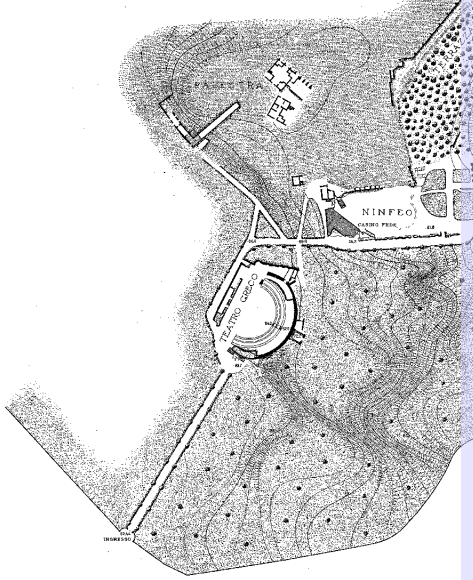
# 1906 2006 Villa Adriana

## Survey Map of Engineering School of Rome

**Villa Adriana Mapping Project -**
**RiVA- Rilevare; Ridisegnare;**
**Riscoprire; Ristudiare … Villa Adriana**

## Team

**Soprintendenza Beni Archeologici del Lazio**




**University of Rome, Tor Vergata**
Faculty of Engineering -Department of Civil Engineering; Electronic Engineering; Computer Science – System and Production; Technological, Physical and Energy Sciences - Faculty of Sciences, Master in Nuclear Physic for the Cultural Heritage - Faculty of Economics, Master in Economics for the Cultural Heritage

**University of Trento**
Faculties of Humanities and Engineering

**University of Rome "La Sapienza"**
Faculty of Architecture Valle Giulia

**University of Florence**
Faculty of Electronic Engineering –Technological Laboratory for the Cultural Heritage

**National Institute of Nuclear Physic - INFN**
Rome Section at Tor Vergata, Florence Section, Laboratories of the South – Catania

**CNR – IFAC** (Institute of Applied Physic "Nello Carrara") - Florence

**CNR – LARA** (Aerial Laboratory on Environmental Research)- Rome

**Ecole Nationale des Ponts et Chaussées –CERMES** - Paris

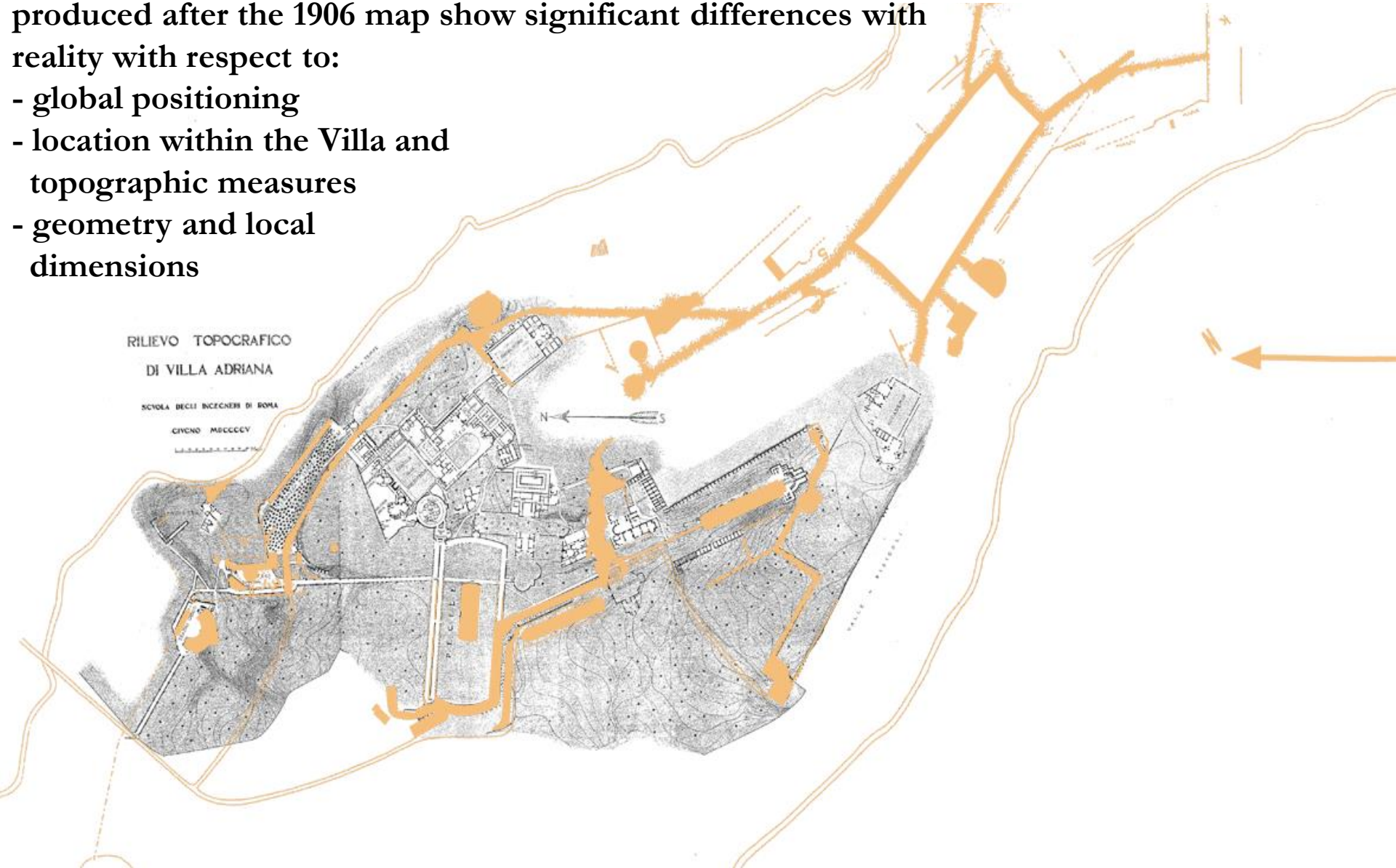
**Fachhochschule,** Department of Civil Engineering – Luebeck

**Universidad –Pablo de Olavide,** Department of Humanities - Seville

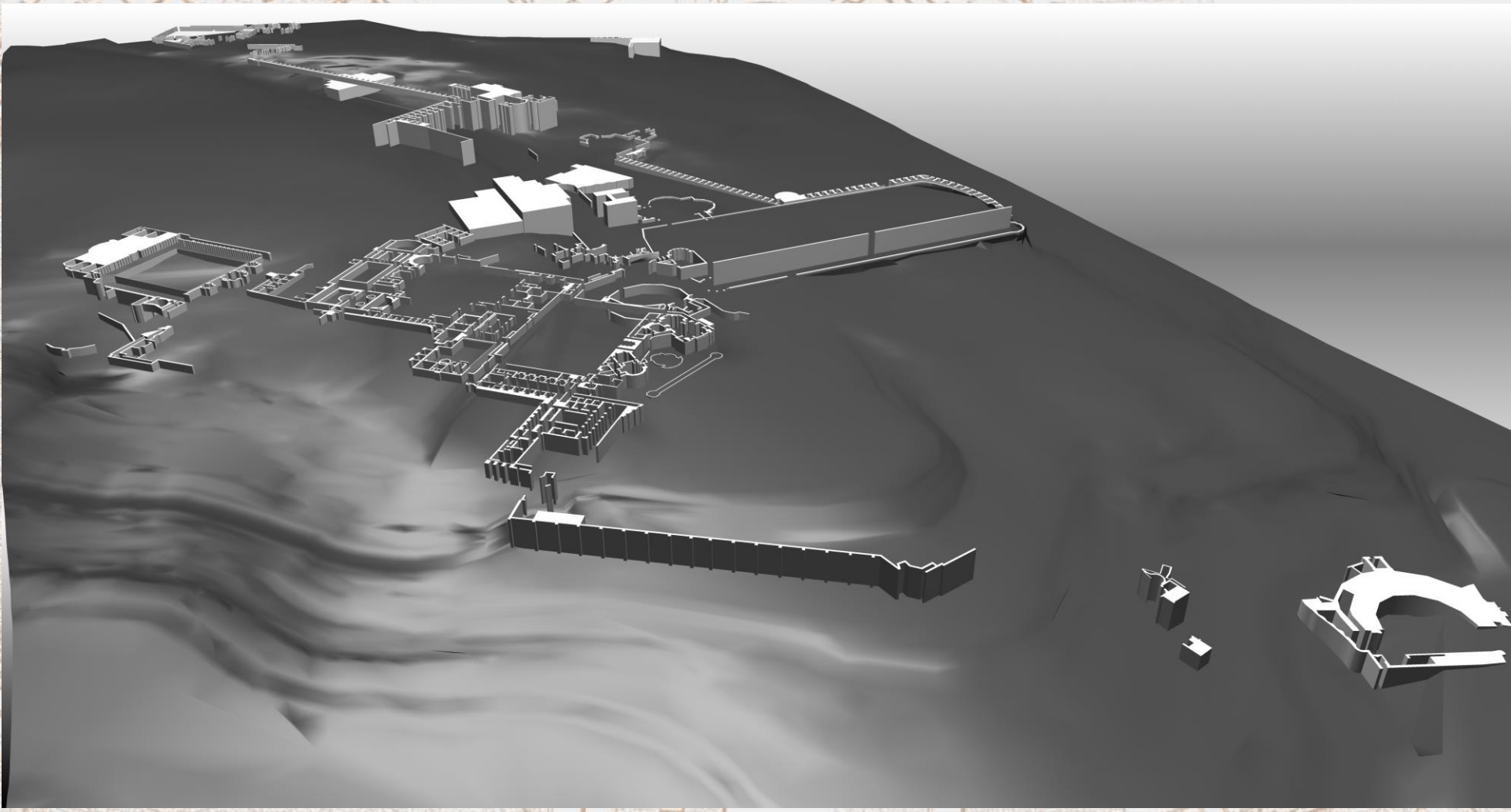
**Rome Underground –** Cultural Association, Rome

**A priority phase of this project will be the reconstruction of a new map of the entire villa to supersede the latest one published in 1906 by the School of Engineers in Rome. Till now it is the only map that has been adopted as a base for supporting data and information from the different researches completed within the Villa. Most of the available graphical data produced after the 1906 map show significant differences with reality with respect to:**

- **global positioning**
- **location within the Villa and topographic measures**
- **geometry and local dimensions**



# Architectural Drawing Group

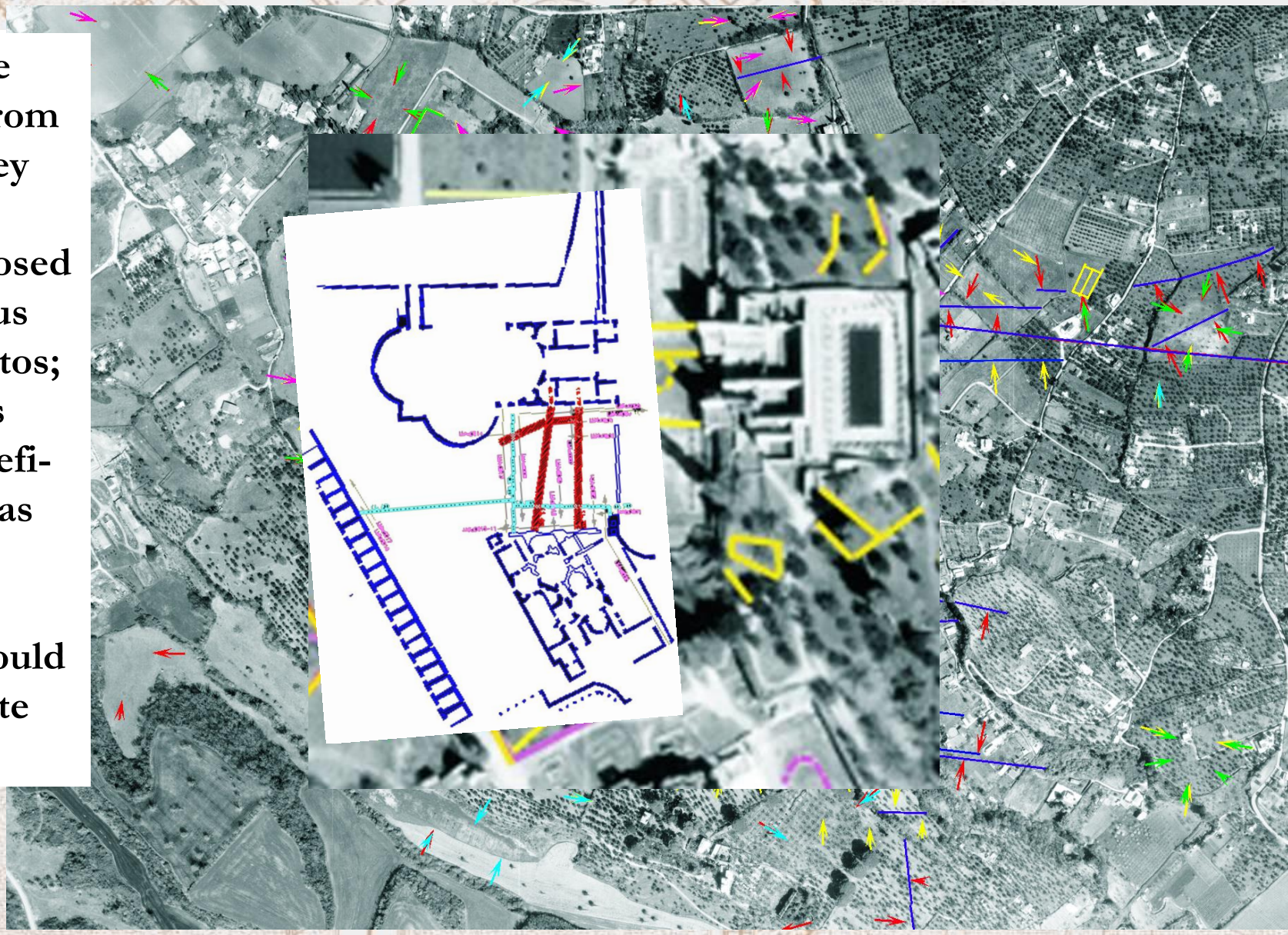


To initiate the project a common support was prepared via digital reproduction in CAD format of the 1906 map; this common base would outline the informative system and sustain the survey data progressively retrieved during the project

BASED on the plan 1906 a 3D model has been reconstructed for inferring a possible realistic image of the complex dating back to 1906. This model can be displayed from any view point

# Architectural Drawing Group

To analyse the data from MIVIS they have been superimposed on previous aerial photos; the results allow to define the areas on which research efforts should concentrate most.



TERRAIN ANOMALIES SHOWING ARCHAEOLOGICAL FEATURES

UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

# Structure Group
# Architectural Drawing Group

Together with surveying specialised studies on specific topics have also begun

Cross section of the roofing floor


mosaic

fine mortar

coarse mortar

fragments of clay bricks

opus spicatum

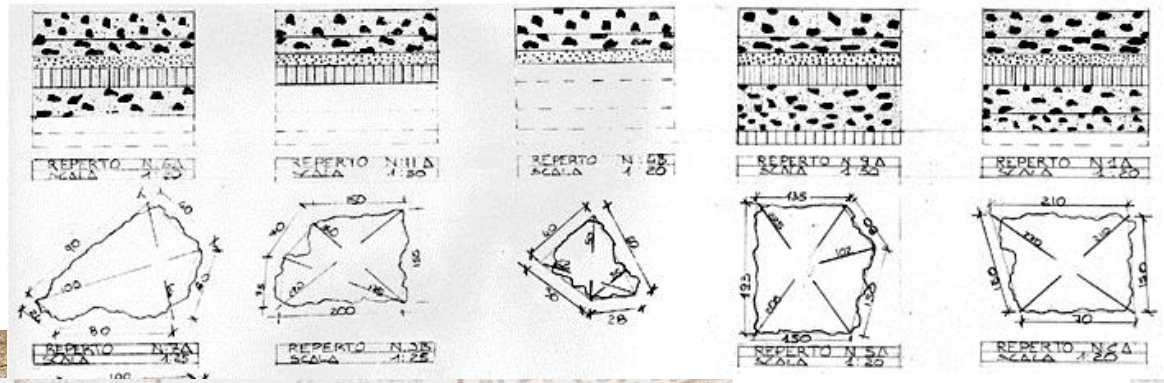
fine mortar

coarse mortar with larger grains

rvey

ent location of fragments of oofing

Detail of a fragment from the roofing



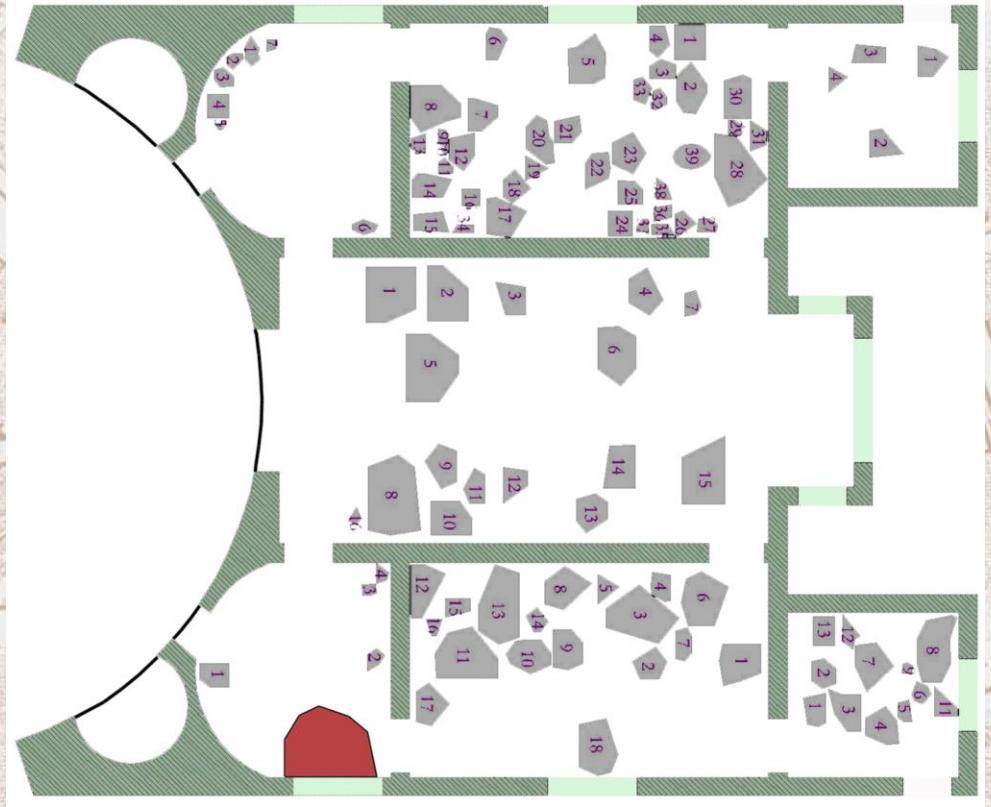

Survey of fragments

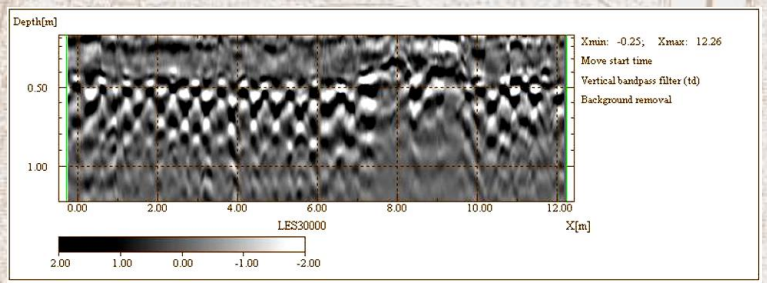
ROOFING FLOORS OF THE “TRE ESEDRE” STRUCTURE - G. Lo Gatto

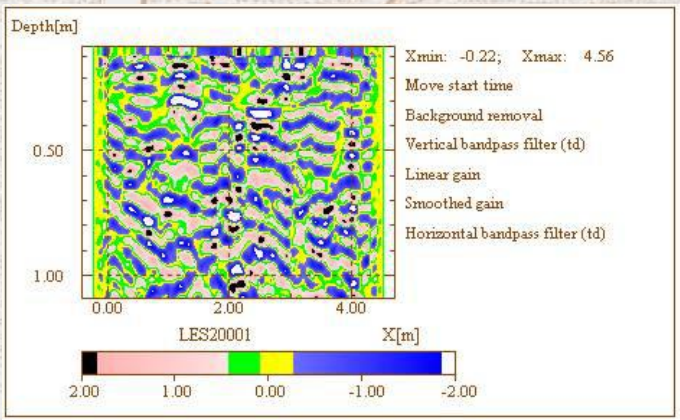
UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

# Architectural Drawing Group



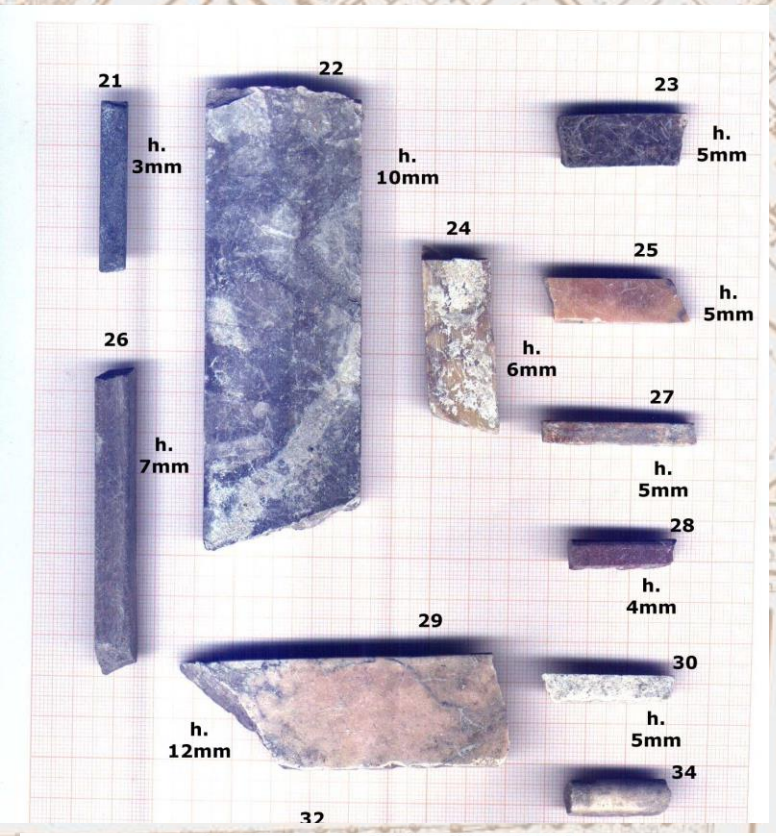


UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

# Neutron Diffraction Group
# Tor Vergata & Milano Bicocca




**TOF diffractometer ROTAX at the neutron spallation source ISIS (UK)**

**Why neutrons?**

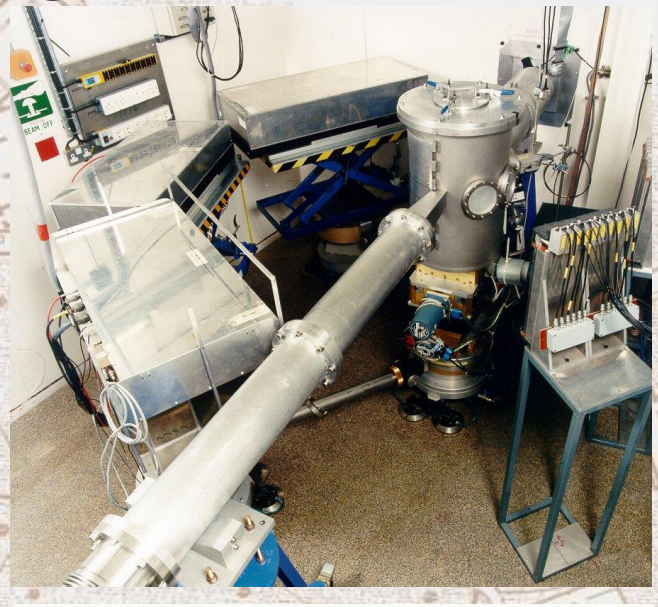
- High penetration capability allows for non-destructive analysis (no drilling, coring, cutting, scraping)
- Complementary information to X-ray diffraction
- A large neutron beam allows for good sampling, i.e. the characterisation data may represent the whole object

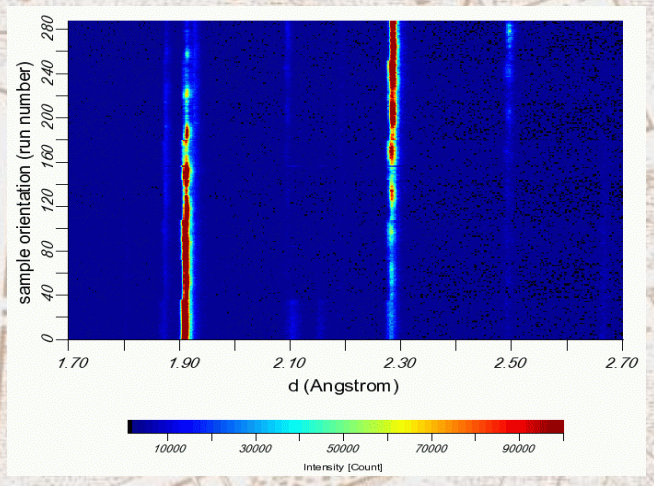
UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

# Neutron Diffraction Group
# Tor Vergata & Milano Bicocca

Pure marble is typically composed of either calcite or dolomite or a combination of the two. Neutron diffraction can identify mineral components down to a 0.5 wt% level. Texture analysis can give information on preferred orientations of grains in the marble tiles and fragments and will serve as a fingerprint that may be characteristic for a particular type of marble and would be used to identify its origin. Indeed it has been proposed that part of the artefacts might have originated from quarries in the Mediterranean area of known texture.





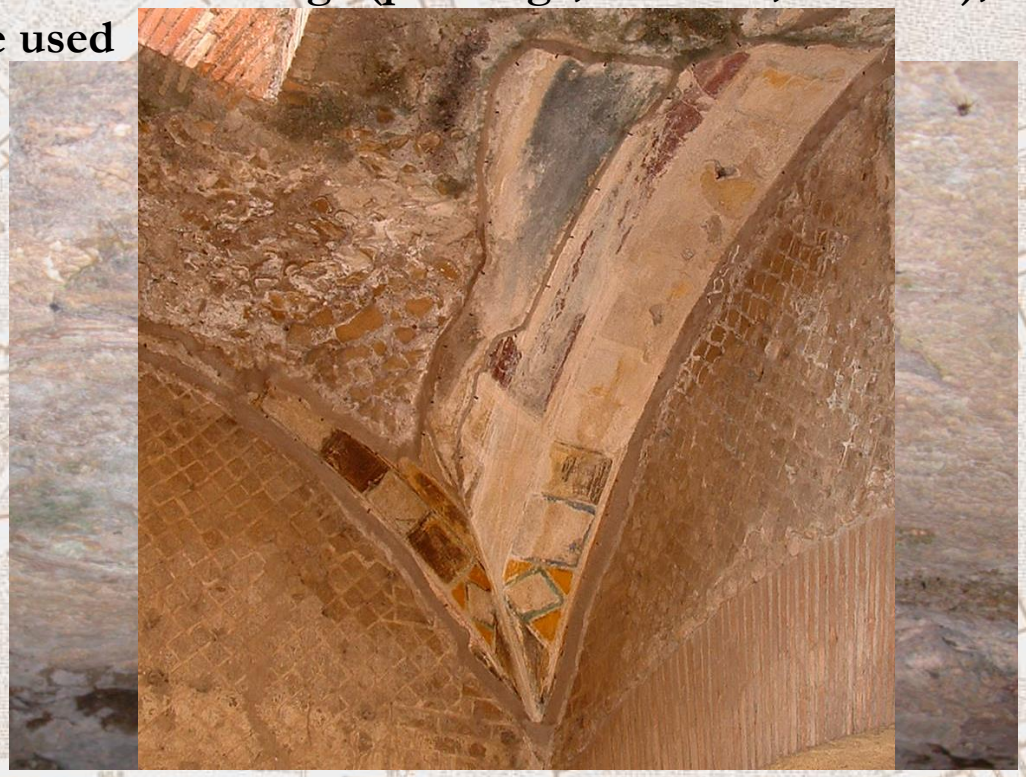

bulk texture

non-random grain orientation distribution

Bragg peaks dependent on sample orientation (i.e. a reference calcite sample)

# Nuclear Physics Group - Tor Vergata

**The National Institute for Nuclear Physics (INFN) will apply the newest technologies and techniques to characterise the wall decorations and linings (paintings, stuccoes, mosaics); either fixed or portable equipment will be used**

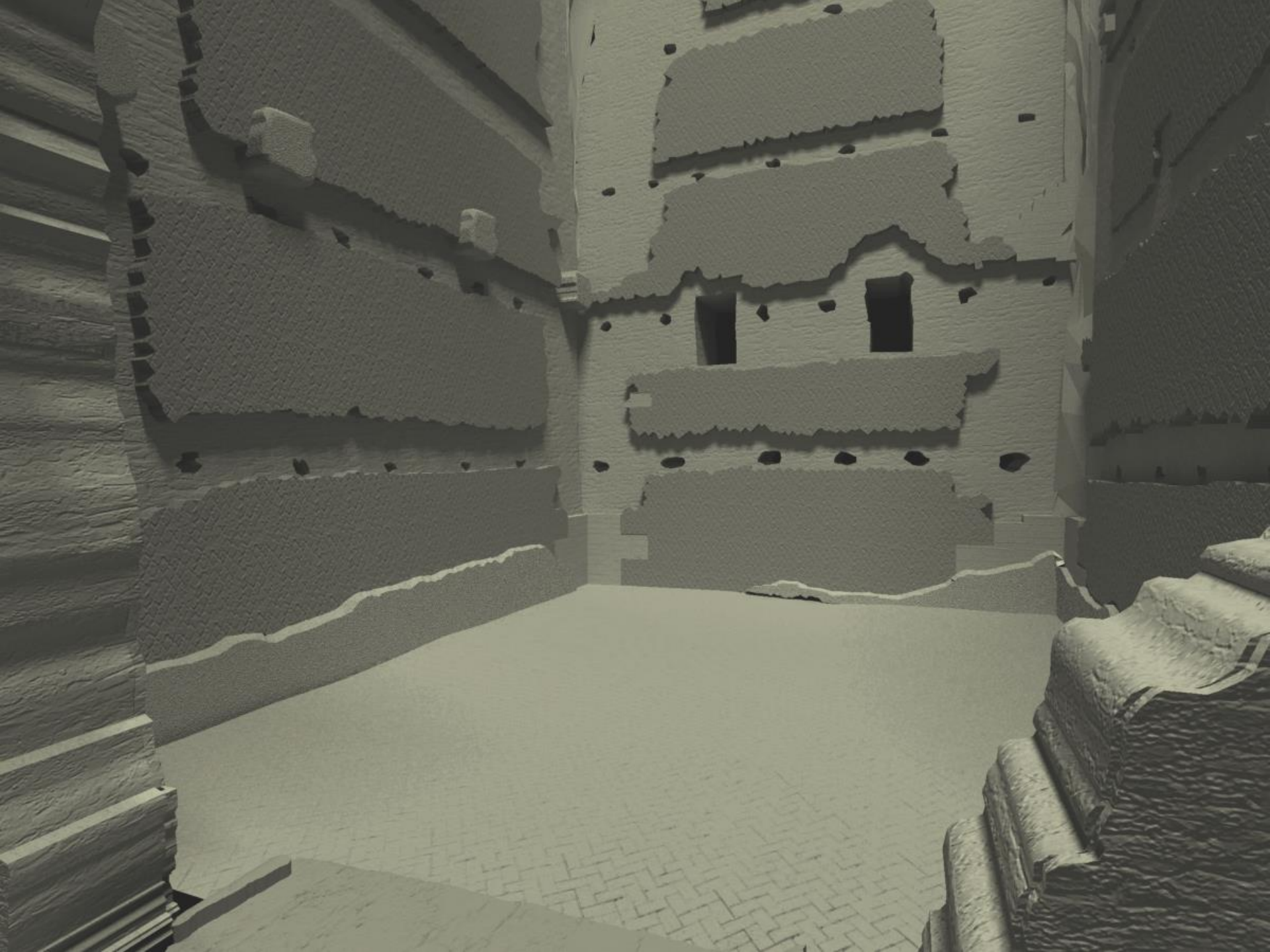


The INFN group of Catania has designed and constructed portable apparatuses; these include the **PIXE-alfa** system, that is dedicated to the analysis of chemicals on surfaces such as pigments, corrosion layers and stains, linings, …, and also the **Microfascio X** system that is dedicated to the analysis of inks and miniatures; in the case of paintings the combined use of the two systems will allow to detect any possible over layer covering the base painting

UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

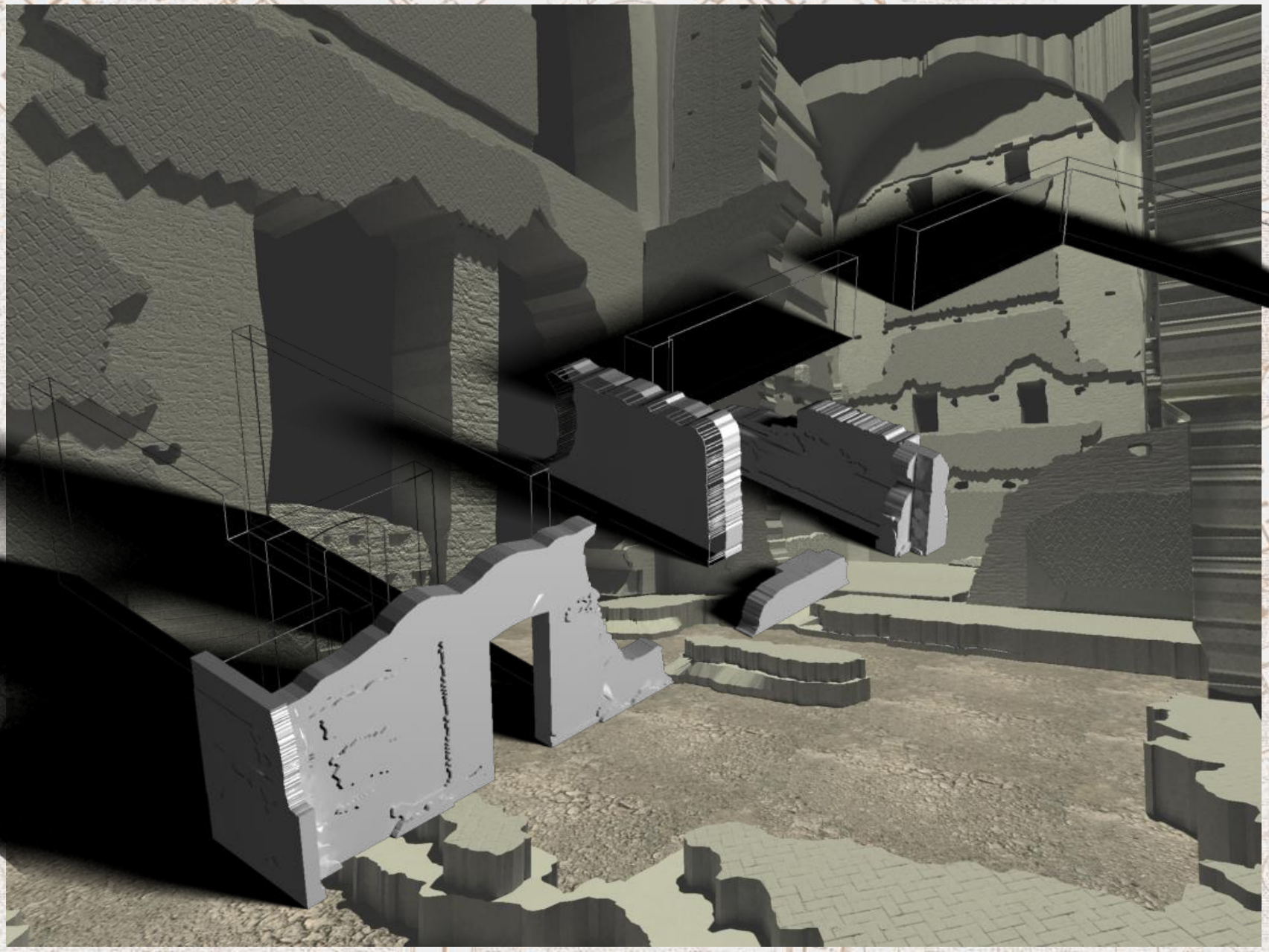
# Geotop Company Group
# Architectural Drawing Group



UNIVERSITA' DEGLI STUDI DI ROMA

TorVergata

# Architectural Drawing Group

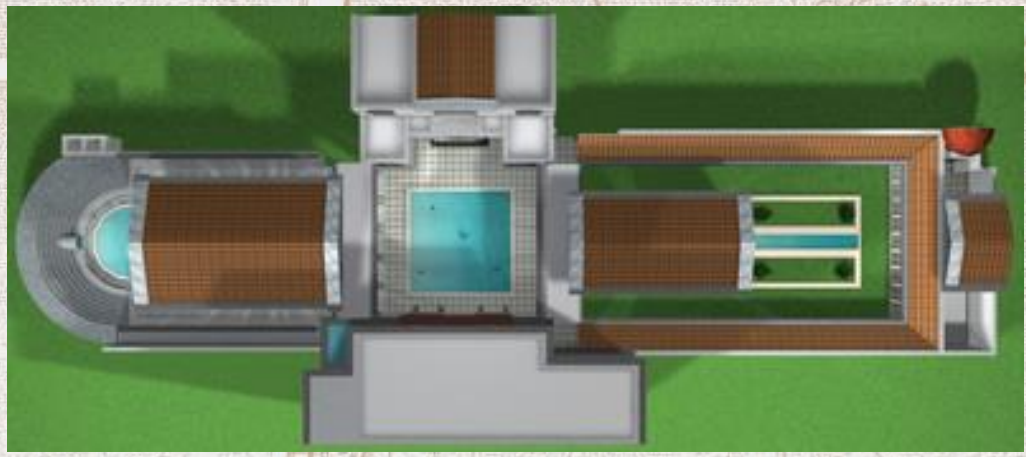


UNIVERSITA' DEGLI STUDI DI ROMA
TorVergata

# Architectural Drawing Group

## VIRTUAL MODELS

Furthermore any virtual model is reconstructed on the basis of the results of a process of understanding and implementing available knowledge. Accordingly these models are often biased by the personal inputs from the surveyor or from the person representing the data from the survey. Also, in some cases the final result is biased by a prevailing attention towards the geometry with respect to the aspect of surfaces. For this reason the methodological approach and related procedures that have been selected for developing the present research project are based on the requirement to prepare several drawings and connected documents for the same archaeological unit. The documentation will be prepared with different techniques, but within the data base bank each document will classified in such a way to maintain the requirements of the scientific approach when data are shared and transmitted among the different disciplinary areas



# Architectural Drawing Group

**VIRTUAL MODELS**
**"PALAZZO D'INVERNO AND GIARDINO STADIO"**

**SURVEY CAMPAIGN 2003 F. Tarselli**

**VIRTUAL MODELS**
**CALIDARIUM OF GRANDI TERME**

**RENDER A. Tomei 2004**