CH digital documentation and 3D survey to foster the European integration process
Case study of Geguti Palace in Kutaisi, Georgia

Tamar Meliva

Faculty of Restoration, Art History and Theory,
Tbilisi State Academy of Arts

Introduction

This is a work-in-progress joint research, developed by the **Department of Architecture of the University of Ferrara** and the **Tbilisi State Academy of Arts**, in collaboration with the National Agency for Cultural Heritage Preservation of Georgia.

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inception

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Aims and objectives

The research needs to be defined as a **cross-disciplinary** process involving different skills by the partners, aiming at a better **interpretation and understanding** for a sustainable development of the site and its accessibility.

To reach the above mentioned overall goal, the research is being developed in two main phases:

- **interdisciplinary survey and documentation** of the asset in order to create a comprehensive database for research purposes, future interventions and knowledge dissemination;

- development of a **valorization strategy** for the site involving both physical and digital aspects.

Context

Geguti Palace, a medieval royal palace, dates back in XII-XIV centuries and was built as the summer residence of the Georgian Kings. The palace, now in ruins, is located 7km south of the city Kutaisi, along the river Rioni. The complex includes the palace itself and the church. Also, there are archaeological excavations in course on the territory, which proves the existence of the previous structures. The palace spreads on about 2,000sqm and is composed by the huge central hall and small additional rooms around it.

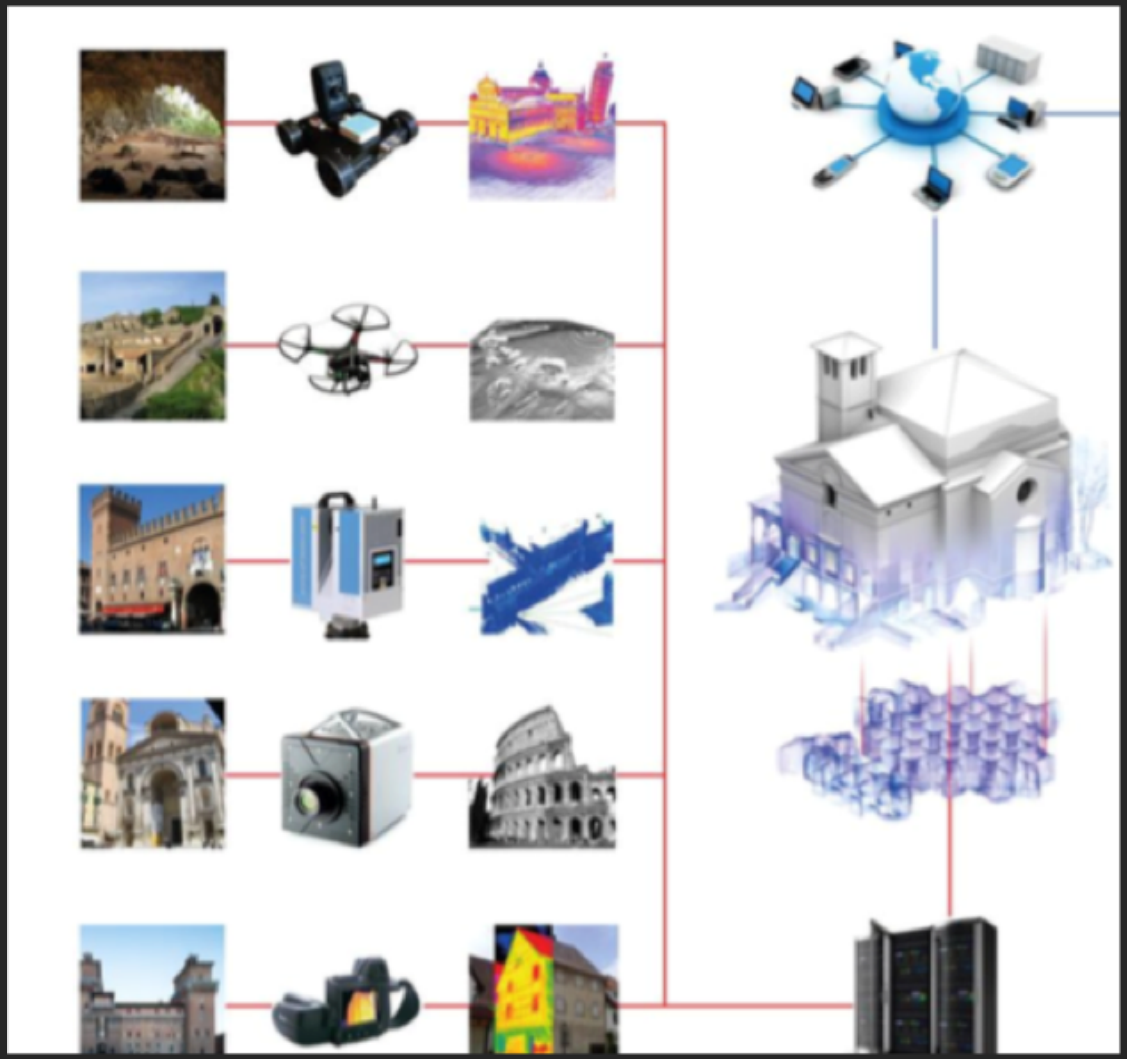
The palace is categorized as the **National Significance Monument** by the Georgian state.

Methodology

The vision of an integrated digital documentation for cultural heritage assessment is becoming more and more a real opportunity, thanks to **consistent and effective improvements of methods, processes and instruments on 3D survey over last years**.

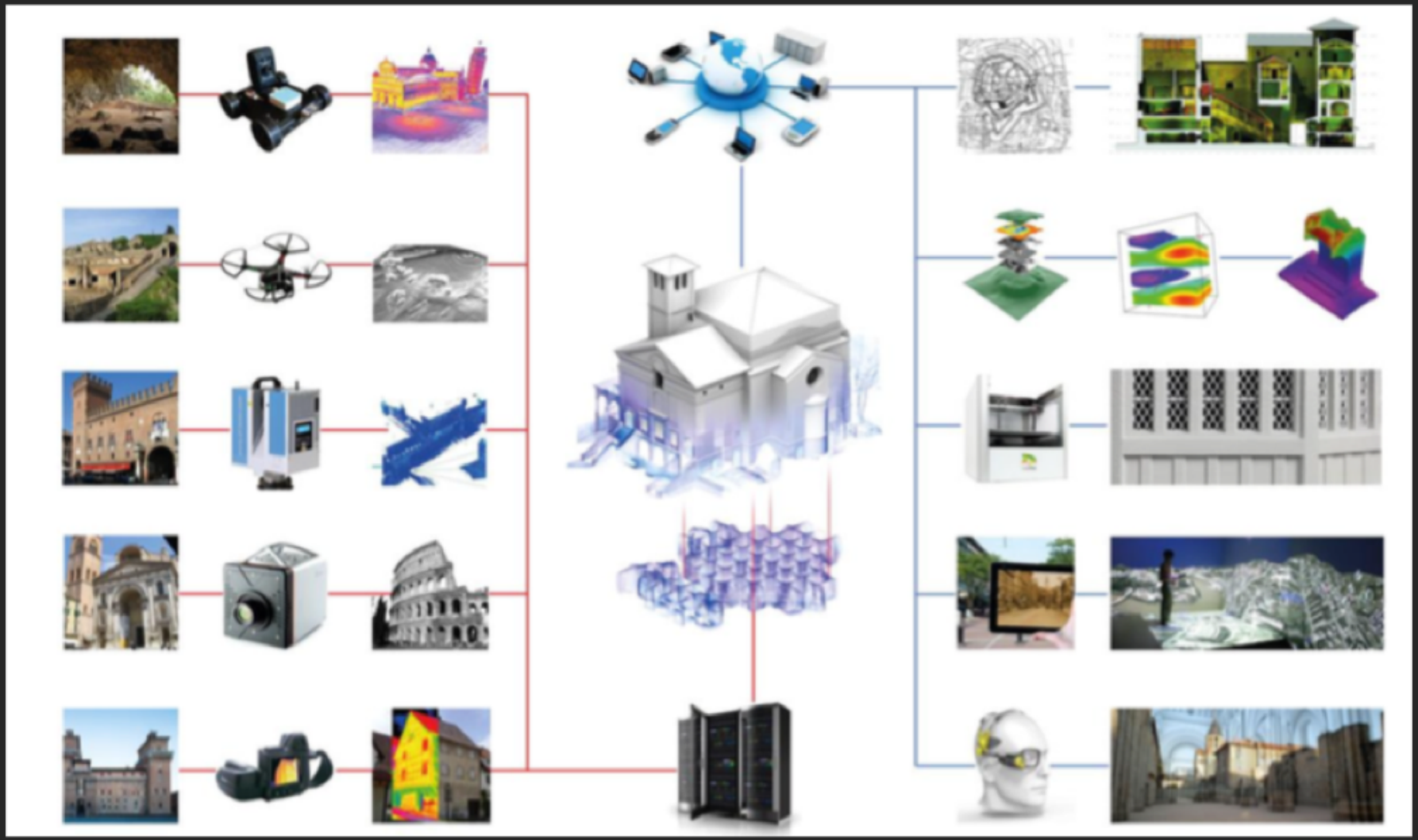
Methodology

Starting from the concept of **“geometric memory”,** it is possible to enhance the knowledge and the understanding of Cultural Heritage assets in order to pursue a sustainable preservation.



Methodology

Moreover, the promotion and valorization phase should take the opportunity to **exploit the captured technical data for the digital cultural heritage accessibility**, making contents and resources available for as many people as possible by using ICT functionalities and applications.



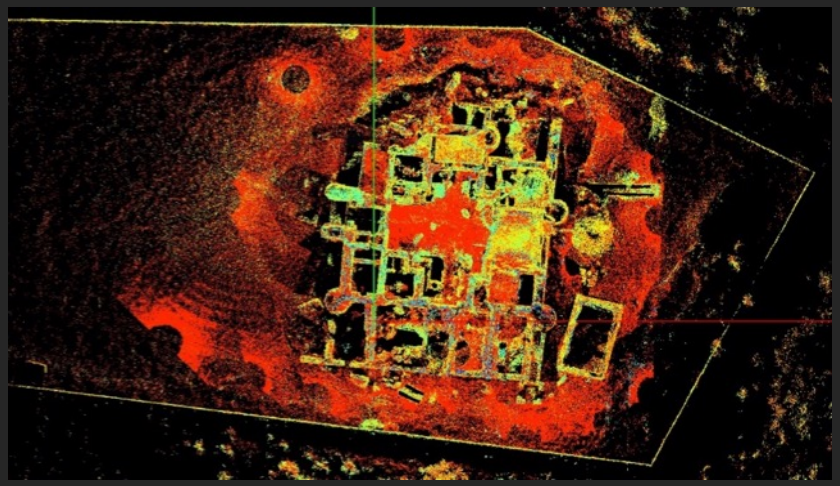
Preliminary results

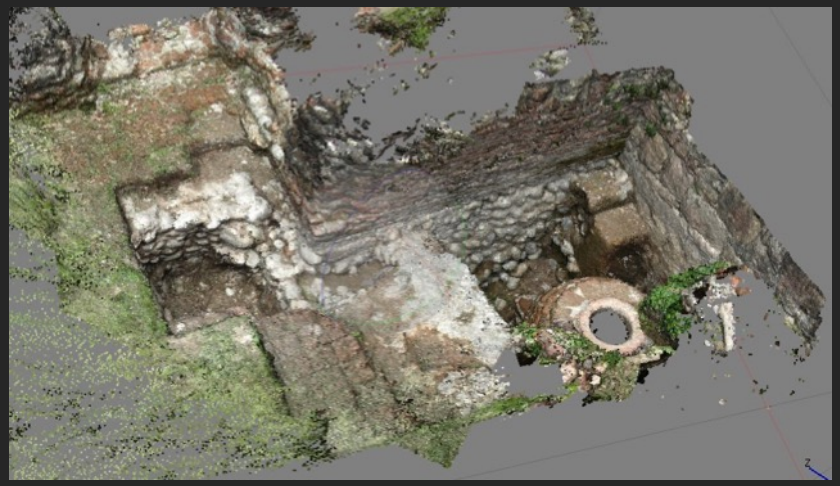
The main preliminary results refer to the 3D survey activities performed in the summer of 2016.

- Creation of the high density **3D point cloud** composed by the **200 millions of points** taken from 60 stations. The dataset was registered with ICP method, average error - 3,8cm, using JRC 3D Reconstructor by Gexcel;

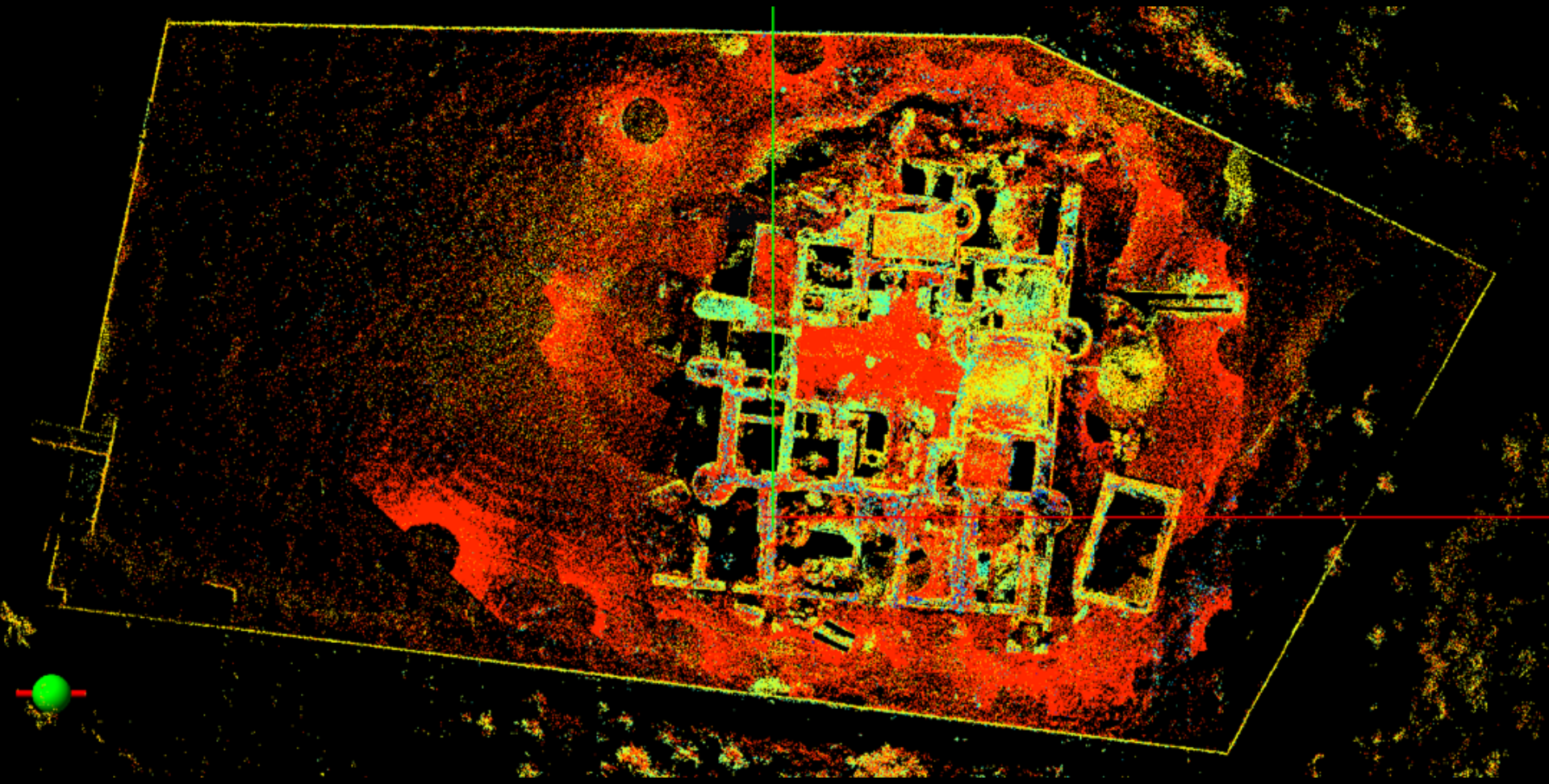
- Capturing of **60 HDR 360° spherical photos** in order to develop an exhaustive visualization for VR (Virtual Reality) viewers;

- Creation of **3D models for 17 archaeological excavation** areas by the photo **SFM modelling** in order to create and easy updatable documentation of excavation processes.





Preliminary results



Preliminary results

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Acknowledgment

3D data capturing
A/R – V/R apps development

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University of Ferrara

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scientific supervisor:
Prof. Marcello Balzani

Site interpretation
Site restoration and exploitation

Department of Conservation
Faculty of Restoration, art History and Theory
Tbilisi State Academy of Arts

Tamar Meliva*, M.A. Ph.D.(c)*
Nino Bugadze*, M.A. Ph.D.(c)*

scientific supervisor:
Prof. Nana Kuprashvili

Site access and stakeholder
National Agency for Cultural Heritage Preservation of Georgia
Director: Dr. Nikoloz Antidze

Data Acquisition protocol and methodology
INCEPTION - Inclusive Cultural Heritage in Europe through 3D semantic modelling
Scientific coordinator: Prof. Roberto Di Giulio

Tamar Meliva
tamar.Meliva@art.edu.ge