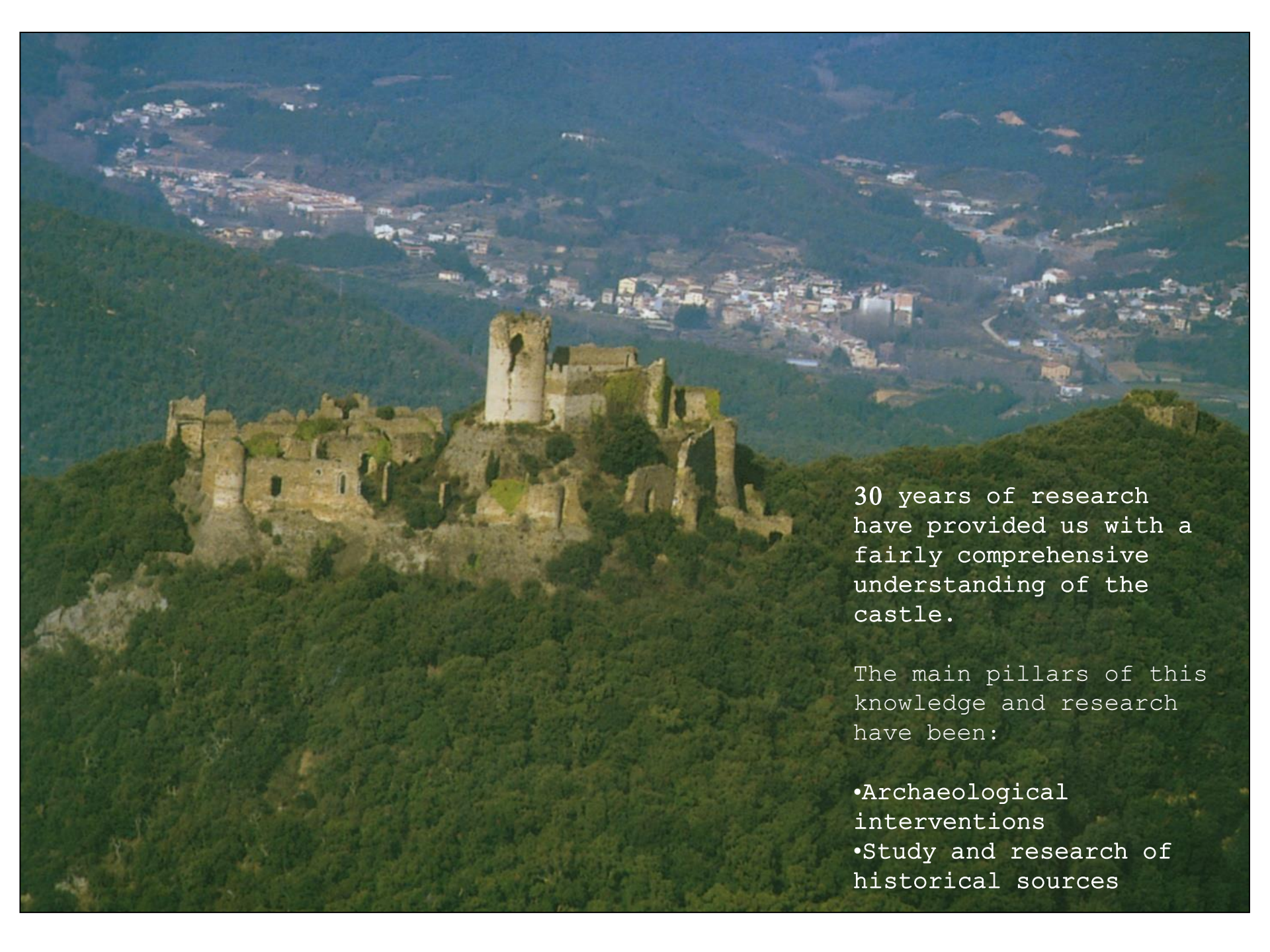


MONTSORIU 3D

The application of new technologies in
archaeological research and
dissemination





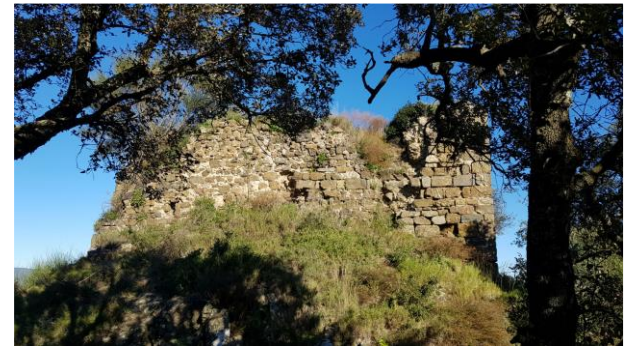
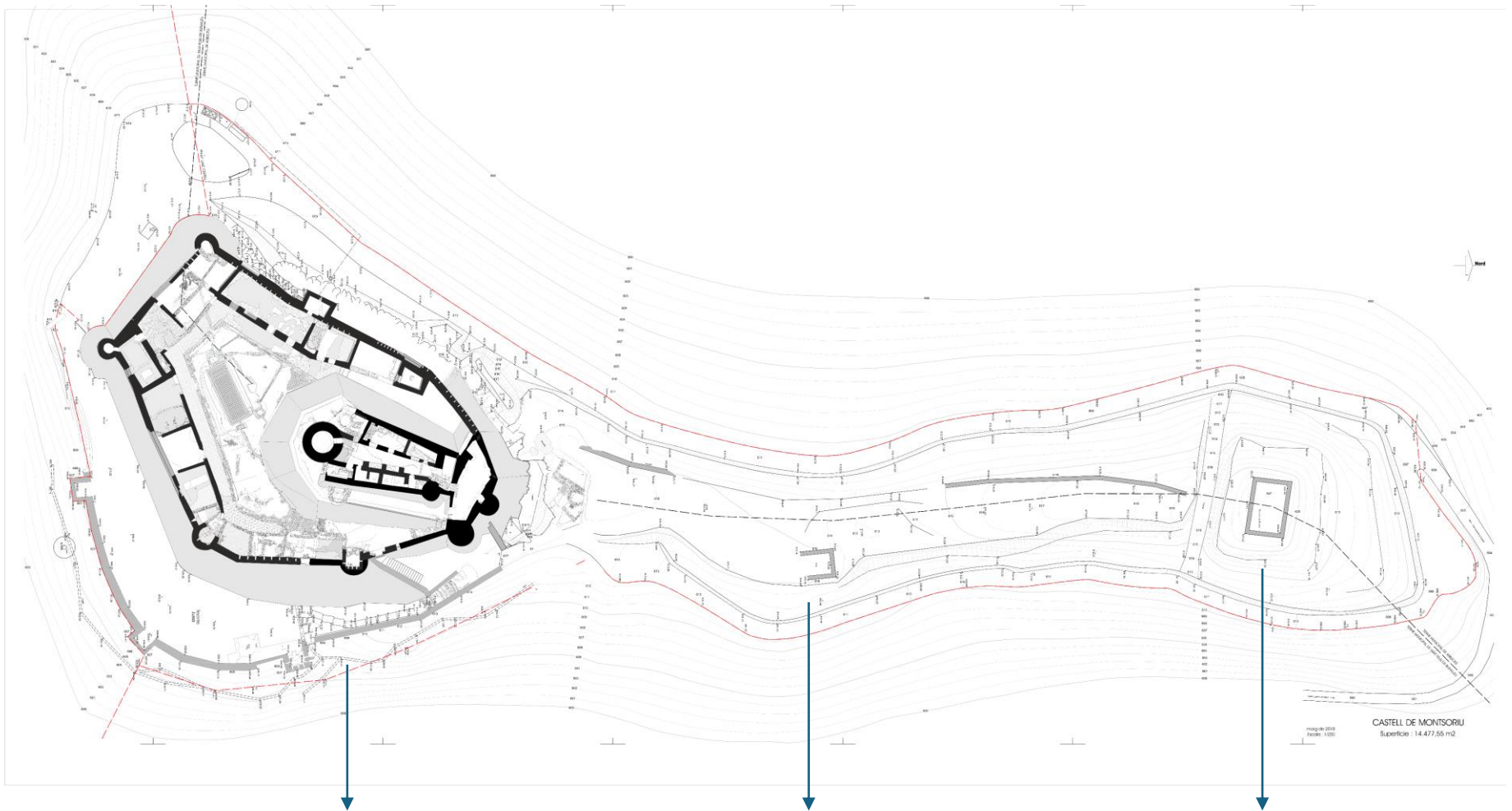
An aerial photograph showing a large, multi-towered stone castle ruin perched on a forested hill. The castle has several towers and walls, some of which are partially collapsed. In the background, a town with numerous buildings is visible, nestled in a valley. The surrounding landscape is covered in dense green forest.

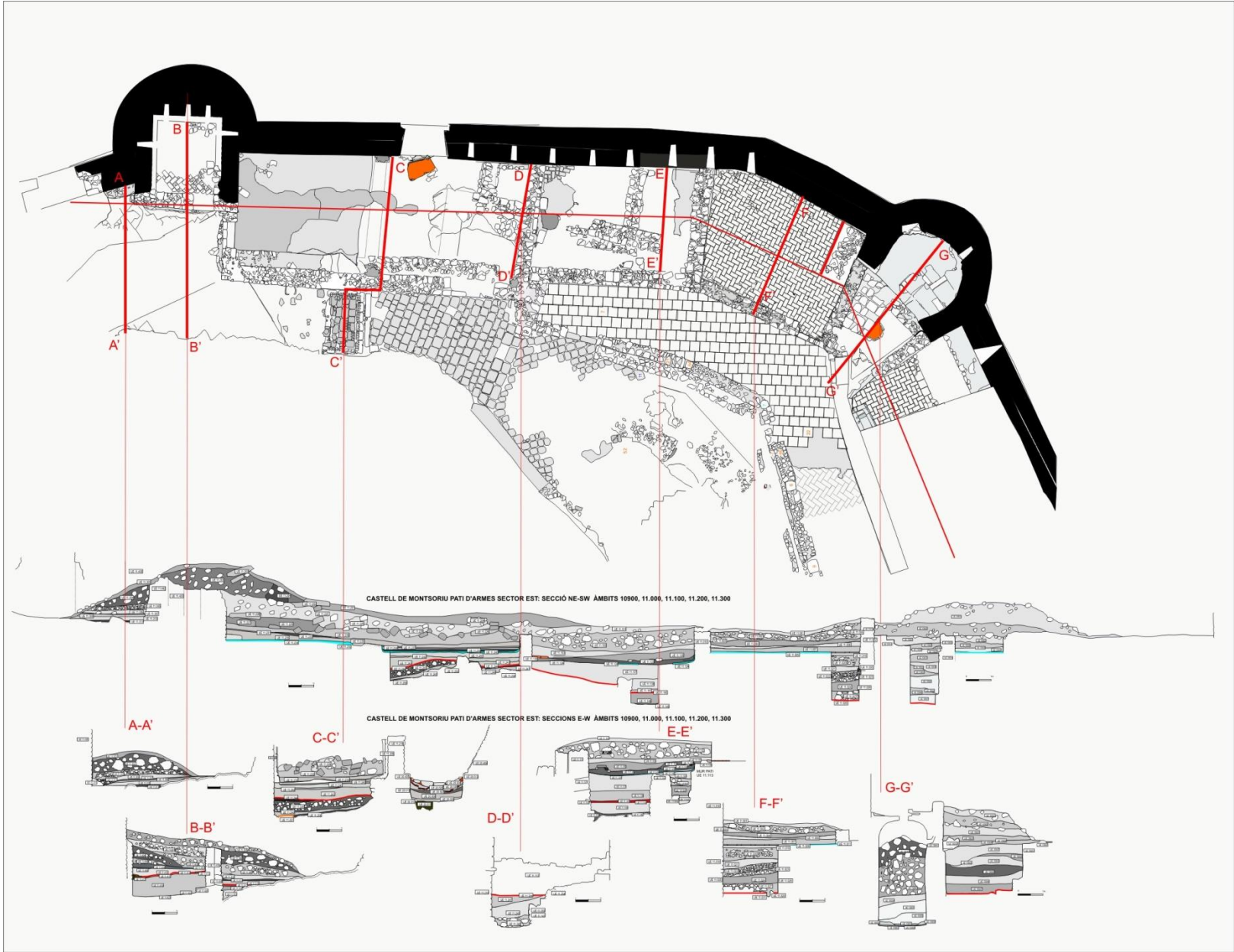
30 years of research have provided us with a fairly comprehensive understanding of the castle.

The main pillars of this knowledge and research have been:

- Archaeological interventions
- Study and research of historical sources





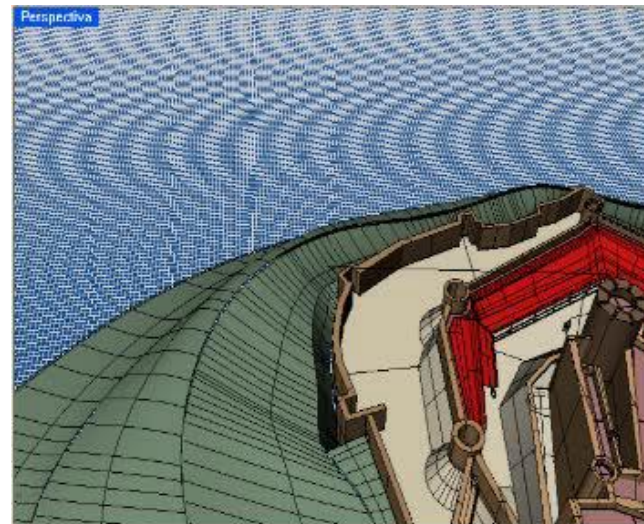
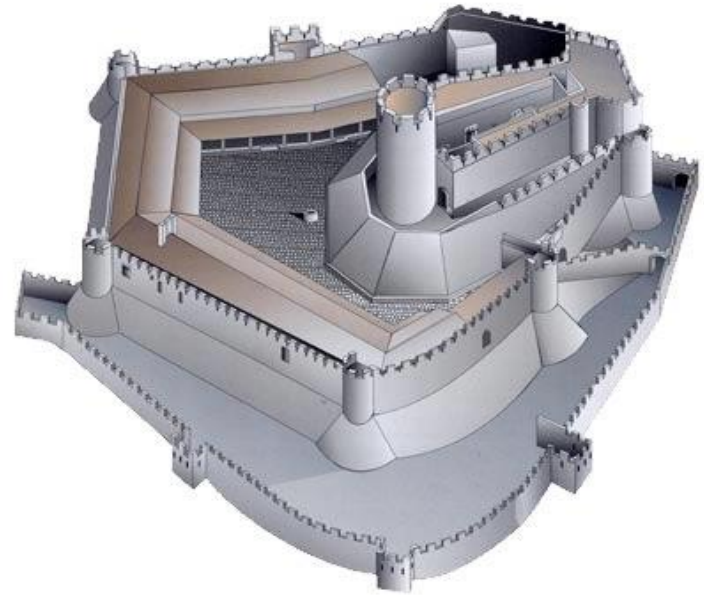




- FASE IBÈRICA
- FASE I - SEGONA MEITAT s. X
- FASE II - SEGLE XI - PRIMERA MEITAT s.XII
- FASE III - SEGONA MEITAT s. XII- s. XIII
- FASE IV - FINALS s. XIII- PRIMERA MEITAT s.XIV
- FASE V - MITJANS s. XIV
- FASE VI - DARRER QUART s. XIV- PRINCIPIS s. XV
- FASE VII - s. XV.-XVI

0 10m

Previous Work on Recreating the Castle

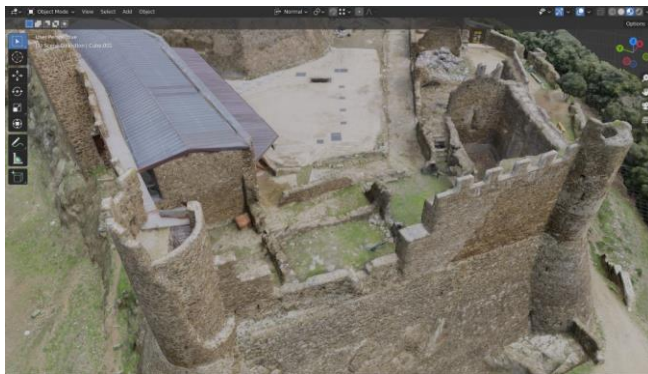
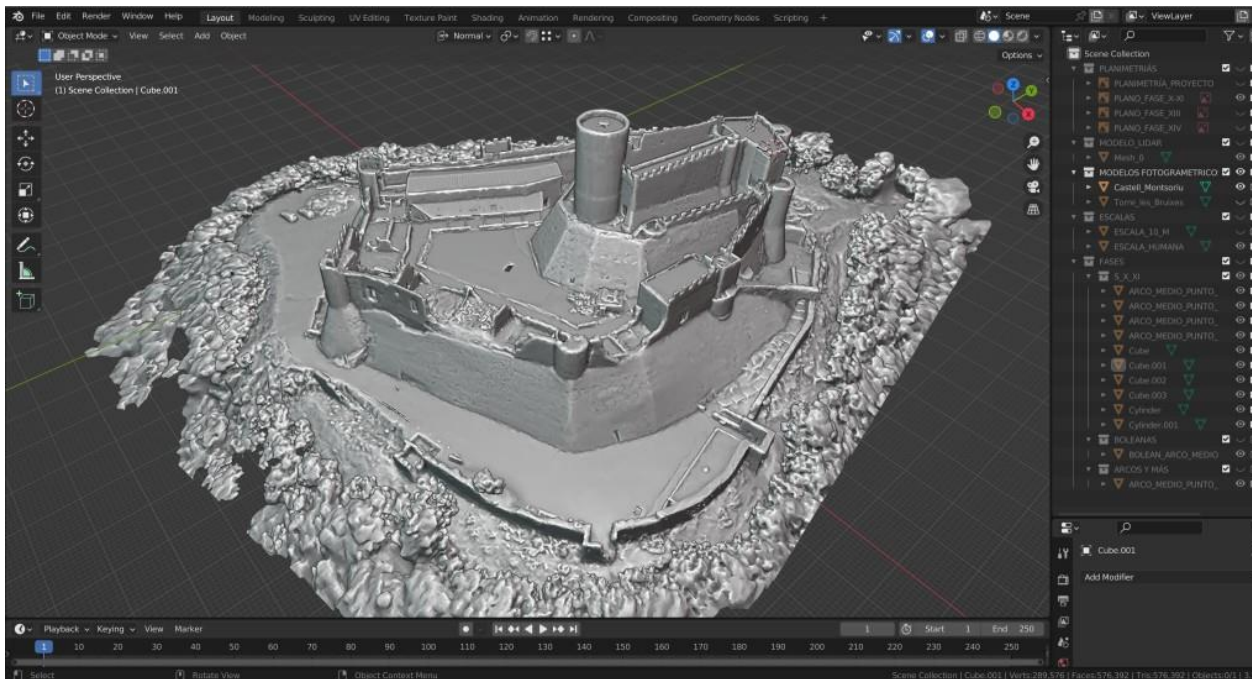


ESPAI
CABRERA

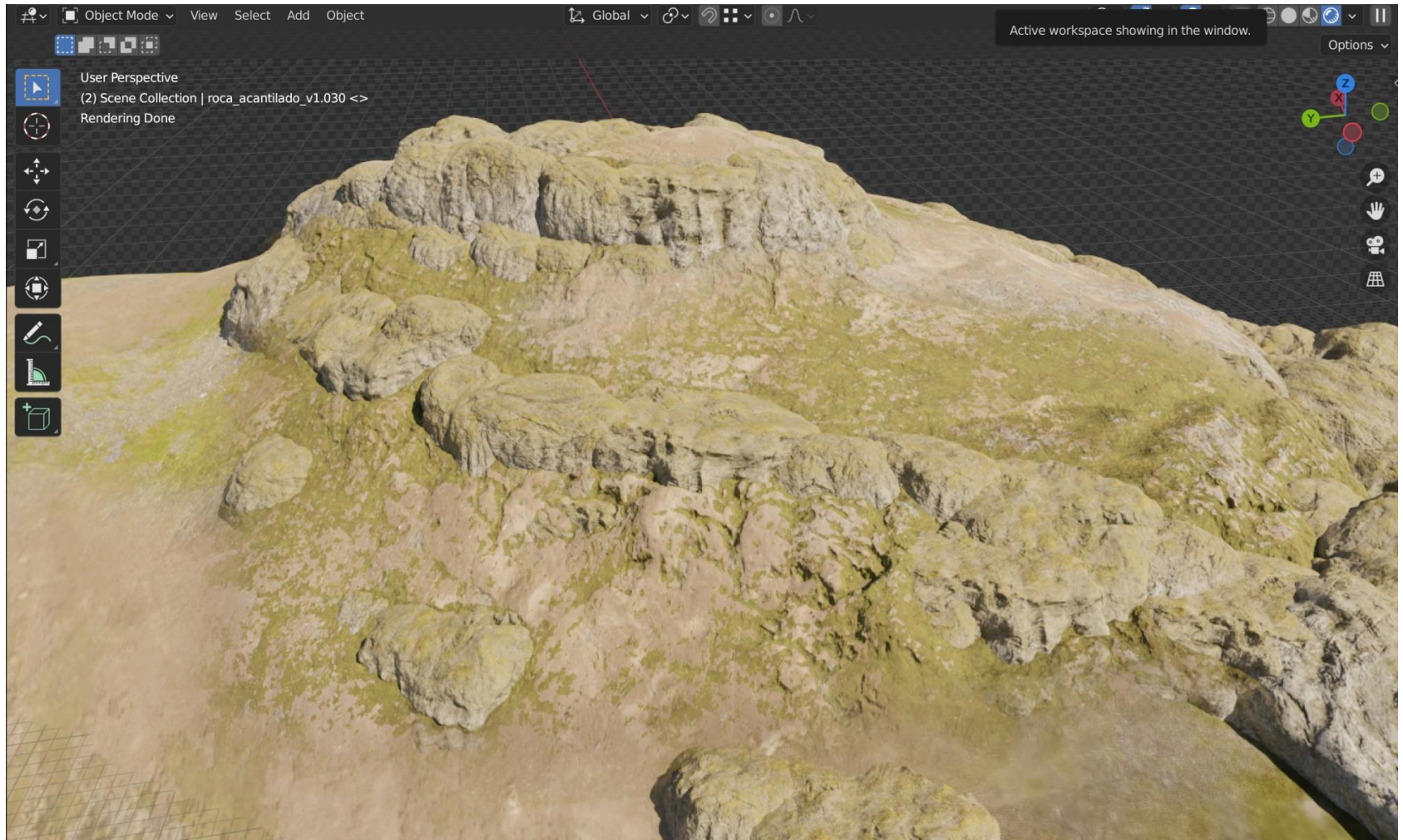


ELS CABRERA
EL PODER D'UNA GRAN NISSAGA

Fases del treball de digitalització



1- Drone flight over the castle to create a high-precision photogrammetric 3D model. This model is essential for subsequent work on the different spaces and construction phases. This task was carried out by the company Digivisión.

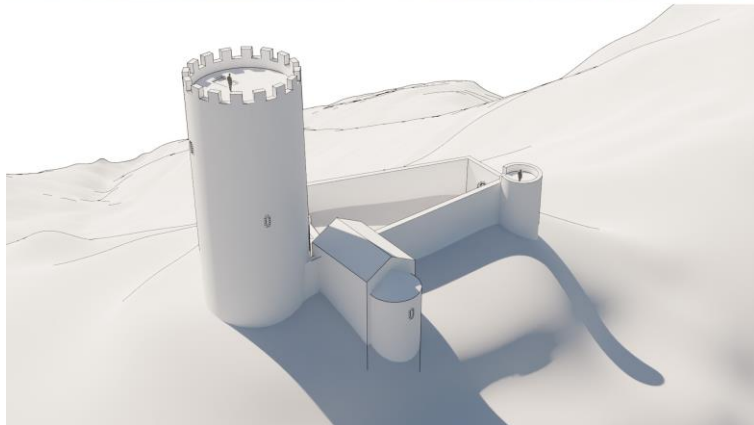


2- For the virtual reconstruction of the terrain, the company relied on photogrammetry obtained by drone, as well as cartographic models and on-site fieldwork.



3- Design of the Different Construction Phases

This process was divided into three phases: modelling, texturing, and rendering.



The modelling and rendering were carried out using the open-source software Blender, based on the photogrammetric model.

As for the texturing, it was developed using Adobe Substance 3D Painter.



The company in charge, as in the previous case, was *3D Stoa. Patrimoni y tecnología*, with the participation throughout the process of archaeologists from MEMGA contributing to

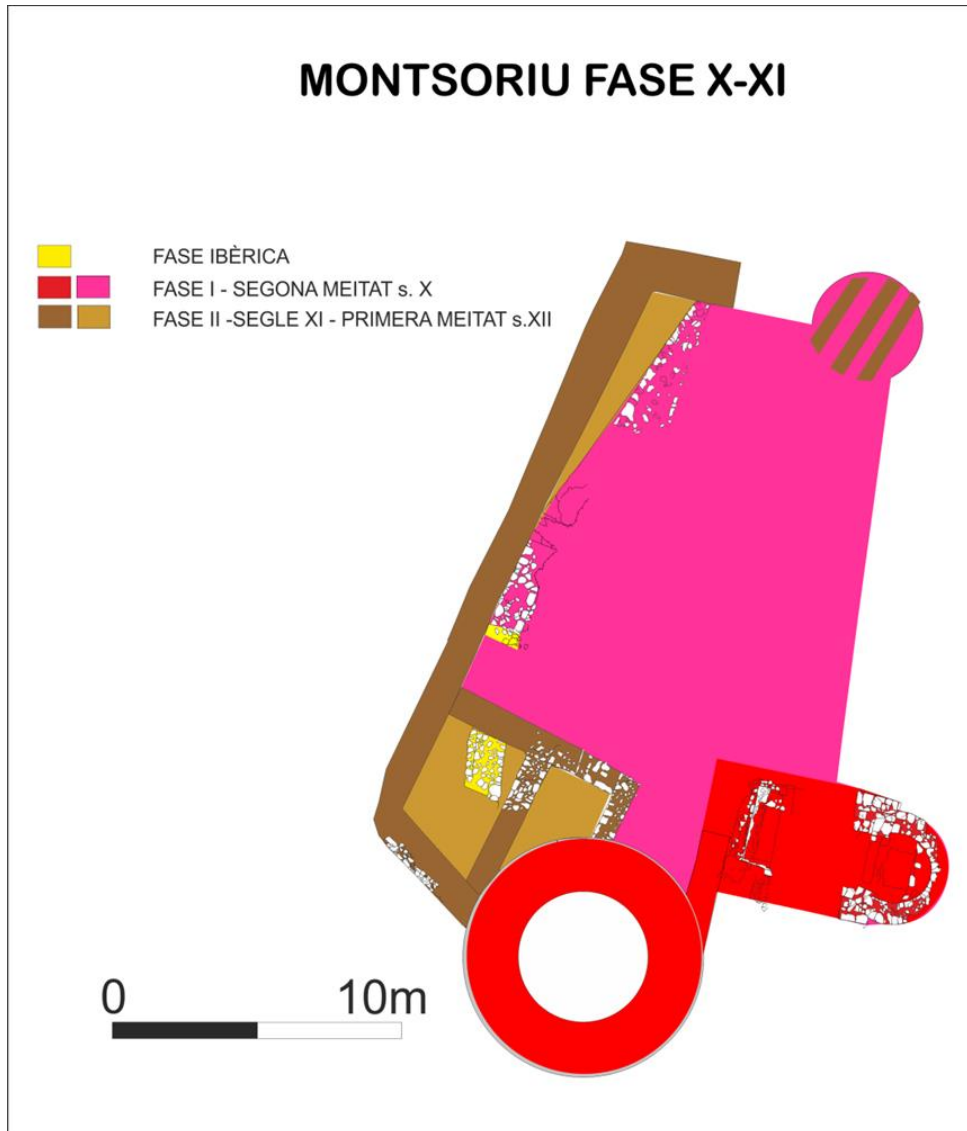


Montsoriu: The Result of 500 Years of Construction and Renovation

Montsoriu walls contain the remains of three overlapping castles built over five centuries of works and reforms:

- A rocky castle from the 10th-12th centuries,
- A castle corresponding to the late Romanesque and early Gothic periods, constructed between the second half of the 12th century and the first half of the 13th century.
- A Gothic castle-palace built between the late 13th and 14th

The Caslte of the year 1000



This is a castle:

- Of small dimensions, measuring 30x19m
- Adapted to the site's topography
- Dominated by a main tower
- Featuring a small castle chapel and a water cistern within its interior
- Endowed with strong symbolic significance due to its architectural presence in the landscape, serving as a testament to the existence of a center of power and control over a territory.





3D Reconstruction of the Pre-Romanesque Chapel of Montsoriu

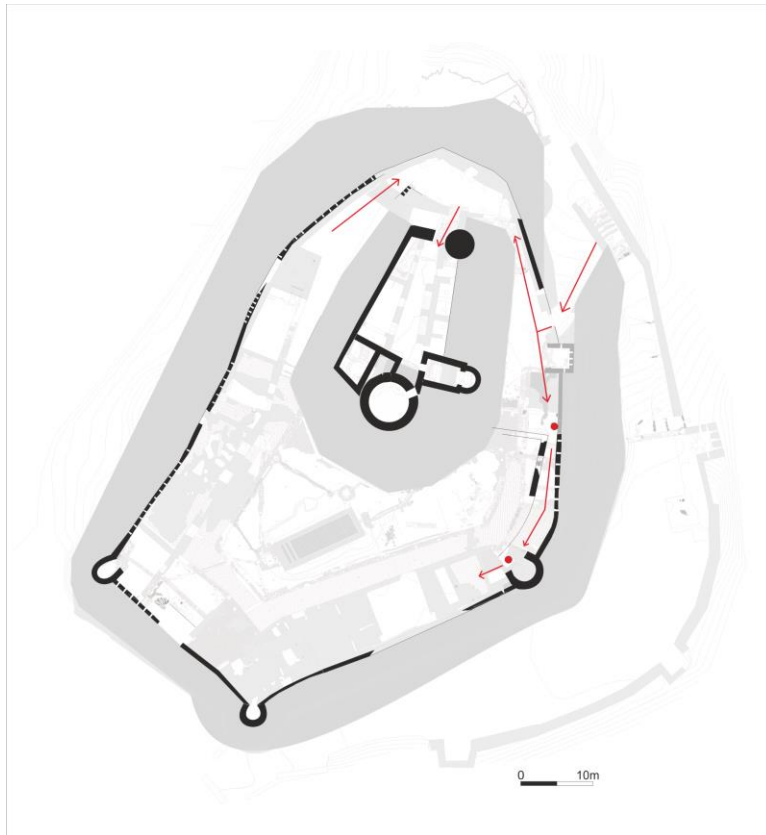
Pre-romanesque chapel from the second half of the 10th century. In use until the second half of the 12th century.







Romanesque Castle (Second half of 12th century)



Formalization of a typically Romanesque castle with two enclosures.

- Definition of a new enclosure adapted to the topography, featuring semicircular towers at the corners, base-level wall defenses, and the presence of an upper enclosure.



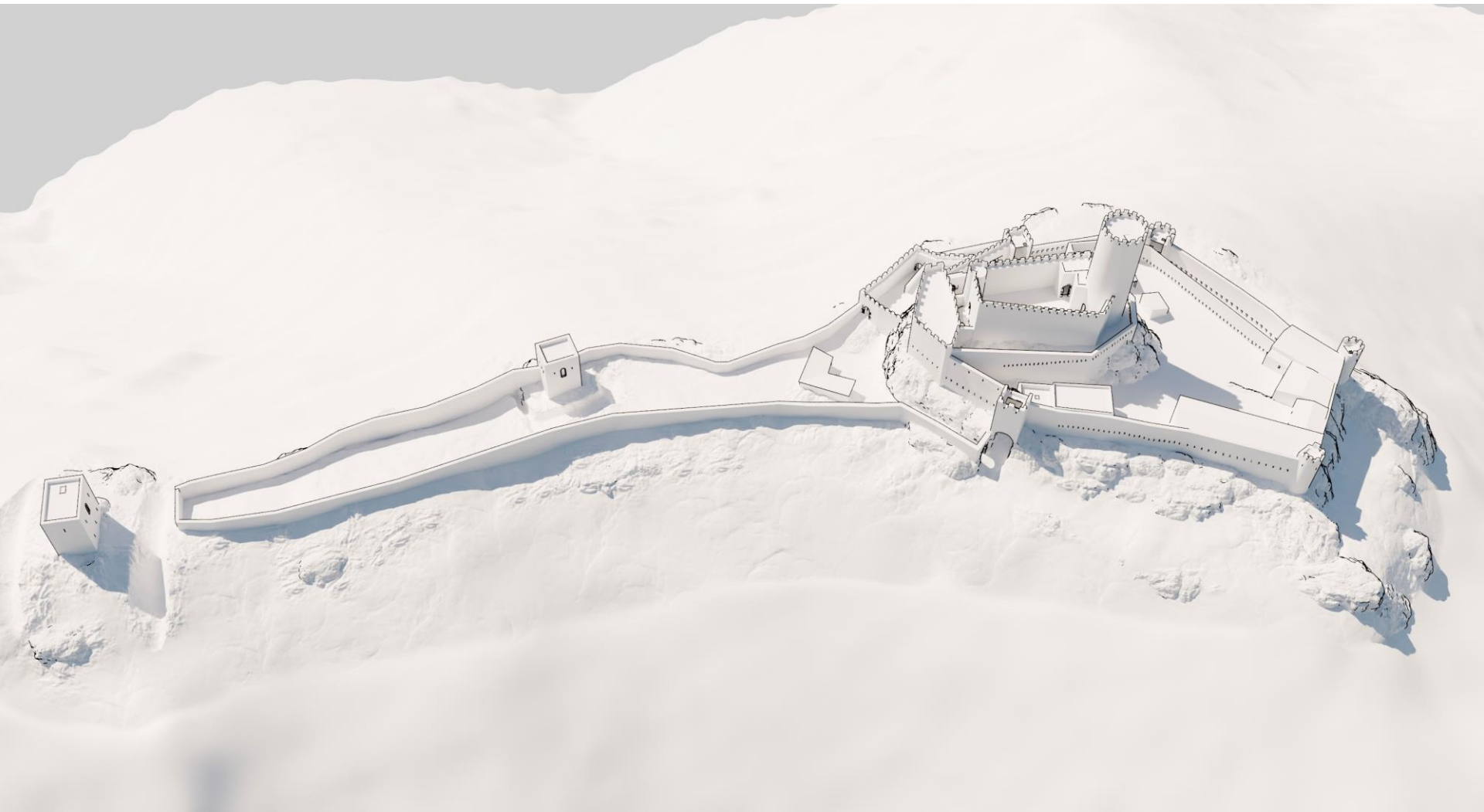
Evolution of the Romanesque Castle (First half of the 13th century):



Evolution of the castle towards the Gothic model, characterized by the presence of a central courtyard.

- Construction of a new chapel in second Romanesque style
- Erection of a powerful barbican on the northern side of the castle
- Construction of a new water tank





"...un dels bells i nobles del món"...











Narthex or hall before entering the late Romanesque chapel. Second quarter of the 13th century

- Late Romanesque Chapel:

- Dating to the late 12th century, in use until the mid-14th century.

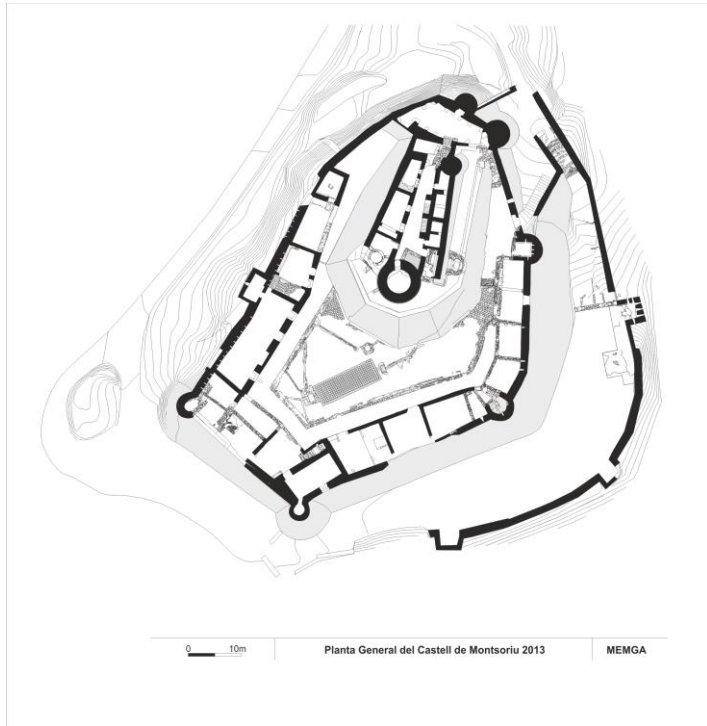
- Dedicated to Saint Peter, with historical sources also referencing a chapel dedicated to Saint Mary.







14th and 15th
century
The great gothic
palace



Remodeling of the upper
enclosure.

- Urban transformation of the Courtyard of Arms, characterized by the presence of a central courtyard.
- Removal of defensive structures in the northern area and creation of the Lower Enclosure (Recinte Jussà), optimizing the defensive capabilities of the castle by designing a system of concentric enclosures.

Improvements to the Wall
Defense System:

- Raising of walls.





CASTELL DE MONTSORIU



CASTELL DE MONTSORIU SEGLE XIV

3D Reconstruction of interior spaces



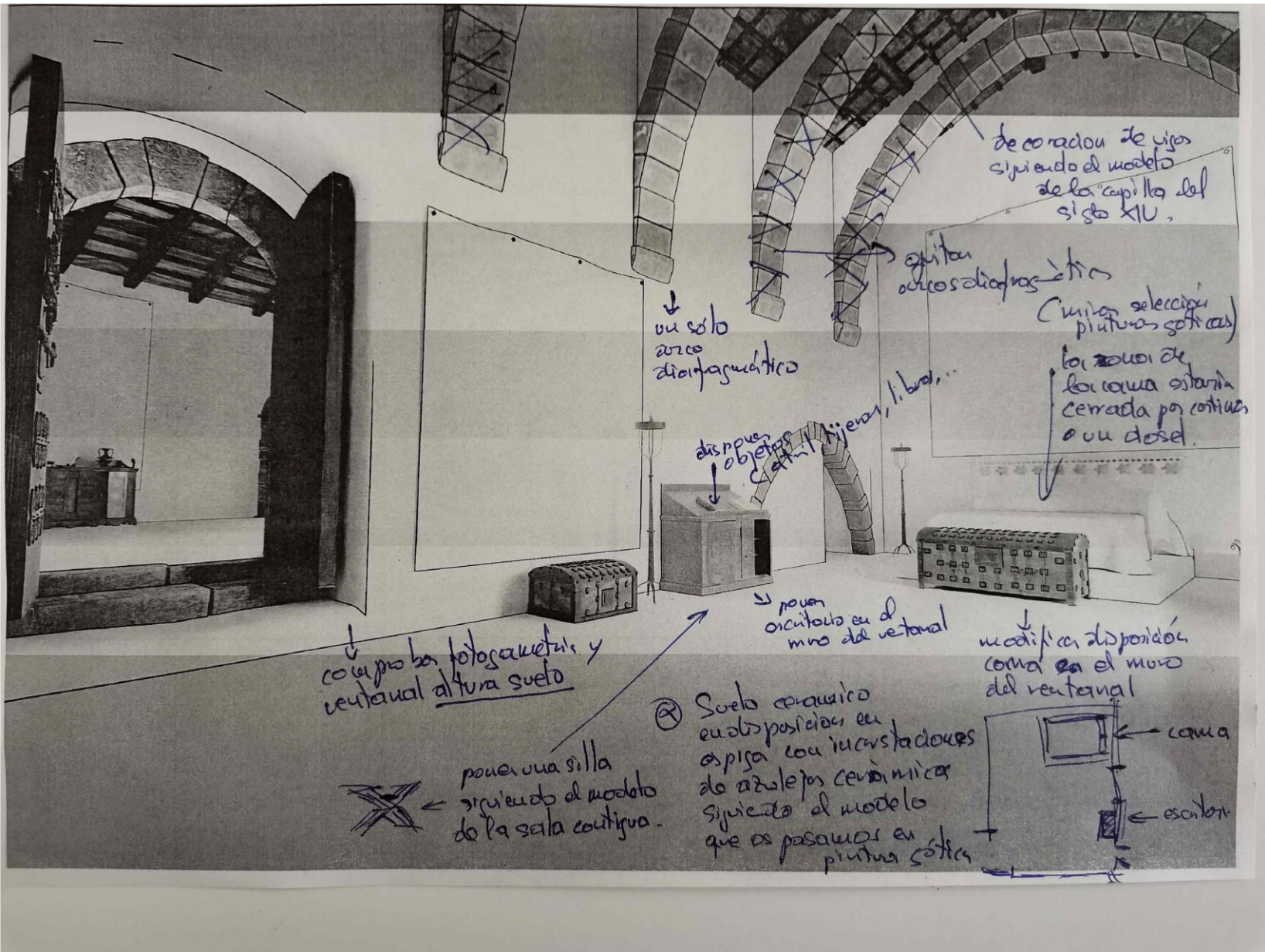
Digivisi3n- 3D Stoa-MEMGA-
Francesc Riart

Hall. End of 14th
century









de coronación de vigas
siguiendo el modelo
de la capilla del
siglo XIV.

quita
algunos arcos adintelados

Con una selección
de pinturas góticas

la zona de
la cama estaría
cerrada por cortinas
o un dosel.

↓
o un solo
arco
adintelado

disponer
objetos
catin, tijeras, libros,...

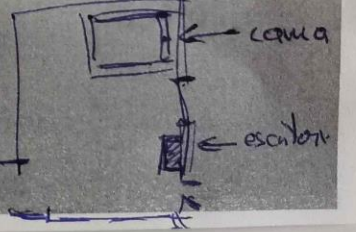
↓
poner
orientación en el
muro del ventanal

↓
modificar disposición
como en el muro
del ventanal

↓
con un par de fotografías y
ventanal altura suelo

✕ poner una silla
siguiendo el modelo
de la sala contigua.

⊗ Suelo cerámico
en disposición en
espiga con incrustaciones
de azulejos cerámicos
siguiendo el modelo
que se pasamos en
pintura gótica









The creation of these virtual models has been carried out as a basis for future projects, some of which we are already beginning to develop with the company Digivisión, such as virtual reality and augmented reality points, VR experiences at the museum or in the castle itself

[Vídeo](#)





Thanks for your attention!