

# EDICULA

## Educational Digital Innovative Cultural heritage related Learning Activities

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DELIVERABLE:  
LEAD ORGANIZATION:  
DATE:

**O4 EDICULA DIGITAL GAMES**  
**D4.5(a) EDICULA Digital Game**  
PerpetielSI  
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## Table of contents:

1. Introduction .....	3
2. EDICULA Digital Game-Virtual Tours .....	3
2.1 Holy Edicule Before the Rehabilitation.....	3
2.2 Holy Edicule After the Rehabilitation (Outdoors).....	5
2.3 Holy Edicule After the Rehabilitation (Indoors).....	5
2.4 Holy Edicule Open Tomb .....	6
4. Conclusion .....	7



## 1. Introduction

This deliverable defines and presents the technologies that will be used for the final implementation of the EDICULA Digital Game. In particular, the implementation of the Virtual Tours will be analyzed, the necessary subsystems and the flow of execution between them and the overall system will be identified.

## 2. EDICULA Digital Game-Virtual Tours

The main idea of the EDICULA Digital Game is to create separate Virtual Tours for each phase of the Holy Edicule Rehabilitation, providing useful information about the monument. The NTUA partners provided the 3D models from each phase of the rehabilitation of the Holy Edicule and in collaboration with them it was decided to develop 4 different Virtual Tours: (i) the Holy Edicule before the rehabilitation, (ii) the outdoors of the Holy Edicule after the rehabilitation, (iii) the indoors of the Holy Edicule after the rehabilitation and (iv) the indoors of the Holy Edicule when the Tomb of Christ was opened. The development of each Virtual Tour is presented below. The user will have the chance to choose and navigate at each virtual environment from the Main Menu presented below at Figure 1.

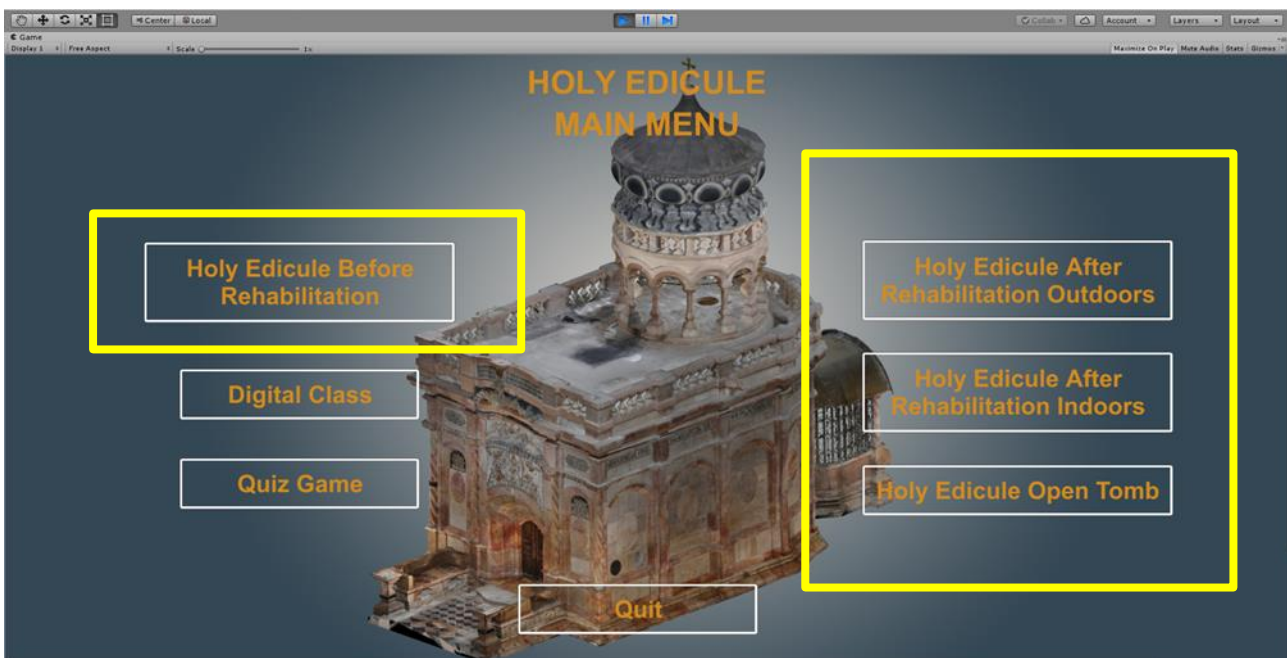


Figure 1: The EDICULA's Digital Game Main Menu presenting the available virtual tours from different stages of the rehabilitation process.

### 2.1 Holy Edicule Before the Rehabilitation

The textured, high resolution 3D model of the Holy Edicule before the rehabilitation was imported into Unity's environment, as well as the 3D model of the Rotonda without a texture, since it was not generated. It was decided to visualize the texture's Rotonda with a simple grey colour since the user should mostly focus on the Holy Edicule and not the rest of the virtual environment. Furthermore, 3D Info Pins were also imported as 3D Game Objects with an orange colour as texture. The user will be able to interact with them by clicking on them and the information panel will appear to present the available content at each monument's position. Mesh colliders were added to all 3D objects so that the user will not be able to go through them and make the experience even more realistic. The rest components of the virtual environment, such as the player, the



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Educational Digital Innovative Cultural heritage related Learning Activities

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camera views, the lights, the floor, the mini-map have been designed and described in D4.4. At the beginning of each virtual tour the Info Panel will appear in order to give guidelines and basic information to the user about the way he/she will be able to navigate into the virtual environment and interact with the components. The NTUA partners will decide the exact positions of the 3D Info Pins and the information that will be presented. Screenshots from the virtual tour before the rehabilitation are presented below at Figures 2 & 3.

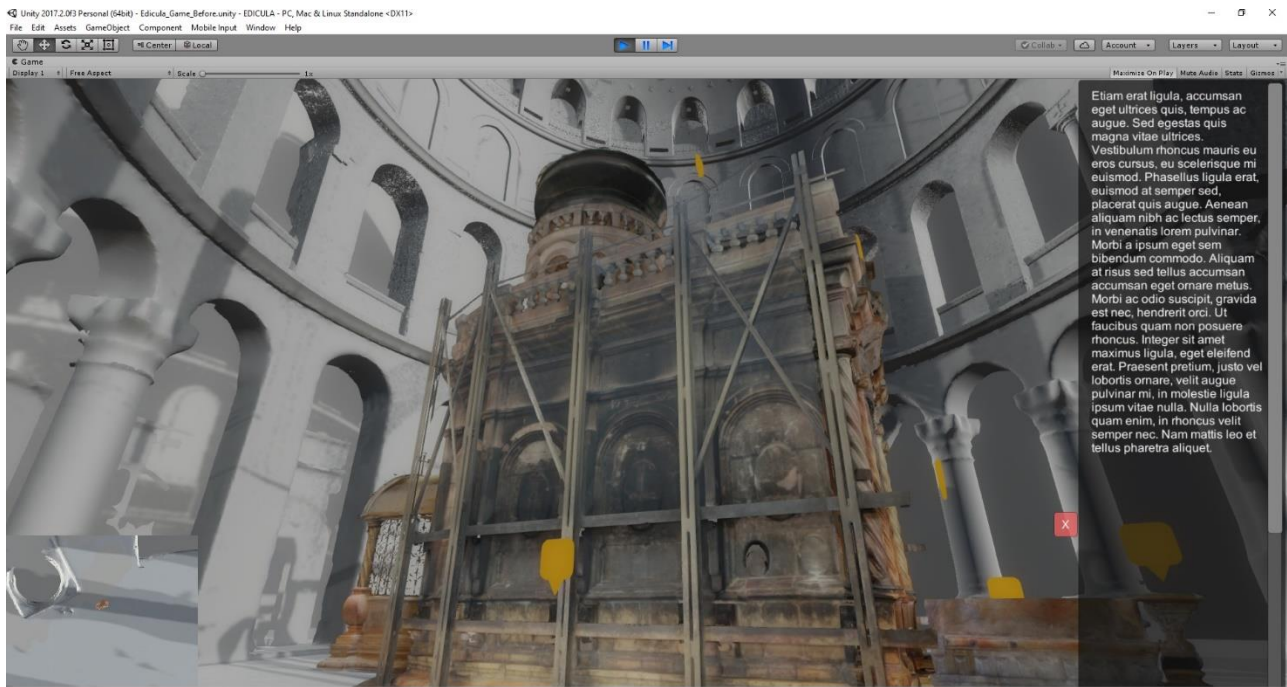


Figure 2: Screenshot from the Virtual Tour at the Holy Edicule before the Rehabilitation.

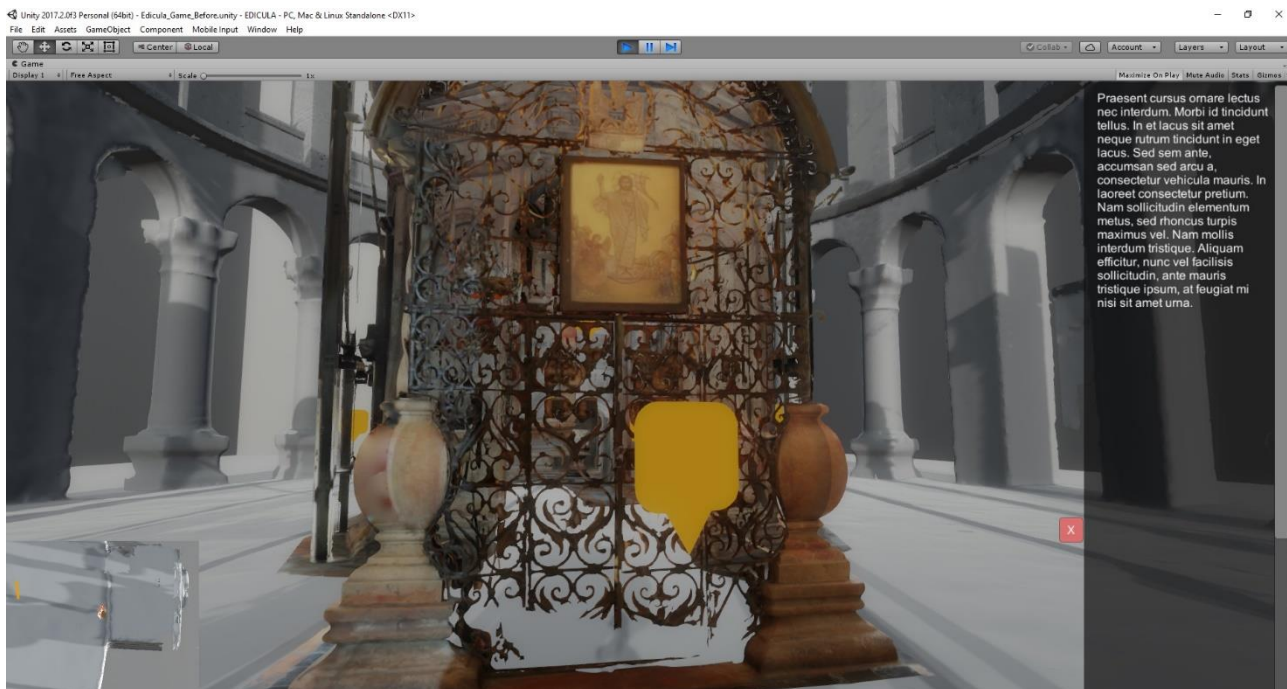


Figure 3: Screenshot from the Virtual Tour at the Holy Edicule before the Rehabilitation.





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Educational Digital Innovative Cultural heritage related Learning Activities

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## 2.2 Holy Edicule After the Rehabilitation (Outdoors)

The textured, high resolution 3D model of the Holy Edicule after the rehabilitation was imported into Unity's environment, as well as the 3D model of the Rotonda. Once again, the same 3D Info Pins as before were imported as 3D Game Objects. The user will be able to interact with them by clicking on them and the information panel will appear to present the available content at each monument's position. Mesh colliders were added to all 3D objects so that the user will not be able to go through them and make the experience even more realistic. The rest components of the virtual environment remain the same. The NTUA partners once again will decide the exact positions of the 3D Info Pins and the information that will be presented. A screenshot from the virtual tour after the rehabilitation is presented below at Figure 4. In order to make the game simpler and user friendly it was decided not to let the user go from the outdoors to the indoors in the same scene. This process would also make the game architecture and programming process more complicated, especially for the scene transitions.

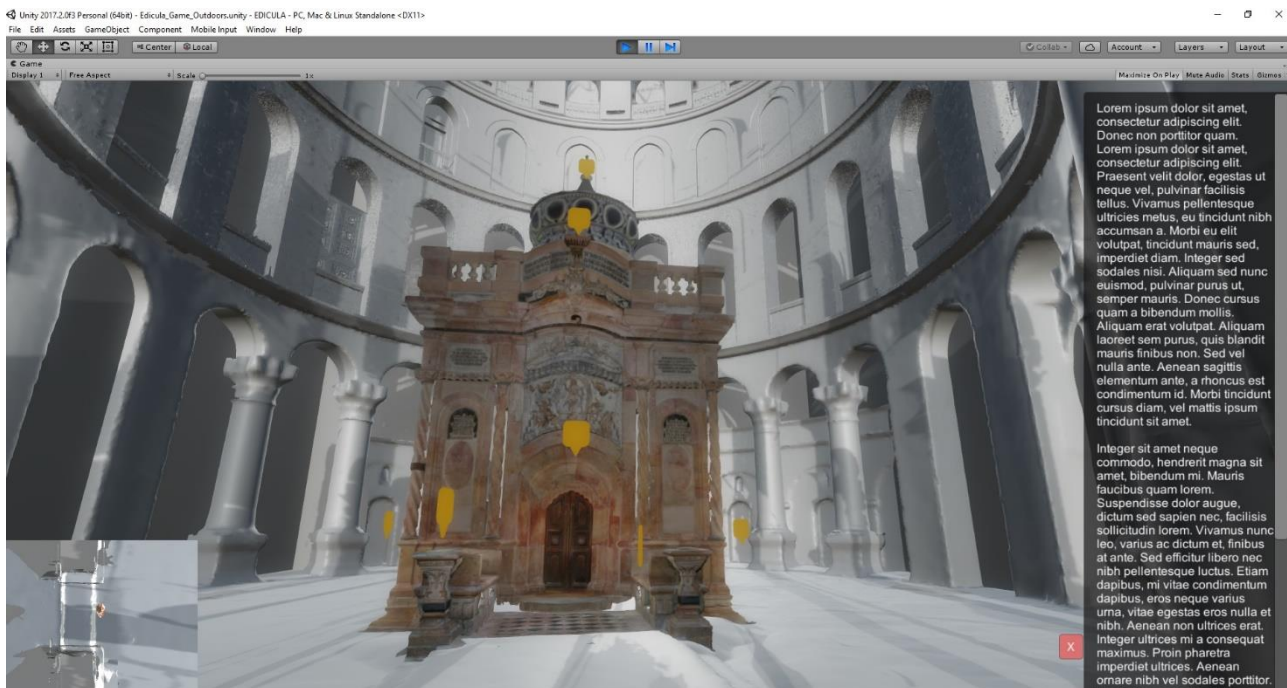


Figure 4: Screenshot from the Virtual Tour at the Holy Edicule after the Rehabilitation (Outdoors Scene).

## 2.3 Holy Edicule After the Rehabilitation (Indoors)

The indoors textured, high resolution 3D model of the Holy Edicule after the rehabilitation was imported into Unity's environment. Once again, the same 3D Info Pins as before were imported as 3D Game Objects. The user will be able to interact with them by clicking on them and the information panel will appear to present the available content at each monument's position. Mesh colliders were added to all 3D objects so that the user will not be able to go through them and make the experience even more realistic. The 3D model of the Rotonda was also added into the virtual environment, so that when the user goes close to holes or walls, he/she will be able to see the rest of the virtual environment in the most realistic way. The rest components of the virtual environment remain the same. The NTUA partners once again will decide the exact positions of the 3D Info Pins and the information that will be presented. Screenshots from the virtual tour at the indoors of the Holy Edicule after the rehabilitation is presented below at Figures 5 & 6.



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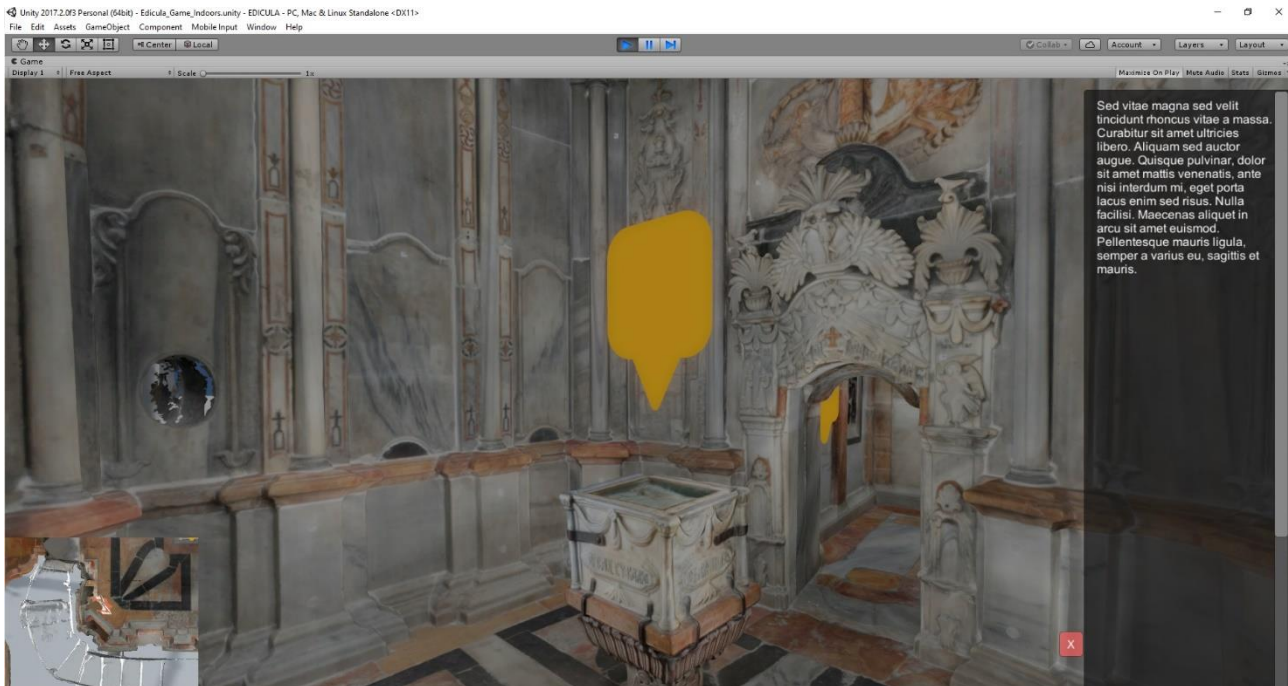


Figure 5: Screenshot from the Virtual Tour at the Holy Edicule after the Rehabilitation (Indoors Scene).

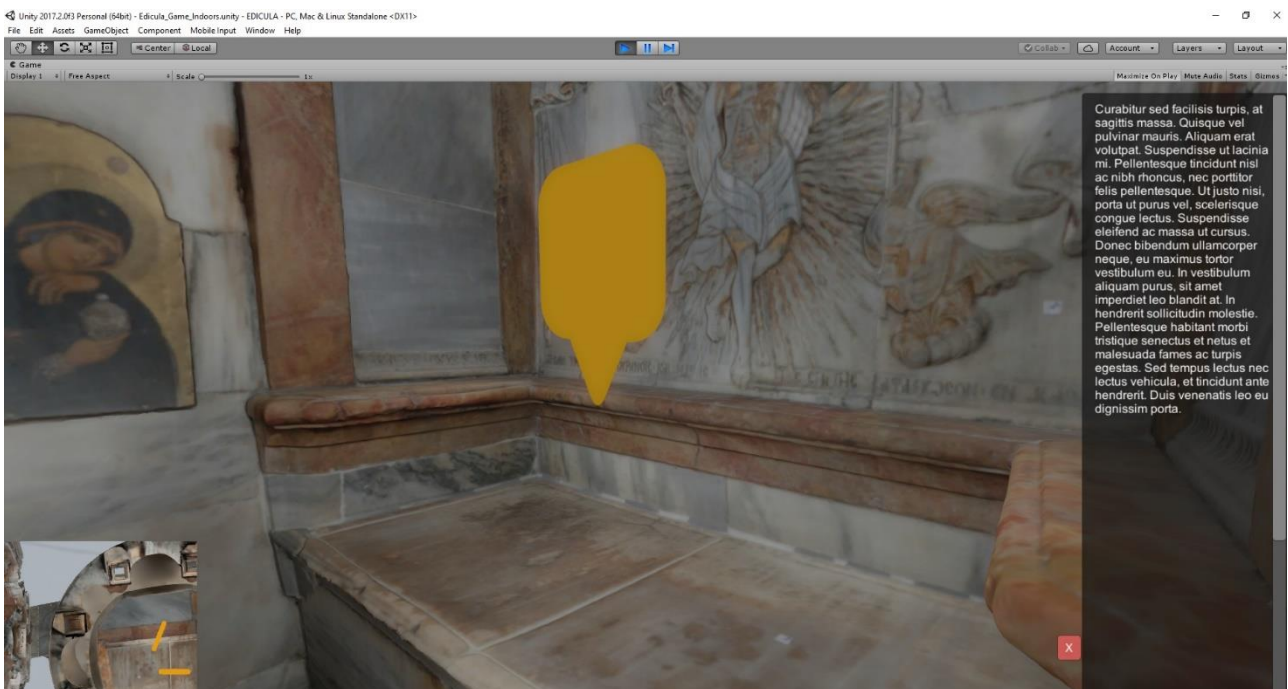


Figure 6: Screenshot from the Virtual Tour at the Holy Edicule after the Rehabilitation (Indoors Scene).

## 2.4 Holy Edicule Open Tomb

The indoors textured, high resolution 3D model of the Holy Edicule when the Tomb of Christ was opened was imported into Unity's environment. Once again, the same 3D Info Pins as before were imported as 3D Game Objects. The user will be able to interact with them by clicking on them and the information panel will appear to present the available content at each monument's position. Mesh colliders were added to all 3D objects so that the user will not be able to go through them and make the experience even more realistic. The 3D



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model of the Rotonda was also added into the virtual environment, so that when the user goes close to holes or walls, he/she will be able to see the rest of the virtual environment in the most realistic way. The rest components of the virtual environment remain the same. The NTUA partners once again will decide the exact positions of the 3D Info Pins and the information that will be presented. A screenshot from the virtual tour at the indoors of the Holy Edicule with the open Tomb is presented below at Figure 7. For the same reasons mentioned above it was decided not to make a scene transition from the previous indoors scene and let the user separately navigate into this virtual environment. The information presented will be the same as in the above scene, except from some 3D Pins related to the Tomb, that will present different information.

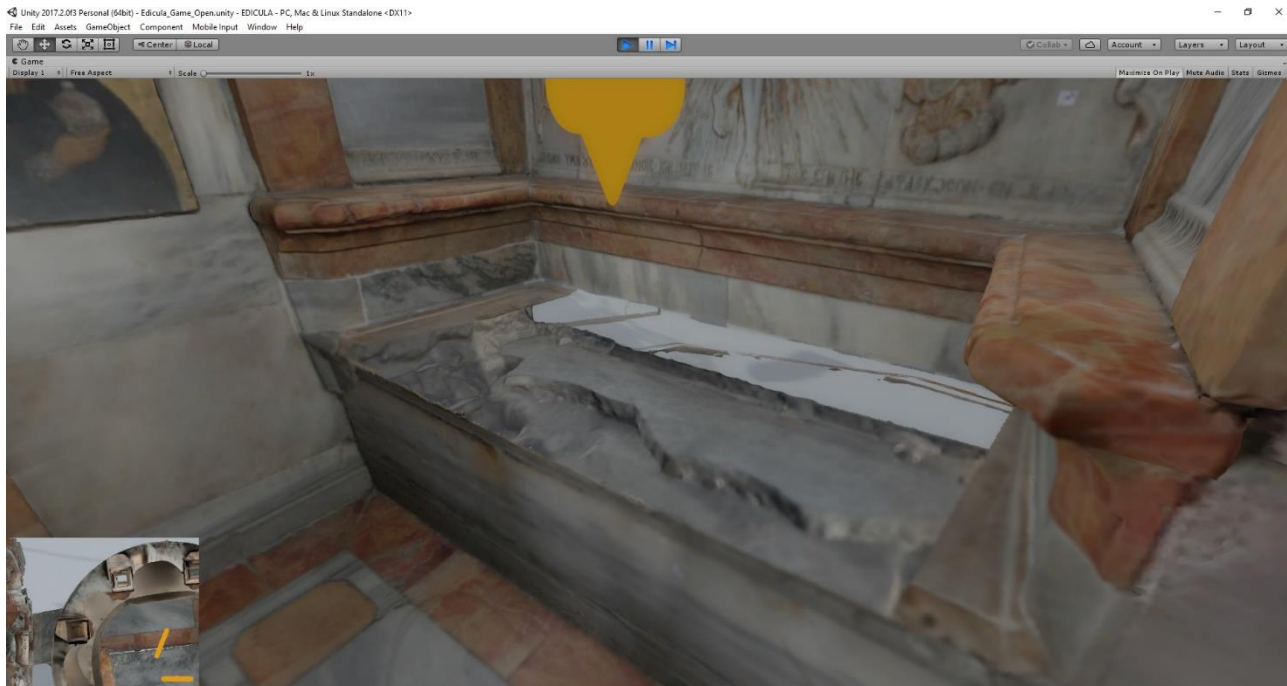


Figure 7: Screenshot from the Virtual Tour at the Holy Edicule when the Tomb was opened (Open Scene).

## 4. Conclusion

The development of the EDICULA Digital Game is a work in progress and this deliverable presents the first implementation of the Virtual Tours. The first results are quite impressive and promising. Based on the available content and information that will be integrated soon, the work will continue and certain options will be improved and/or be properly modified leading to the best possible result.