

Lucus Feroniae – ripresa da Drone

Volo con il drone: Claudio Leggieri, Valentina Sanna



SWINGLET cam

Flight altitude: 200 m (WGS84)

Camera: Canon IXUS 220HS

Focal length: 4 mm (22 mm equivalent)

Average image scale: 1/40000

If $h = 160$ m GSD= 0.06 m



Project flight

PostFlight Services 1.1 - lucus_totale

Project Georeference Process Help

Cloud Camera Refresh Nokia Maps

▼ Project summary

Project :
Name : lucus_totale
Datum : World Geodetic System 1984
Coordinate system : WGS 84

Postflight services :
Uploaded : no

Images :
Number selected images : 253
Datum : World Geodetic System 1984
Coordinate system : WGS 84

▼ Layers

- ☒ Images
- ☒ GCPs
- ☒ Processing areas
 - ☒ Orthomosaic area



Latitude = 42.1323013, Longitude = 12.5849622

Flight path



Geotag of images

Elaborazione fotogrammetrica 3D: Andrea Adami

Import CSV

Delimiter

☒ Tab

☐ Semicolon

☐ Comma

☐ Space

☐ Other:

Columns

Label: 0 ☒ Load orientation

X/East: 2 Yaw: 5

Y/North: 1 Pitch: 6

Z/Alt: 3 Roll: 7

Start import at row: 0

Label	Y/North	X/East	Z/Alt	Yaw	Pitch	Roll	
#Rev: sensefly/geoinfo/2							
fileName	latitude	longitude	altitude_amsl	altitude_wgs84	heading	pitch	roll
IMG_1124.JPG	42.1324029800	12.5914513080	169.68	208.54	189.51	3.32	-0.52
IMG_1125.JPG	42.1321430000	12.5914237000	167.12	207.34	179.14	-4.15	-4.49
IMG_1126.JPG	42.1318623000	12.5914626000	165.87	205.96	162.85	-10.85	-6.69
IMG_1127.JPG	42.1315164000	12.5914804000	166.90	207.04	171.33	-10.84	-2.14
IMG_1128.JPG	42.1312498000	12.5914668000	166.60	206.63	175.44	-5.96	-7.71
IMG_1129.JPG	42.1309763000	12.5914640000	165.67	204.90	163.81	-11.84	-0.36
IMG_1130.JPG	42.1306577667	12.5915159333	165.65	204.03	164.21	-0.81	-0.53
IMG_1131.JPG	42.1303295250	12.5915040750	165.18	203.97	175.13	0.58	-3.74
IMG_1132.JPG	42.1300209000	12.5915316000	167.06	206.03	165.35	-7.26	-9.06

OK

Ground Control Settings

Coordinate System

WGS 84 (EPSG::4326)

Measurement accuracy

Camera accuracy (m): 10

Marker accuracy (m): 0

Projection accuracy (pix): 0.1

Camera correction

☐ Enable correction

X: 0 Yaw: 0

Y: 0 Pitch: 180

Z: 0 Roll: 0

OK Cancel

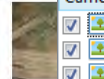
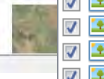
Image orientation and calibration

Model  Perspective

faces: 27204 vertices: 13628

Photos

Console

	Cameras	X/East	Y/North	Z/Altitude	Error (m)	Yaw	Pitch	Roll	Error (deg)
	☒ IMG_1124.JPG	12.591451	42.132403	169.680000	3.001822	189.510	3.320	-0.520	6.035
	☒ IMG_1125.JPG	12.591424	42.132143	167.120000	3.460047	179.140	-4.150	-4.490	7.413
	☒ IMG_1126.JPG	12.591463	42.131862	165.870000	2.625018	162.850	-10.850	-6.690	5.374
	☒ IMG_1127.JPG	12.591480	42.131516	166.900000	3.223024	171.330	-10.840	-2.140	6.737
	☒ IMG_1128.JPG	12.591467	42.131250	166.600000	2.996099	175.440	-5.960	-7.710	6.758
	☒ IMG_1129.JPG	12.591464	42.130976	165.670000	2.542619	163.810	-11.840	-0.360	8.364
	☒ IMG_1130.JPG	12.591516	42.130658	165.650000	2.256388	164.210	-0.810	-0.530	13.594
	☒ IMG_1131.JPG	12.591504	42.130330	165.180000	2.199950	175.130	0.580	-3.740	17.596
	☒ IMG_1132.JPG	12.591532	42.130021	167.060000	2.053782	165.350	-7.260	-9.060	9.705
	☒ IMG_1133.JPG	12.591525	42.129743	168.750000	2.393850	161.060	-4.590	0.940	12.285
	☒ IMG_1134.JPG	12.591573	42.129430	171.390000	1.951600	162.710	1.730	-2.500	8.173
	☒ IMG_1135.JPG	12.591665	42.129059	171.660000	2.996605	174.660	5.610	-17.480	5.297
	☒ IMG_1136.JPG	12.591660	42.128704	169.220000	1.890188	184.490	0.860	0.030	5.161
	☒ IMG_1137.JPG	12.591609	42.128396	169.760000	1.940673	177.280	-3.540	-1.120	8.207
	☒ IMG_1138.JPG	12.591623	42.128085	169.200000	3.642490	174.380	-5.400	-3.720	4.714
	☒ IMG_1139.JPG	12.591647	42.127737	170.710000	3.052321	168.370	-4.410	-0.610	9.370
	☒ IMG_1140.JPG	12.592061	42.127854	170.650000	4.134611	358.820	-4.120	2.510	6.267
	☒ IMG_1141.JPG	12.592028	42.128212	168.730000	3.176640	352.000	-1.150	-0.380	6.150
	☒ IMG_1142.JPG	12.592013	42.128548	169.680000	2.797104	354.780	-6.030	3.120	5.973
	☒ IMG_1143.JPG	12.591988	42.128896	169.850000	3.536853	348.650	-3.570	-4.310	6.855
	☒ IMG_1144.JPG	12.591956	42.129246	169.110000	2.595192	356.710	-3.990	-0.200	3.367
	☒ IMG_1145.JPG	12.591943	42.129606	171.920000	2.780704	352.040	-0.970	1.610	5.845

Orthophoto totale



1 Pixel = 5 cm

Orthophoto anfiteatro

9050 9100 9150 9200 9250 9300 9350 9400 9450 9500 9550 9600 9650 9700 9750 9800 9850 9900 9950 10000 10050 10100



1 Pixel = 5 cm

Orthophoto sito



1 Pixel = 5 cm

Ricostruzione 3D di Lucus Feroniae in età tiberiana e traianea

Daniele Ferdani

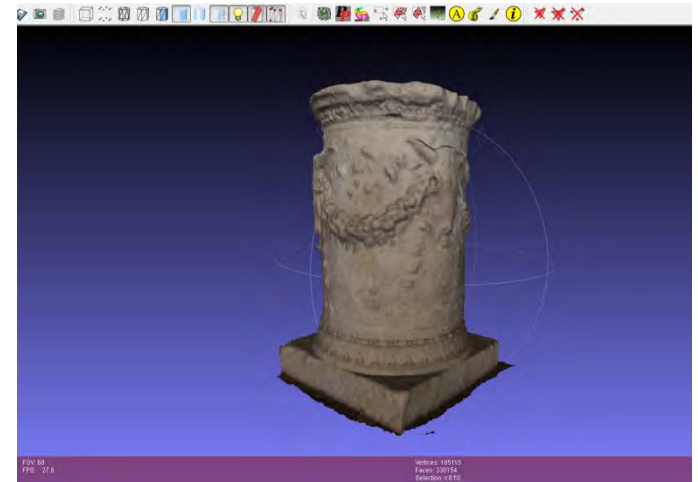


1 step: Resources

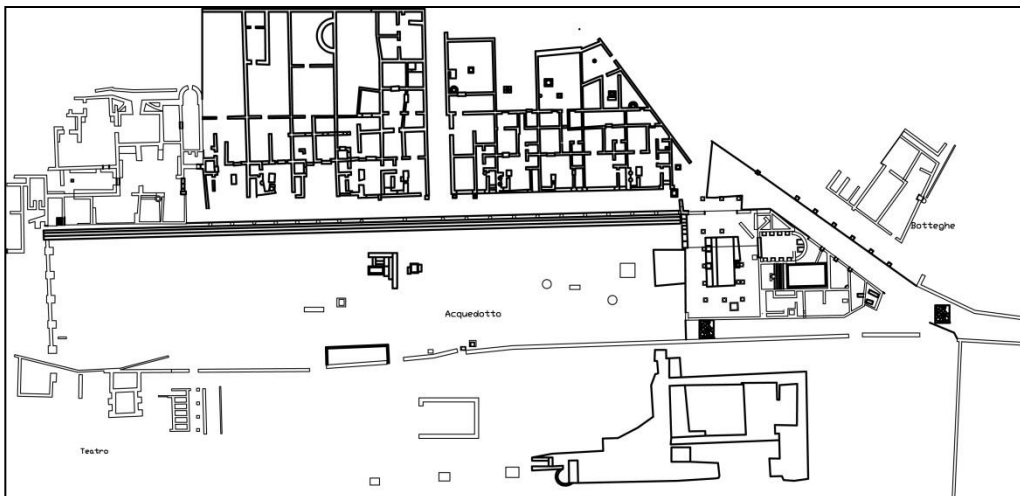
Historical photos after restorations



3D models coming from dense stereo matching techniques



Plans coming from excavation surveys



Photographic survey

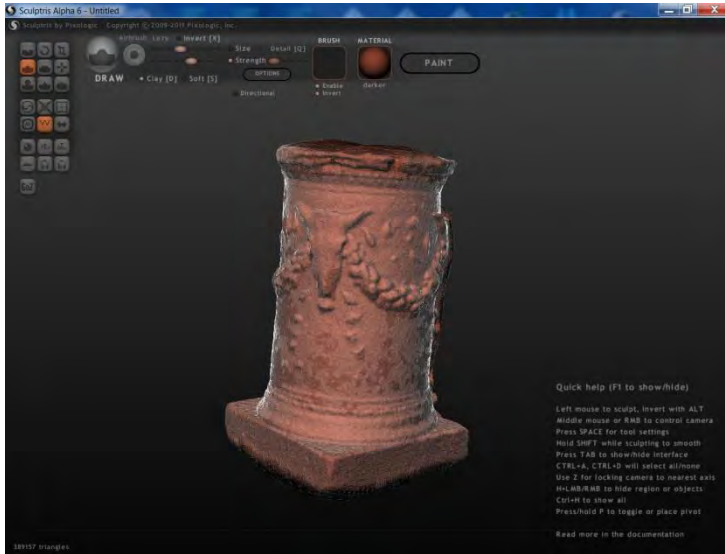


2 step: source elaborations

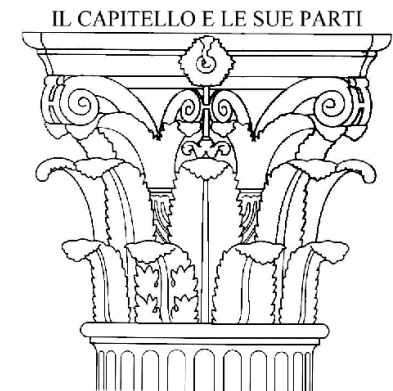
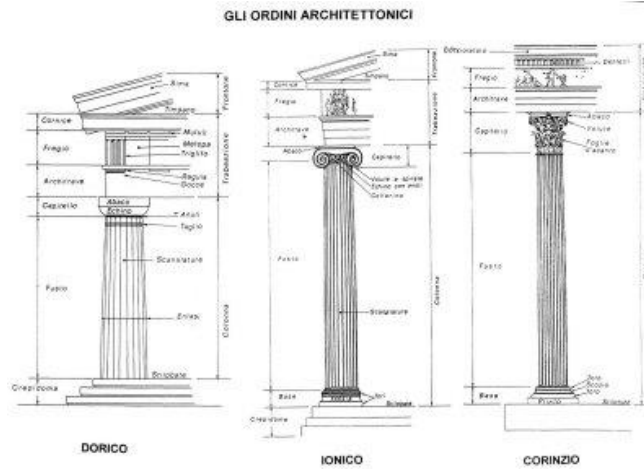
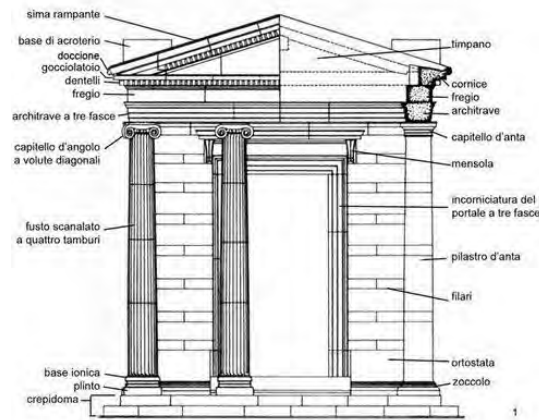
3D models reality-based

Dense stereo matching from photos

Comparisons

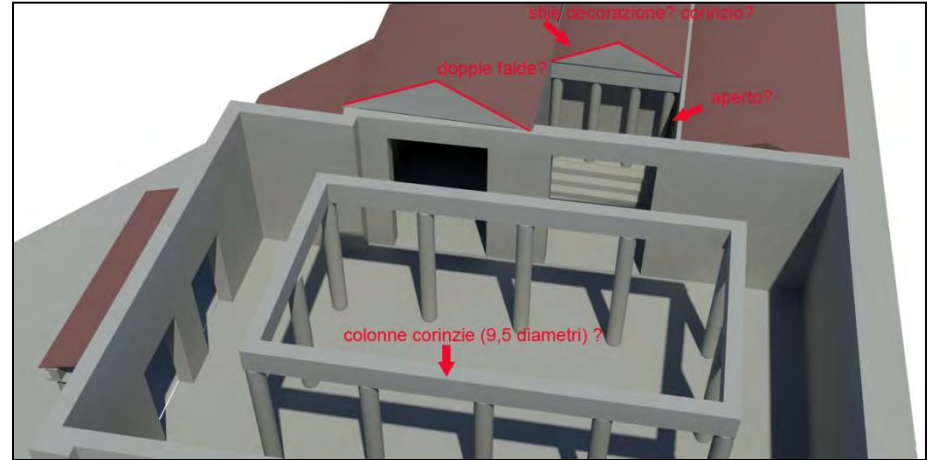
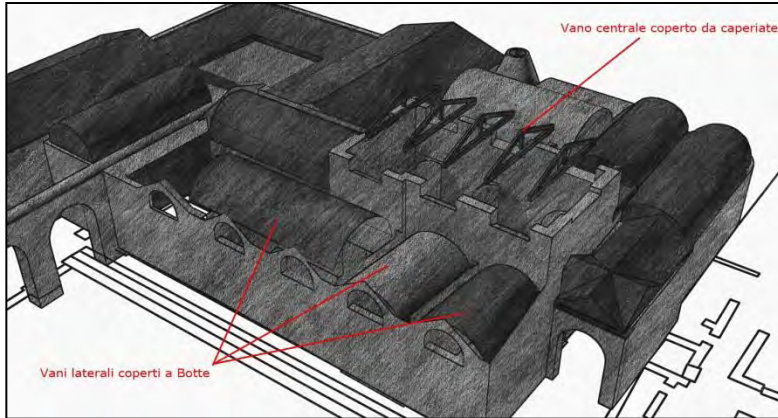


Architectural analysis and hypothesis

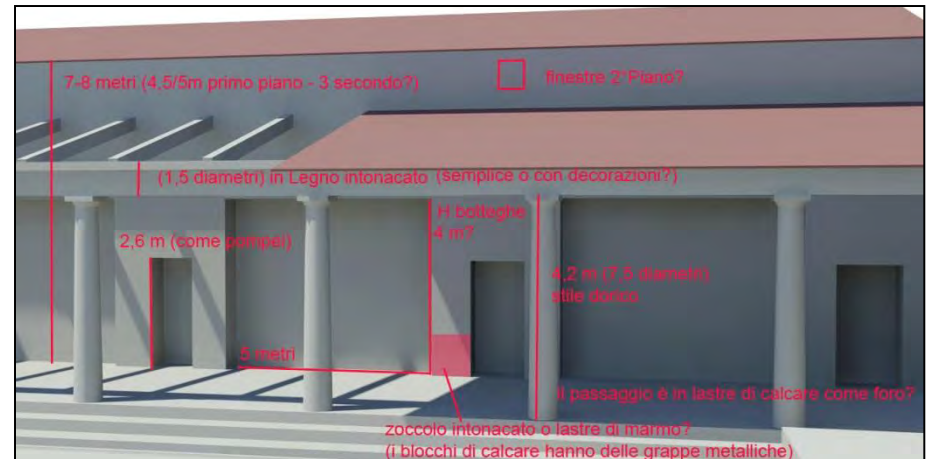


2 step: reconstruction of Tiberian and Trajan phases

Hipotesys,
First Drafts, 2D, 3D

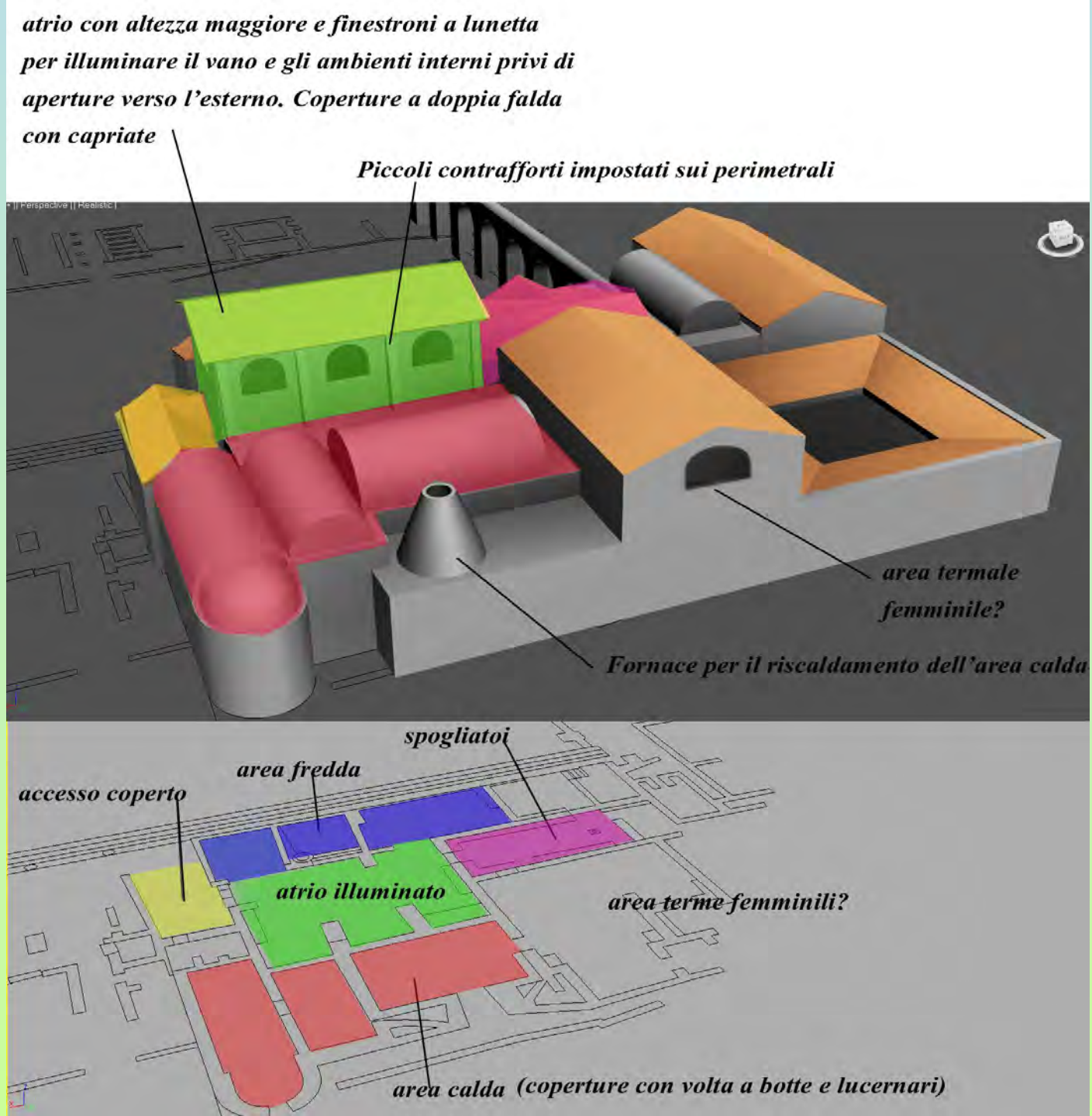


Experts of the Soprintendenza ai Beni Archeologici dell'Etruria Meridionale as supervisors



LUCUS FERONIAE

Ricostruzione
Terme del lato
sud del foro
di età
traiana



RICOSTRUZIONE: CORRISPONDENZA AL RILIEVO

vasche

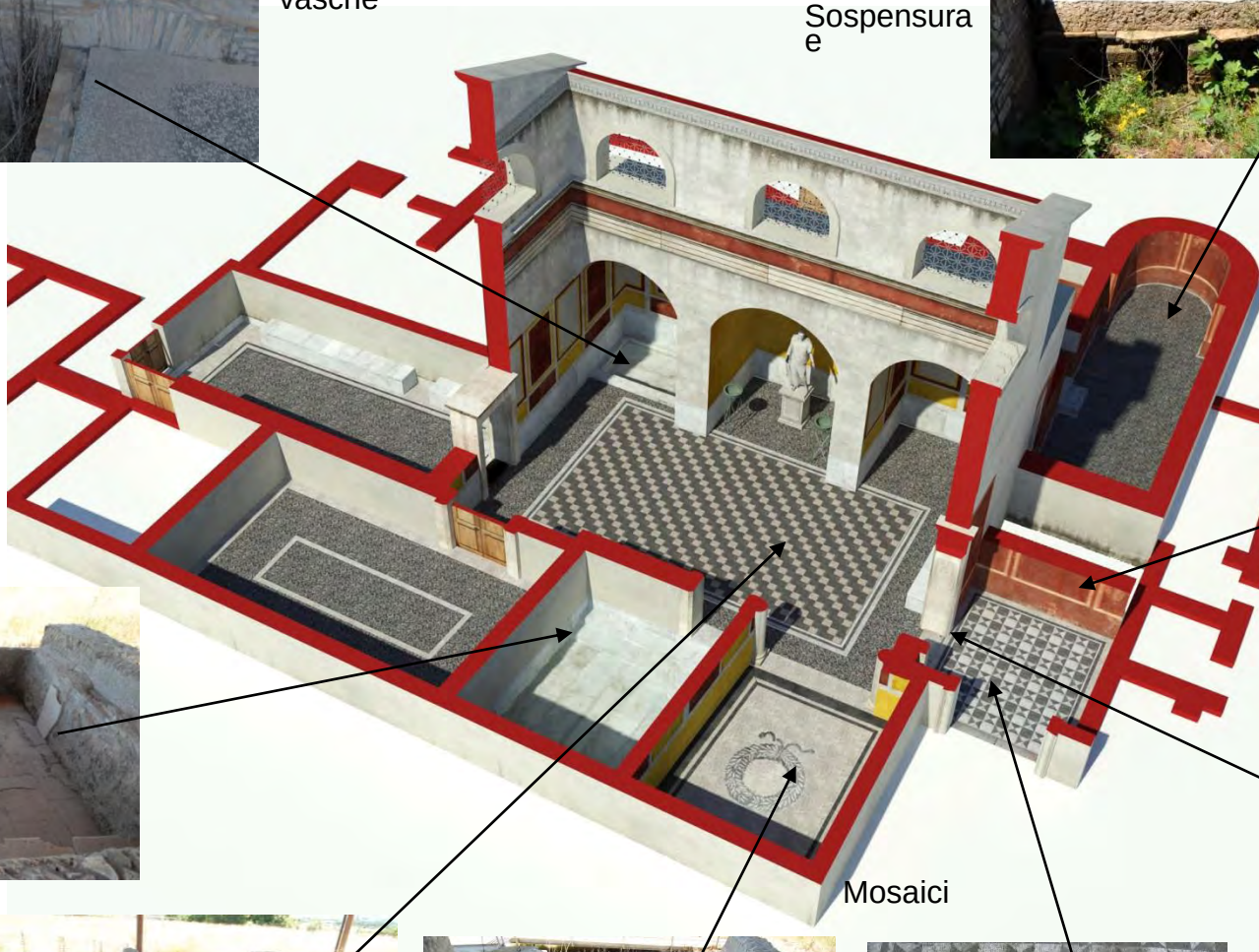
Sospensura
e

Affreschi

Elementi
architettonici

Mosaici

Marmi



RICOSTRUZIONE: CONFRONTI E IPOTESI

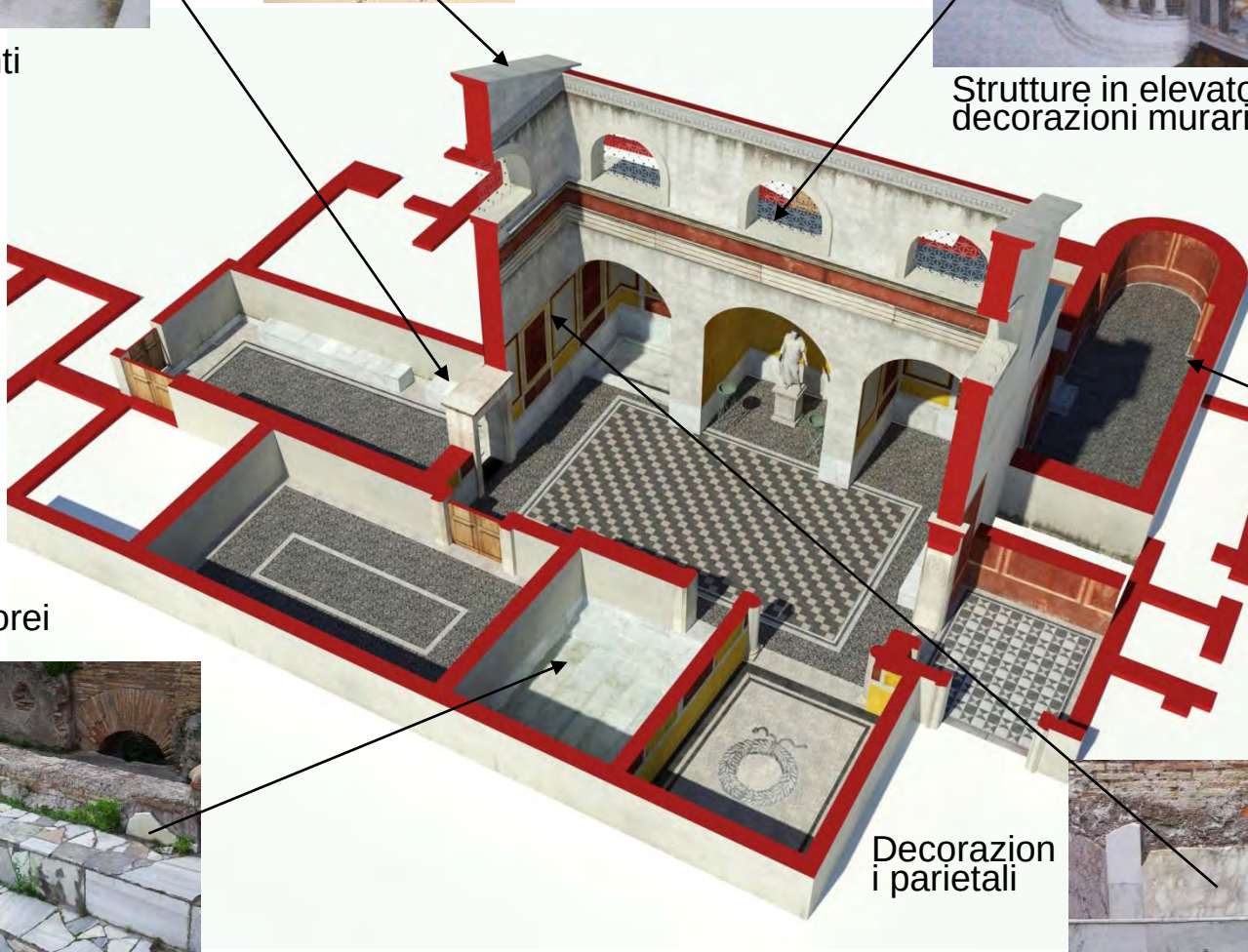


coperture



Strutture in elevato, aperture e decorazioni murarie

condotte



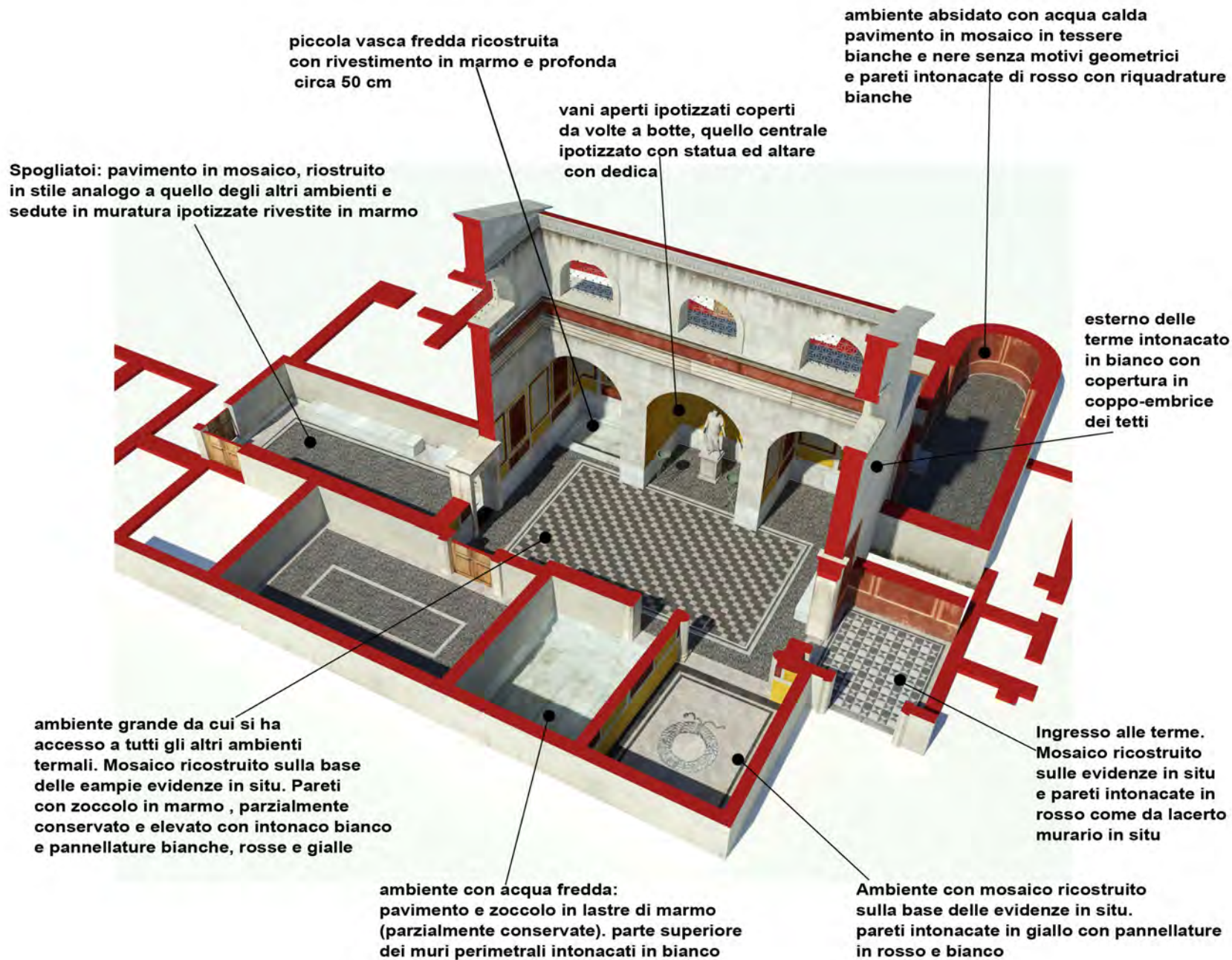
Portali elementi architettonici

Elementi marmorei

Decorazioni parietali

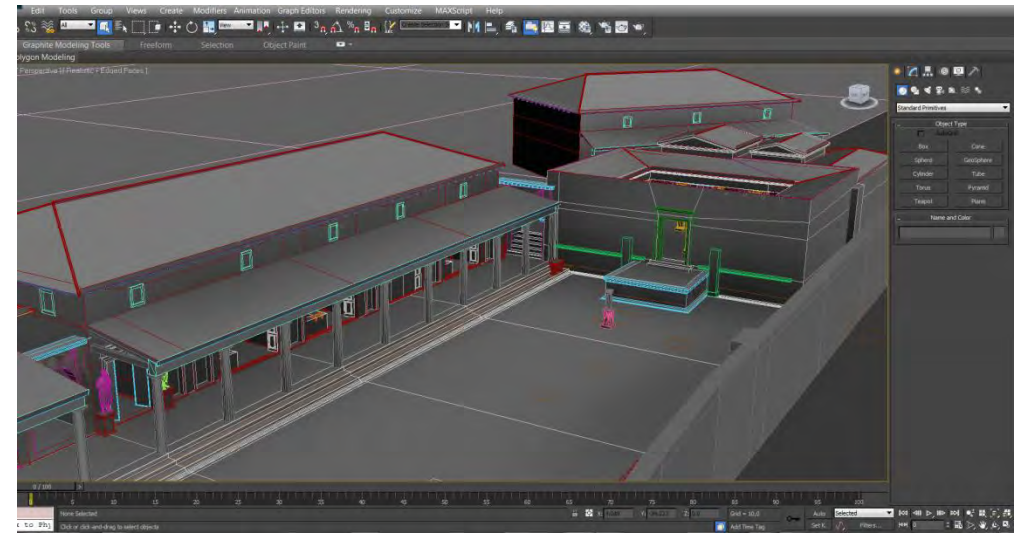
MODELLI TERME IMPERIALI I-II SEC. D.C (Ostia, Roma)





3D modeling

- 1) Real time applications for tablets, web, VR installations in museums (Unity3D)
- 2) Movie and still images





Ricostruzione 3D di Lucus Feroniae in età tiberiana



Basilica



Podio della Basilica



Schola



Bottega



Fontana monumentale

RICOSTRUZIONE DEGLI AMBIENTI TERMALI DI «LUCUS FERONIAE»



Ambiente principale delle terme da cui si accedeva ai spogliatoi ed ai percorsi caldo-freddo





vasca

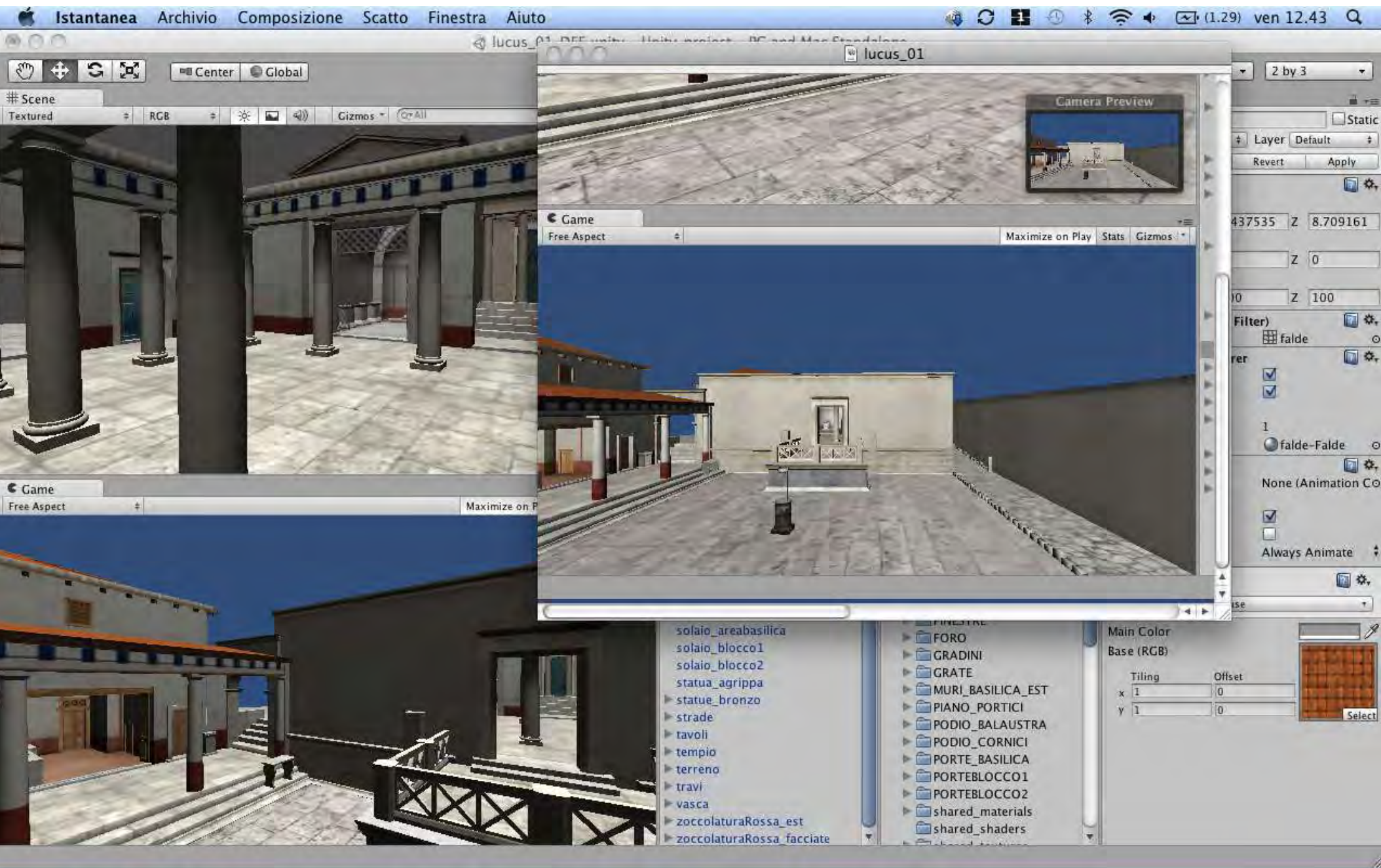
Calidarium

Accesso alle terme

Frigidarium

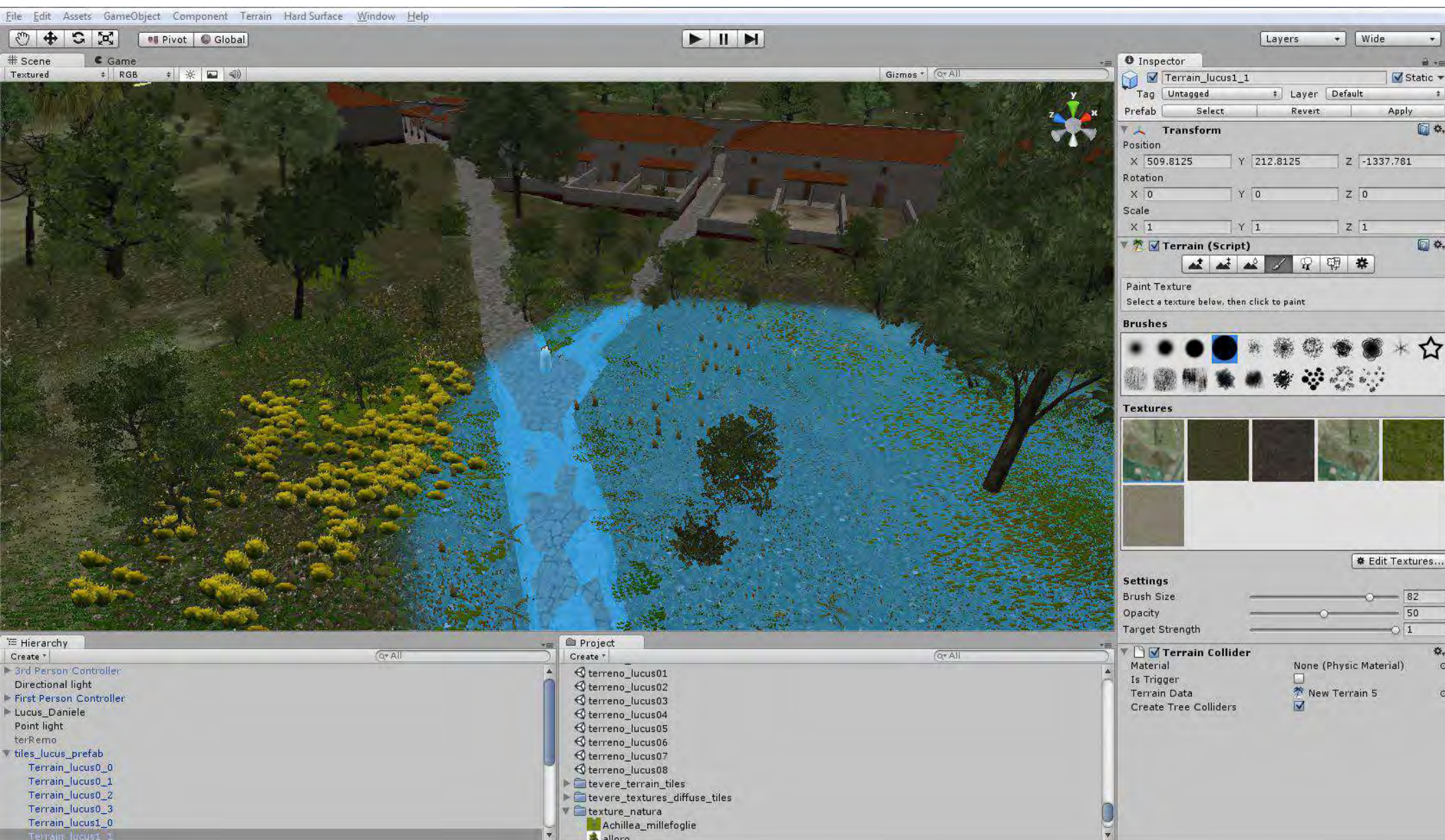
Implementazione del modello in Unity 3D

editing di scena di: Daniele Ferdani, Massimiliano Forlani, Marco Di Ioia,
Eva Pietroni



•Editing e ottimizzazione

Caratterizzazione del paesaggio di Lucus Feroniae in Unity 3D: Marco Di Ioia

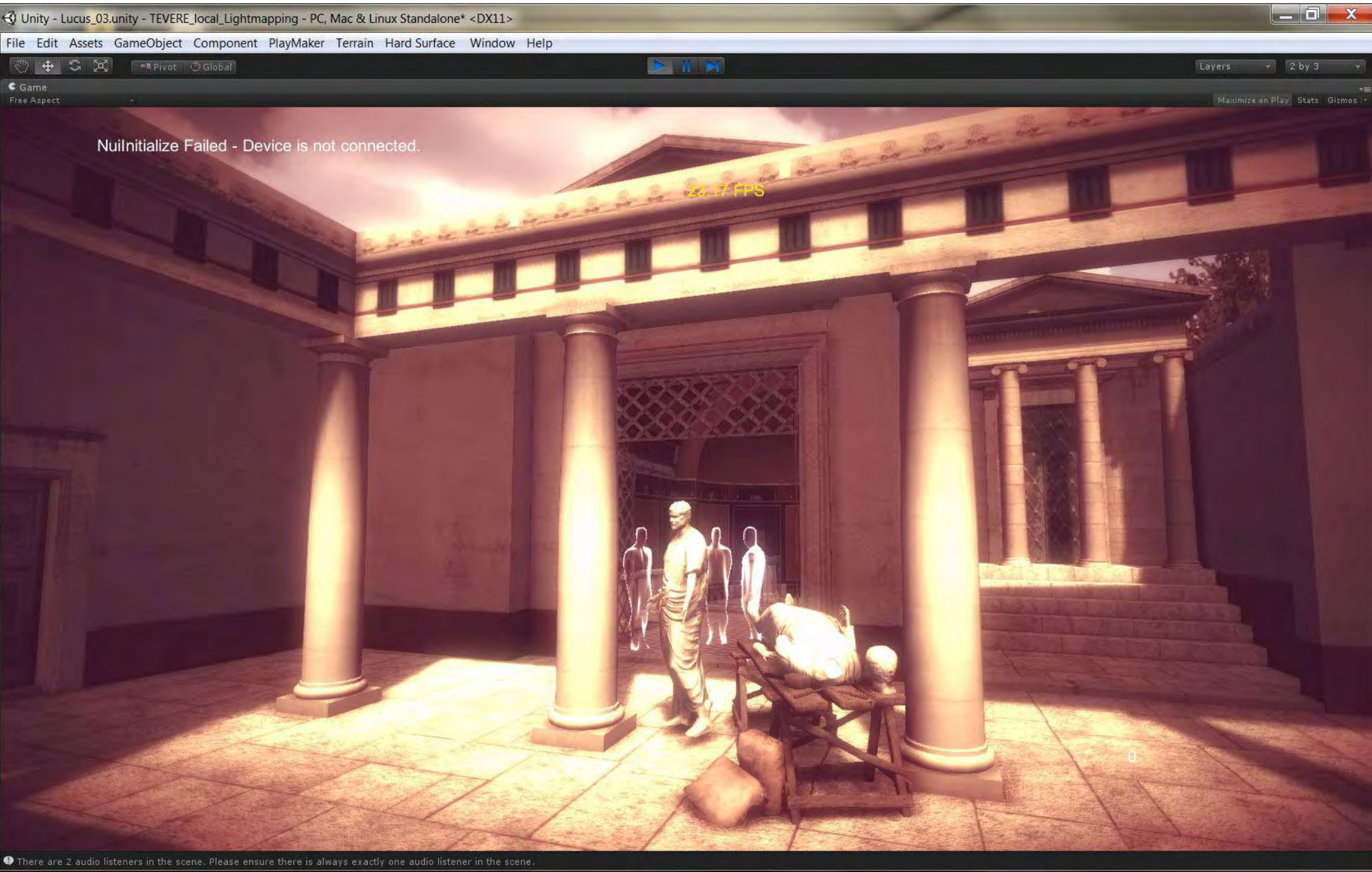


•Editing e ottimizzazione



•Editing e ottimizzazione

Image effects in Unity 3D: Massimiliano Forlani



•Virtual set

Virtual Set: Claudio Rufa, Massimiliano Forlani, Eva Pietroni.
Attori e recitazione: Orchestra Teatralica



- Risultato finale

