3D LASER SCANNER TECHNIQUES FOR THE ENHANCEMENT AND VIRTUAL FRUITION OF CULTURAL HERITAGE: THE CHURCH OF SANT'ANTONIO ABATE (RC)

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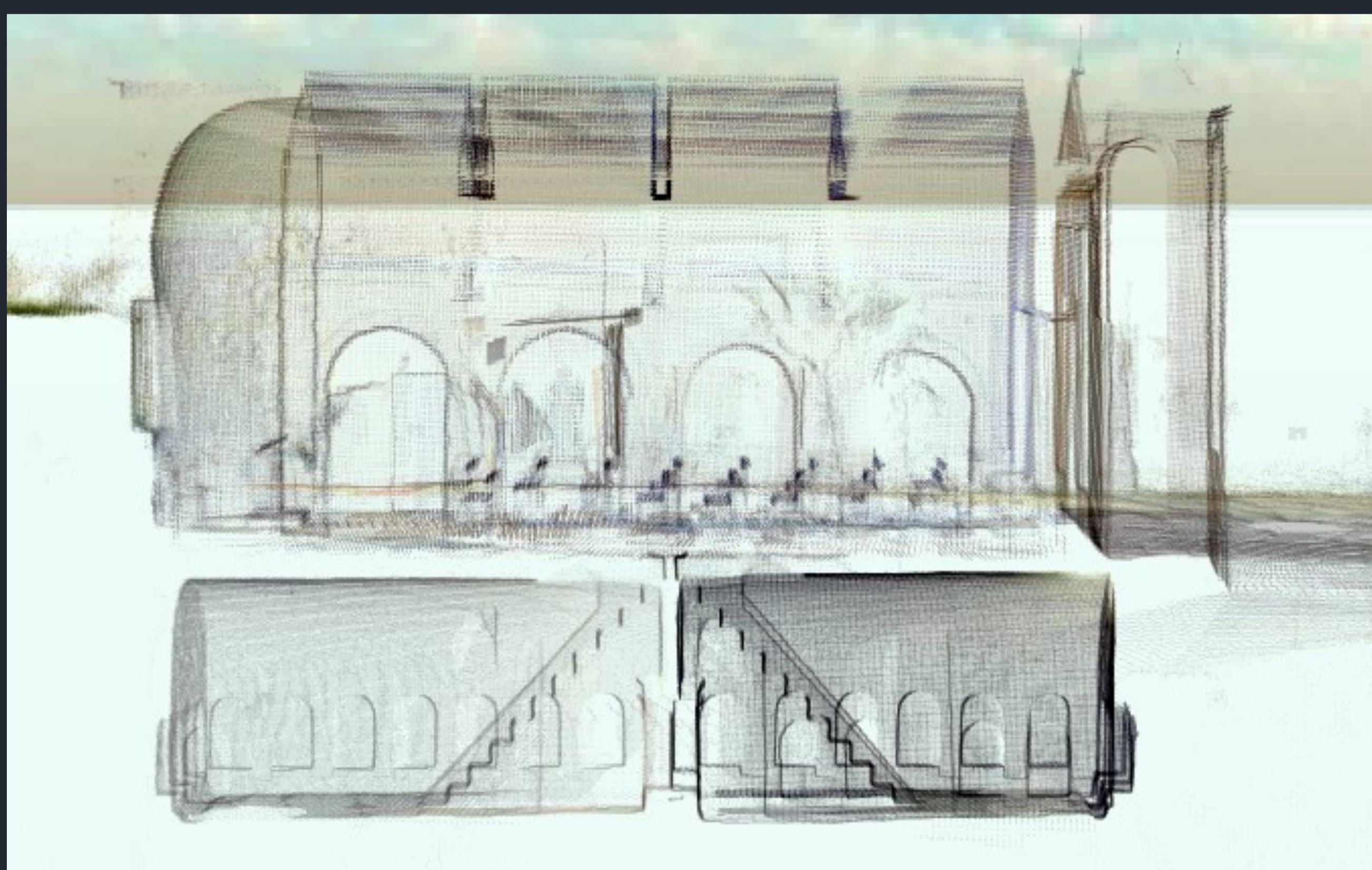[b] Università Mediterranea di Reggio Calabria, Dipartimento DICEAM, Salita Melissari, 89124, RC

The Church of Sant'Antonio Abate is located in the Archi district, in the northern part of Reggio Calabria.

The first proof of the building's presence is known through two diplomas by Giovanna I D'Angiò, dating back to 1363, which prove the importance of the area, around which the important trade fair of Scaccioti gravitated. Between the end of the 15th and the beginning of the 16th century, due to the numerous turkish incursions into the territory, the church was severely damaged and gradually lost its importance following the change in commercial dynamics within the area.
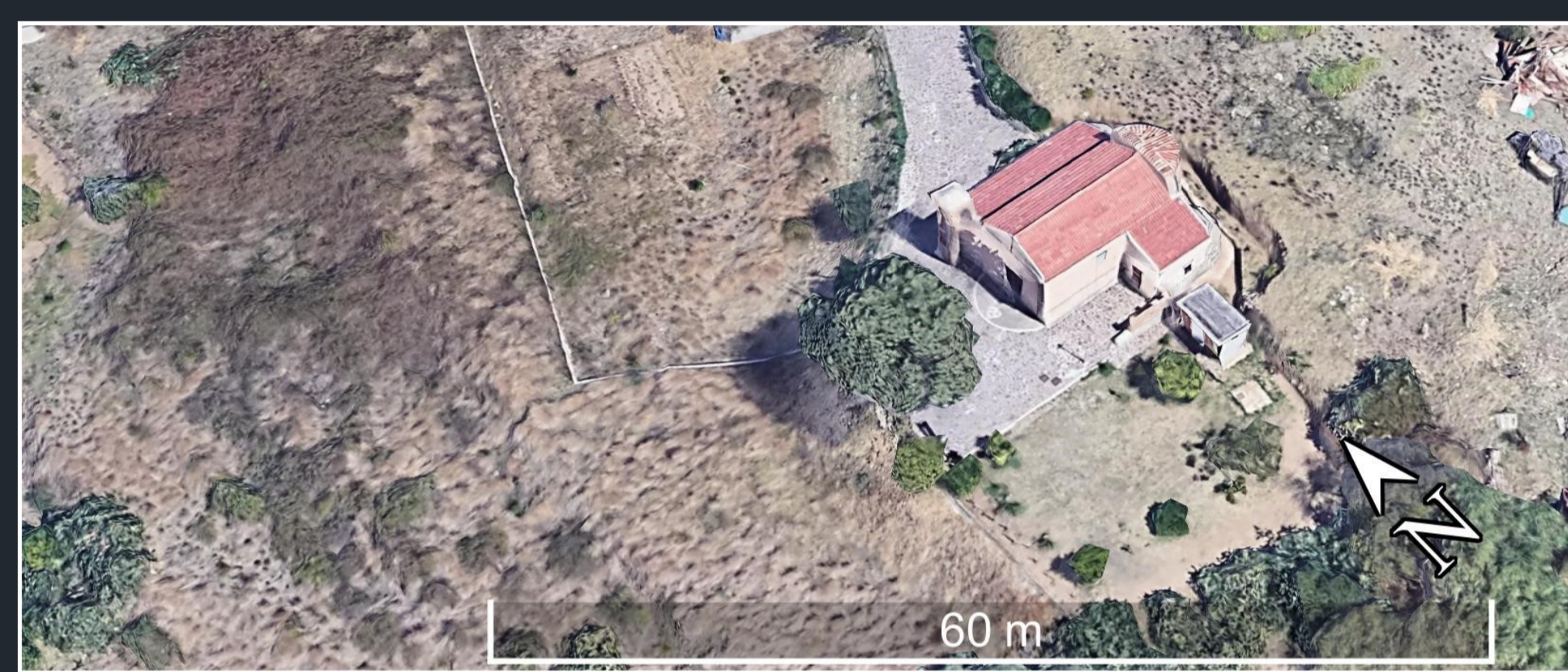
The current building is therefore the result of a series of building phases attributable to a long chronological period dating from the 13th century to the 20th century, with the latest restoration works dating to the early Nineties.

The surviving elements and peculiarities of the original architecture, ie the absence of a transept and the triabsidata plan with a longitudinal development with three naves, allow the church to be placed in the broader framework of the Byzantine-Norman building tradition.

The work carried out by the team of the IPCF-CNR of Messina has had as objective the realization of an updated survey of the structures and the consequent creation of a 3D model, which can be used virtually. The instrument used is a terrestrial laser scanner model FARO CAM2 Focus 3D S 120, with a field of view of 305 ° (vertical), 360 ° (horizontal) and a margin of error of ± 2 mm; 3D color and photorealistic scans were carried out, with a resolution of 70 mpx and color overlapping without parallaxes.

The location of the church, Archi, (RC)
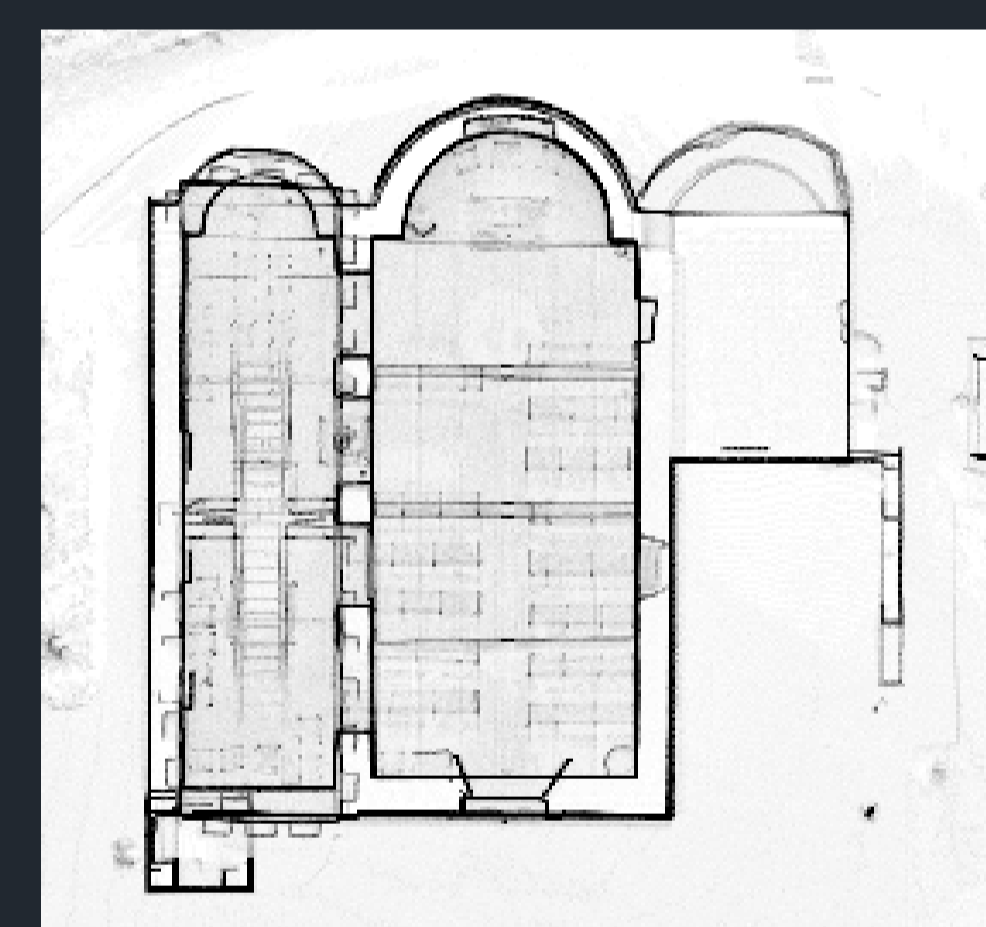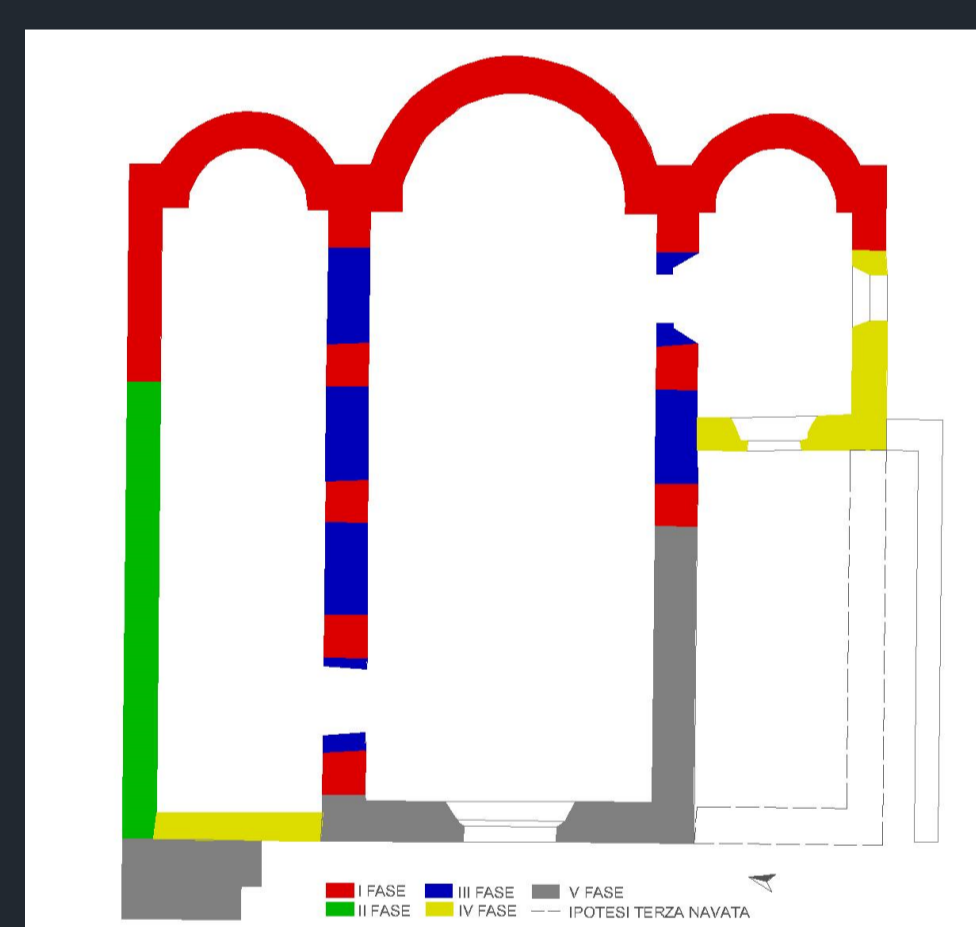
The two plans of the church: on the left (Montanaro 1996); on the right the new plan made from point cloud

The architectural features of the building made it necessary to program twenty total scans of which eleven were performed outside the structure while the remaining nine were distributed sequentially inside the naves and the two crypts below the walkway.

The processing of the scans was performed through the integrated use of the dedicated software FARO SCENE v.18 and JRC 3D Reconstructor with which it was possible to proceed with the registration of point clouds, the creation of triangulated mesh and texturization of the model.

The model was subsequently exported to CAD for the construction of plans, sections and reconstructions of the building phases.

Point cloud of the church with transparent view an crypts detail.

References

De Lorenzo A., *Le quattro Motte estinte presso Reggio di Calabria*, Siena 1891, pp. 262-263

Martorano F., *La chiesa di S. Antonio Abate in Archi*, in *Chiese e Castelli medioevali in Calabria*, Soveria Mannelli 1996, pp. 25-46