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A new Gis-based map of villa Adriana, a multimedia guide for ancient paths

M. Canciani, F. Chiappetta, M. Michelini, E. Pallottino, M. Saccone, and A. Scortecci
Dipartimento di Architettura, Università degli Studi Roma Tre, 00153 Roma, Italy

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Abstract. For the last fifteen years the Faculty of Architecture at the University of Roma Tre, has been working on the famous Villa Adriana in Tivoli, studying its ruins and its ancient paths, in order to better understand how the villa was originally laid out. In this paper, we will talk about one of these studies, which reconnect previous works and creates a new GIS based map of Villa Adriana.

The goal of this study is to create a cultural heritage evaluation. In order to achieve this aim, we have created a multimedia guide with text, drawings, 3D reconstructions and augmented reality. This work can be summarized in five steps: first of all, a new georeferenced plan was created. This drawing is based on an orthophoto and brings together all existing surveys (from historical drawings to recent surveys). In this new work we show the current status of the ruins and the original layout of Villa Adriana according to the most recent study. The second step was a 3D survey, with extensive use of photogrammetry to verify and upgrade drawings. The next and third step involved creating the Database, within which to store, edit, analyze, share, and display linked data relating to both ancient and contemporary buildings and pathways. This GIS is based on the new plan and gathers together different orders of information: original function, paving, the old paths of each original user (Hadrian, his wife Sabina, the retinue, guests and servants) as well as the ancient system of underground tunnels. It collects all the existing data relating to Villa Adriana relevant to solving the "what/where" question. The fourth step was to create a complete 3D model of Villa Adriana. The 3D reconstruction started from the existing surveys, the documentation of recent excavation and the input of the hypothetical reconstruction of lost or buried buildings.

Finally we created a multimedia guide, based on a mobile app, which took information from the database to show, in real time, during the tour, where you are and what you can see around you. With this app it's possible to read information about the villa's original layout, or you can access information about the ancient users (their lives and paths). You can also see 3D reconstructions of the buildings around you.

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