

EGU21-16523

<https://doi.org/10.5194/egusphere-egu21-16523>

EGU General Assembly 2021

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Underground heritage valorization of camerano's cave in center italy a case of transition towards projects integrating the local community and landscape

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Underground4Value is a COST Action (CA18110) aiming at providing adequate cultural, scientific and technical knowledge of the UBH concerning different aspects (i.e. archaeology, geotechnics, history, urban planning, architecture, cultural anthropology, economics, tourism, sustainable development), in a multi-disciplinary context. So far there are 30 participant countries, moreover Tunisia and Mexico.

The overarching idea is supporting Underground Built Heritage (UBH) conservation, valorization, management, and fostering decision-making through community-led development. The main challenge is how to stimulate social innovations in local communities through heritage management approaches.

One of the living lab stemmed by the activities of the Cost Action is in center Italy, where are many other hypogea with different function: water reservoir, military-strategic, food storage, cultural or religious function, mines or quarries. Among them the city of Camerano represents a local heritage and a landmark for its network of connected built underground spaces. The local community's self-initiative and the determination and far-sightedness of the local authority allowed to differentiate the local tourism offer leading to success in terms of tourism attractiveness, with more than 25'000 visitors per year. First reliable records date 1327 AC.

Special attention is given to the digital dimension of Cultural Heritage. An asset for the next decade, in particular after the COVID-19 pandemic. Surveys of the interior environment of the caves were carried out using two laser instruments in different acquisition modes. The use of the static laser scanner requires a longer time for both the acquisition and the subsequent processing phases. The use of a mobile laser scanner, on the other hand, makes it possible to scan and record the underground environment in real time in just a few hours, thus providing a fast and agile solution. This means that it is possible to go more often for constant and rapid monitoring. The integration of spherical photos taken along the route of the caves themselves offers the possibility

of creating a virtual reality (VR) tour that can be integrated with a 3D model of the entire underground environment. This allows the caves to be visited from a virtual point of view when they are closed for restoration work or in cases of emergencies, such as pandemic one.