3D visualisation and interaction with a Paleolithic database

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Prehistory is a science at the crossroad of many disciplines and requires to compile data from three main sources : the geology of the site, the environment of the fossils and the fossils. Then, researchers must handle an enormous quantity of information.

In particular, during the excavation on the prehistoric site of Tautavel (Cave of Arago, Tautavel, France, 450,000 years B.C.), archaeologists have found more than 500 000 objects. The processing of these data is till now performed in 2 dimensions only and their compilation remains difficult. There is then a large requirement of 3D digital modelling.

The purpose of our study was to conceive a virtual environment of excavation, allowing a three-dimensional interaction with the archaeological data. The 3D environment is composed of the digital copy of the cave in which the objects of the archaeological database are integrated using the mapping method of Benedikt space. We have developed tools to ease the handling of data, the visualisation and the navigation in the virtual environment as filtering (focus + context), management of the level of details for the objects.

The 3D visualisation and interaction with data should support the work of archaeologists. The prospects are multiple as to allow a virtual excavation considering the time variable, to think about an innovative interface mode using haptic feedback and to develop a distributed platform of virtual reality.

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