In-depth

Showcases: putting technology to work

Among its contract obligations, EPOCH has to complete in the first year 8 showcases in which technology is immediately applicable to case studies to serve as demonstrators of the potential of IT. Showcase preparation has started early and is now being finalized. Most of them will be ready, possibly in a preliminary version, for VAST2004 and will be shown there. Others have been delayed for different reasons and will be ready in time for delivery, later on in year 1.

Showcase 1 presents an AR (Augmented Reality) system where visitors see virtual reconstructions of ancient monuments superimposed on the scene through AR glasses. This gives visitors and researchers a feeling for the original appearance of a site, and this experience is provided *in situ*.

The mobile unit is based on a Head Mounted Display, a camera and a laptop. A visitor wearing such equipment is

The nymphaeum at Sagalassos reconstructed in Showcase 1

shown on page 2. It has been applied to the *nymphaeum* (ornamental fountain) at the upper agora of the ancient city of Sagalassos, about 100 km to the north of modern Antalya in Turkey. Sagalassos was a prosperous city from early Hellenistic times until it was struck by a devastating earthquake in the 7th century. Similar applications to other sites require detailed data acquisition and 3D reconstruction of monuments, which nowadays are available for a number of ancient monuments and whose use would be greatly improved – with little additional costs – by such a technology.

Showcase 2 deals with fragile objects, and proposes to use a replica of the object which serves as the interface to explore the object. Through the use of an orientation sensor integrated in the replica, the object can be visualised on a computer screen in precise coordination with the angle it is held or rotated by the visitor/user. In this way, the user feels the shape and details of the object and sees the virtual representation of the object in the screen, behaving exactly the same way as the replica. It has been applied to a rare carved ivory head for an abbot's ceremonial staff from the end of the eleventh or

beginning of the twelfth century, displayed in the Provincial Archaeological Museum in Ename, Belgium. There are many similar fragile and precious objects in archaeological museums

The ivory object used for Showcase 2: the original, the replica and the computer model

that could benefit of such an application, while the production cost of the replica, using an industrially widespread technique known as "rapid prototyping" and 3D scanning, is within the economic reach of most cultural institutions.

Showcase 3 introduces the possibility of storing the stratigraphic relations within a site and to show them with the help of the Harris Matrix and in a 3D representation. It is something very much interesting for researchers because it memorizes and reproduces the intimate structure of an excavated site after it has been destroyed by the excavation itself.
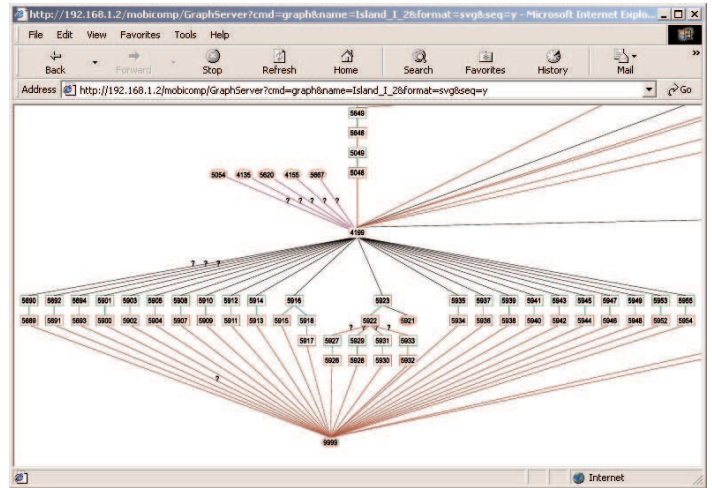
The Harris Matrix created in Showcase 3

Applications of this technology to any archaeological stratigraphic excavation is straightforward.

Showcase 4 employs avatars to populate a city reconstructed in detail as far as important buildings are concerned, while the background houses and the vegetation is generated in a simplified way.

Some of the avatars will interact with the visitor, being enabled to communicate in several languages information taken from the same knowledge base. While the showcase application concerns Wolfenbuttel, a Medieval German city, many other cities have similar features and would benefit from a relatively simple applications of these multingual avatars.