

Augmented reality: Visual time machine offers tourists a glimpse of the past

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(PhysOrg.com) -- A ruined temple, ancient frescos and even a long-dead king have been brought to life by a “visual time machine” developed by European researchers.

The Palace of Venaria near Turin, Italy, and Winchester Castle in the United Kingdom have already benefited from the technology, which combines augmented reality (AR) content with location awareness on [mobile devices](#) to give visitors to historic and cultural sites a deeper, richer and more enjoyable experience. Other places of interest are also set for a virtual renaissance in the near future with a commercial version of the system being developed to run on smart phones.

Augmented reality allows people to see and discover much more than they would normally be able to by overlaying information and images in real time on photos and video taken using a mobile device. Innovative software matches the image being viewed with suitable AR content stored on a central server.

“They can look at a historic site and, by taking a photo or viewing it through the camera on their mobile device, be able to access much more information about it,” explains Luke Speller, a senior researcher at BMT in the United Kingdom who oversaw development of the technology.

“They are even able to visualise, in real time, how it looked at different stages in history,” he adds. The AR system is one component of a comprehensive mobile information platform for tourists developed in

the EU-funded iTacitus project, which also created location-based services and smart itinerary-generating software to help users get the most out of any trip.

Virtual guide for augmented holidays

Visitors to historic cities provide the iTacitus system with their personal preferences - a love of opera or an interest in Roman history, for example - and the platform automatically suggests places to visit and informs them of events currently taking place. The smart itinerary application ensures that tourists get the most out of each day, dynamically helping them schedule visits and directing them between sites.

Once at their destination, be it an archaeological site, museum or famous city street, the AR component helps bring the cultural and historic significance to life by downloading suitable AR content from a central server.

At the Palace of Venaria, a UNESCO World Heritage site, the iTacitus system allowed users to see how frescos on the walls of the Sala Diana once appeared and superimpose a long-gone [temple](#) in the colourful gardens to the pictures of the ruins on their mobile phone. In Winchester, the system showed visitors the court inside the castle's Great Hall and even offered an introduction by a virtual King Alfred.

“One of [our] key innovations is that we do not need markers in each location to tell the mobile device to show a certain image or pull up certain information. Instead, the video or photograph taken by the user is sent to a server and analysed by software that matches it with AR content in the database,” Speller says.

“Test users loved the concept of the system,” he adds. However, the

project manager admits that they were less keen on the hardware initially chosen to conduct the trials.

Coming to a smart phone near you

“We used small portable computers, but people found them hard to see in daylight and too bulky to carry around. That hardware issue has been solved by the iPhone and similar smart phones, which were not as advanced as they are today when the project began three years ago,” Speller says.

With increasingly ubiquitous smart phone users in mind, the iTacitus project partners are now developing the software further with the aim of creating suitable AR and location-aware applications for the iPhone and for Google’s Android mobile operating system.

“Our aim is to make the application available for free and then charge users a fee for AR content for different locations... It would be a similar amount or even less than they would pay for a guidebook, but offering them a much richer experience,” explains Ben Hodgson, an administrative manager of the iTacitus project at BMT.

The project partners envisage AR content being generated by museums, historical sites and the tourist boards of historic cities and regions looking to promote themselves to visitors. That could be particularly beneficial for less well-known sites by encouraging tourists to get “off the beaten track.” In addition, the researchers see possibilities for user-generated content to be incorporated into the system, further enriching visitor experiences.

“It’s probable that, by giving visitors access to more information in a more interactive way and helping them find different events and places of interest more easily, they will spend more time and do more during

their visit,” Speller says.

iTacitus received funding from the ICT strand of the EU’s Sixth Framework Programme for research.

More information: itacitus.org/

Provided by [ICT Results](#)

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