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2d3 DEVELOPS REAL-TIME CAMERA TRACKING FOR EU AUGMENTED REALITY PROJECT

Oxford, UK, September 29th 2004 - A European Union-funded technology project designed to allow visitors at archaeological attractions to see and hear computer-augmented views of the sites they are walking through has opened up a glimpse of a future development for cultural tourism.

Tourists at sites such as Pompeii may soon be able to see not just the frescos, taverns and villas excavated by archaeologists over the past 250 years, but the people who lived there before the catastrophic eruption of Vesuvius destroyed the city in AD79. Engineers and researchers working in a Europe-wide consortium have demonstrated a breakthrough prototype augmented-reality system that can add 'digital people' and other computer-generated interactive animated elements in real-time to the visitor's view of the site.

The Lifeplus project is part of the EU's 'Information Society Technologies' (IST) initiative aimed at promoting a user-friendly information society and enhancing European cultural heritage. First demonstrated at Pompeii, the Lifeplus system comprises a range of technologies working together to deliver an experience that combines the visitor's view of the site with computer-generated sound and animation in a head-mounted display (HMD).

As the visitor moves through the site wearing a backpack-mounted computer, a miniature camera mounted on the HMD captures the view and feeds it to software running on the computer where the visitor's viewpoint of the scene is combined with animated virtual elements before being fed back to the display. The visitor experiences not only the actual site, but also sees it peopled with Pompeian citizens going about their business before the disaster that befell the city.

Augmented reality is common in special effects for feature films such as 'Troy', and 'Lord of the Rings', but while these effects take many months to create, Lifeplus for the first time deploys technologies that can generate augmented reality in real-time, as a visitor walks unhindered through the site.

The technologies combining to create the characters in the scene use leading-edge techniques in hair and cloth simulation, skin rendering and interactive programmable shading, and plant simulation; with artificial life algorithms for behavioural animation of the virtual characters, and facial emotion software for realistic expressions.

Professor Nadia Magnenat-Thalman of the Swiss research group Miralab has been working to develop realistic virtual characters for over twenty years. 'Current computers now have so much power that we are for the first time able to run this combination of software processes to create walking, talking people with believable clothing, skin and hair in real-time. This technology can now be used for much more than just computer games.' Miralab, together with the VRLab at Lausanne, have built a powerful computer application that produces the virtual people according to a predetermined script.

Unlike virtual reality (VR) simulations, which deliver an entirely

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computer-generated scene to the viewer, Lifeplus provides a more immediate and realistic visualisation by combining live video of the site with the virtual elements to create the augmented reality (AR) experience. Central to this technique is the software that interprets the visitor's view, seen through the head-mounted miniature camera, to derive the positional and perspective information crucial for an accurate match between the real and virtual elements.

Oxford-based software developers 2d3 are the company responsible for this component of the project. Widely-used in feature films and in television post-production, 2d3's technology automates the matching of virtual and real by reading the geometry of the scene and calculating the exact motion of the camera within it to allow the added computer generated elements to 'sit' in the scene realistically. For the Lifeplus project, 2d3 adapted its software to perform in real-time, as 2d3's Andrew Stoddart explains: 'We've used leading-edge computer-vision techniques in our products for several years now, but this is the first time that anyone has been able to move a camera through a scene and have the software to work out in real-time where it is and how it's moving.'

'The popularity of television documentaries and dramatizations using computer-generated imagery to recreate scenes from ancient history demonstrates the widespread appeal of bringing ancient cultures to life. Now Lifeplus offers the prospect of 21st century visualization technology delivering an even more vivid experience to visitors to sites like Pompeii in the very near future.'

To visit the Consortium Website - click here

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http://news.bbc.co.uk/1/hi/technology/3954659.stm

About boujou

Launched in 2001, **boujou** (boo-zhoo) was the first fully automated camera calibration and tracking system. Using advanced adaptive algorithms developed from vision science research, the application removes previous limitations on what is achievable in effects production by allowing 3D professionals to derive complex camera tracks and calibration data from film and video material automatically without the need for manual tracking input.

boujou has made a major contribution to high-profile television and film productions, music videos and commercials by facilitating the creation of visual effects that seamlessly combine live action and 3D. In 2002, 2d3 was awarded with a Primetime Emmy Engineering Award for **boujou**, which is also used for games development, architectural visualization and industrial design projects.

boujou three and **boujou bullet** run under Windows, Apple Mac OS X and Linux Red Hat on standard PC hardware.

About OMG

2d3 Limited. is a wholly-owned subsidiary of OMG plc together with Vicon Peak, developers of the world's most advanced motion capture systems, and winner in 2001 of a second Queen's Award for International Trade. OMG plc is listed on the London Stock Exchange. OMG provides solutions in three dimensions derived from film, video, and digital moving images, for the manufacturing and entertainment industries, medicine, and research.

Further information is available from:

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