An added dimension for virtual museums

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Culture vultures enjoy exploring museum collections online. New 3D technology promises to make their experience richer still. With a mouse click, people can manipulate valuable objects as if they were in their own hands.

"As far as I know, no European museums offer 3D presentations of their prized treasures," says Martin White, coordinator of the IST project ARCO. "Their websites are mostly just a catalogue of what they own or are exhibiting. But with our software, a museum can enhance its site by building a 3D virtual exhibition."

The process begins with digitisation of cultural objects, creating 3D virtual representations in X3D (an XML-enabled 3D file format) or VRML (Virtual Reality Markup Language). Object modelling software then generates 3D models, which are made interactive using other tools. These virtual representations and associated metadata (such as age, colour and shape) are then described using XML (eXtensible Markup Language) for storage in an object-relational database.

"Using this database and an application to manage content," says White, "a museum can store all the digital data in a catalogue and associate this data with templates. The templates enable the museum to create and update virtual exhibitions by simply reorganising database content."

Objects can be visualised on the Internet or a museum kiosk, using the X-VRML template. To enjoy the virtual-reality experience, such as turning an object around, Web users require Cortona – a VRML plug-in that

translates the 3D content into a format that any normal browser can understand.

The templates can also create a full-screen augmented-reality interface (ARIF). "ARIF allows the user to send a virtual museum artefact from a Web page to the augmented reality application," says White. "The Web page will disappear and be replaced by a video stream from a Web camera pointed at a marker card, used as a spatial reference." The artefact miraculously appears to pop out of the screen into the real world. Adds White: "People can then play with the 3D object and even feel it through a special haptic mouse."

Three museums were involved in the user trials, which included curators and photographers, in the UK and France. "They were enthusiastic about our software, because it enhances the visitor experience and could extend disabled people's access to culture and heritage," says White. The project partners are developing several licensing models, to make it easy for any museum to adopt 3D presentation technology.

The Victoria and Albert Museum in London, a project partner, is setting up an ARCO-based virtual museum of its textiles. These 3D images, though not good enough for curatorial research, are fine for Internet viewing.

Having received positive feedback at several European museum and heritage trade shows, the project partners are setting up a forum to exploit their unique technology. Since the museum market is very fragmented and hard to penetrate, they have decided to link up with the company Third Millennium Publishing to win commissions to build 3D-based 'virtual museums' for well-known museums such as the United States Library of Congress.

The coordinator notes that the project's 3D gallery spaces technology

could be used in catalogues and e-commerce for any kind of product. He adds that it is also being exploited in new IST projects, such as EPOCH, a heritage network of excellence.

Source: IST Results