New virtual world order

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An EU project will enable virtual reality to take another step into the real world with a series of innovations that make the technology cheaper, more flexible and more powerful.
"The origins of virtual reality grew out of psychedelic philosophy and they were looking at simulating alternative worlds, not realistic simulations as we have today," says Marc Cavazza, coordinator of the IST project Alterne and computing scientist at the UK's University of Teesside. "This concept had been forgotten and we wanted to return to it while doing some series scientific work."

The project team, which includes seven partners from across Europe, developed software that will let a CAVE Immersive projection screen to run on PC clusters, a type of parallel processing that gives massively more computing bang for the buck. This means it will be cheaper to run, because it uses standard PC technology.

But it also means that the system can use standard PC software. Unreal Tournament, a first person shooter video game developed by Epic, is the reference in current gaming technology. It replicates an entire world with predictable physical laws that govern everything from lighting to player movement and ballistics.

Alterne used the game engine from Unreal Tournament, which creates the graphics in the game, and bolted on a series of modules that enable new physical laws.

"The bulk of the contribution of the project is all the software which has

been developed on top of the game engine," says Cavazza. "Our alternative reality software consists of a series of modules: those dealing with causality, those dealing with physical laws and we also have modules which can be used to describe artificial life."

What's more, the team designed the system so that other modules to enable new effects can be added to the system when they are required. "It is only limited by the processing power of the cluster and the imagination of the artist or computer scientist," says Cavazza.

Artists will use the system to create alternative realities as a form of expression. Unfortunately, this is a very limited market in Europe. "There are probably 100 virtual reality artists in Europe," says Cavazza.

But the system will have other applications, both in computer science and graphics.

"Cognitive scientists, for example, are very interested in our work because it will allow them to test new hypothesis on the nature of the perception of causality and higher brain functions," he says.

For example, causality perception, or the perception of cause and effect, is believed to be instant in humans. When something happens we can immediately identify its cause, implying that it is an inherent part of the perception process.

But the perception of causality is a higher brain function, so normally there should be a delay between perception and recognition of causality. The Alterne system will help cognitive scientists to tease out what exactly is happening. "Before Alterne, they didn't have the tools to explore that," says Cavazza.

There are also important implications for computer science, particularly

Human Computer Interactions, which are all about causality.

In the meantime, the project is undergoing its final evaluation right now. "Artists are enthusiastic," says Cavazza. Ultimately, the Alterne system will usher in a new virtual world order.

Source: IST Results