Virtual game of life

Insights gained from computer gaming and virtual-reality experiments can have practical applications in real life and business.

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Children whose parents nag them about spending too much time on computer games may soon have a new excuse _ they can claim they're doing research.

Lessons learned in the world of video shoot-em-ups and simulations, it turns out, could have some powerful practical applications in the game of life.

The belief has given rise to a new field of research, which the IT industry has dubbed "gamification".

The idea is to apply game-design thinking to non-game applications, explains Carlos Dominguez, a senior vice-president of Cisco Systems, the US-based networking firm.

He said better knowledge of the way people react to and interact with games could help businesses increase efficiency, customer loyalty or engagement.

Researchers at Stanford University in California, for example, are studying how gamification techniques can be applied in the workplace to improve employee performance and increase profit margins.

A call centre is one example, says Mr Dominguez. Gamification can be applied to measure the stress level of a caller at the beginning of the call and compare it with the rate at the end. A lower stress level would indicate the operator has helped the customer solve a problem.

Gamification could also be applied to creating a virtual-reality meeting for a business, in which each participant could create his or her own 2D or 3D animated avatar, acting as a digital representative.

"This could be a powerful communication tool, making people more engaged and making work more fun," says Mr Dominguez.

He predicts corporate training will increasingly have some sort of virtual reality component, with more use of simulations and gamification: "We believe gamification will soon find its way into the workplace within two years."

Mr Dominguez said virtual reality was already beginning to extend to other areas such as product design, sales and health care.

Stanford has a virtual reality laboratory (VR Lab) as part of its broader Virtual Human Interaction Lab programme. It is specially designed for psychological experimentation in the virtual world. Three virtual senses _ sight, sound and touch _ are integrated into one immersive digital experience.

The test subject in the VR Lab has to wear a helmet-like accessory. The head-mounted device sports two small screens close to each eye. An advanced "ambisonic" sound system with powerful speakers in the walls and floor complete the effect.

The combination of movements of sound across the room and vibrations from the floor make the person feel as though the sound is coming from the visual location of virtual objects.

The virtual reality research in the lab mainly focuses on education and ways to change people's behaviour.

Mr Dominguez points to one experiment in which the sights and sounds in the VR Lab made test subjects feel they were using a powerful chainsaw to cut down

huge forest trees. After a lot of creaking and crashing sounds, the tree falls to the ground vibrating beneath the feet.

And the point of the exercise? The test was designed for people who do not use recycled toilet paper, he says. The test group is told that if they use non-recycled paper, then each person will use up two mature trees over their lifetime.

After their trip to the VR Lab, the test subjects used 20% less paper, said Mr Dominguez.

Another example is a virtual-reality demo called Pit World. In this case the visual and audio effects make the person feel he's walking on a narrow wooden plank 1,000 metres above the ground, sending the heartbeat and blood pressure soaring. The aim is to help people overcome fear of heights.

Health care is another area in which virtual reality technologies can be applied, with potential seen in treatment of post-traumatic stress and Parkinson's disease.

Mr Dominguez says the VR Lab helps people feel that they are highly engaged, making it easier for the immersive virtual environment to create a change in behaviour in the physical world.

He believes more product designs will inceasingly leverage the power of virtual reality, and the technology could also change how products are sold, starting with niche markets before becoming a mass-market experience within five years.

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