Blending realities to create a truly global workforce

April 16 2015

The globalisation of business already means many companies have their workforce scattered across the world.

But what if engineers in different countries want to work together to solve a problem on exactly the same piece of equipment at exactly the same time? This is the challenge behind a unique new project at the University of Essex.

Scientists have created a first-of-its-kind virtual engineering laboratory which enables engineers to work on the same project at the same time wherever they are in the world and have already successfully linked up with colleagues in Mexico to test out the technology.

It allows students in Mexico and Essex to collaborate on live science and engineering work using online mixed-reality environments. The technology, using a large screen to enhance the sense of reality and interactive avatars, synchronises the different realities so they all coordinate as one. It means they work together in the virtual environment but manipulate the equipment in the real environment.

Working together on an intelligent home prototype, the project meant the scientists at Instituto Tecnológico de León in Mexico could immediately see the effect of their actions on the equipment at Essex.

PhD student Anasol Pena Rios, who is leading the project, said: "It was a real challenge to get the synchronisation right so we could accurately blend the real and virtual realities. The beauty of this technology is that it opens up lots of possibilities of working together and teaching in mixed realities.

"What these trials with Mexico will also do is to see if this is a good platform for people working together across the world in this mixed-reality environment."

Project supervisor Professor Vic Callaghan added: "This technology has the potential to significantly change in a positive way the future of our lifestyles, where there is no longer the need to always travel to a central spot achieve great things.

"The team at Essex are huge believers in the effects of blended realities and how this will affect real life. When you send a text you are already blending realities. In the future this blending of virtual realities is going to increase in a very positive way. We have to just make sure we get the balance right."

The timing of this event is particularly poignant as 2015 has been

designated as the Year of the UK in Mexico and The Year of Mexico in the UK by both governments.

The project also involves Essex computer science alumnus Victor Zamudio whose Mexican company FortiTo produced the intelligent home prototype BuzzBox used in the experiment. He also coordinated the trials with the Instituto Tecnológico de León, which has thousands of Mexican students studying science, technology, engineering and mathematics (STEM) in almost 300 locations across Mexico. The trial was also key in showing that distance was no longer a barrier to STEM laboratory work.

The five-year project, funded by King Abdulaziz University in Saudi Arabia, has led to over 30 research papers and three patents.

Provided by University of Essex