DG CONNECT Brain ICT projects

The brain is the most complex machine we know of and the most mysterious one. Studying the brain is a huge challenge; simulating a complete human brain on a super computer will revolutionise the way we do computing today. These projects consider the brain as a system, not simply as an organ, and try to find solutions to challenging questions.

Positive app combats stress

INTERSTRESS is using advanced ICT-based solutions to assess and treat a condition that most of us experience: psychological stress.

The project combines biosensors and mobile devices to conduct an "e-therapy" that bridges virtual and physical reality into one seamless reality: interreality. The user wears (easy-to-use, low cost and comfortable) sensors which measure our heart beat, respiration, sweat and other physical indications of stress. The Mobile app then takes the user through relaxation exercises, scenes, and sounds in a virtual beach, forest, mountain or tropical environment. The sensor monitors the user's physical reactions and adjusts the scenes and music to lower the user's stress levels. This 3D-biofeedback training helps to counter the physiological changes induced by stress. Users can also share their experiences with others through 3D shared virtual world role-playing, bio and activity sensors in mobile and in internet applications.
The app is currently undergoing clinical trials. In 2012 the project won the UN-based World Summit Award Mobile for the best mobile health application.
The European Commission has contributed €3million to support this project over 3 ¾ years.

Is it a beach or forest? RENVISION will allow computers to "see"
RENVISION project will help improve vision in artificial systems. Today, we have computing systems that allow machines to "see"; but these are quite simple systems which cannot perform complicated activities, such as a vision with a high-quality spatial and temporal dimension. This project will study how our eye's retina receives and how our brain encodes visual information. It will then use these insights to develop high-level computer vision; these could allow computers to for example categorise natural scenes (i.e. telling the difference between a beach and a forest) or recognise human action (i.e. understanding if a person is walking or driving). This could help us give robots and vehicles better navigation and environment awareness, improve object recognition and image classification. That could be helpful e.g. in the rescuing operations, or in monitoring public spaces such as airports.
The project began in March 2013 and will receive €2.2 million of EU support over 3 years

Seeing a complex problem from all sides.
The CEEDs project aims to help people better understand large and complex data sets. Experts in areas like astronomy, neuroscience, archaeology, history, economics and all of us in our everyday life have to make difficult decisions quickly in increasingly complex and cluttered environments (whether that is navigating an unfamiliar setting or understanding what are relevant or important considerations in any situation).

CEEDs' solution to these challenges is two-fold. Firstly, the project brings together screens, sensors and other ICT technologies to allow people to consciously experience properties of large data sets, so they can better understand them. For example CEEDs would help a chemistry student to experience what a molecule actually looks like, to get inside it, view it from outside and touch it. This almost physical experience would make it easier for the student to understand and absorb information about the molecule's composition, properties, behaviour under different conditions etc. Secondly, the project will exploit the power and potential of the unconscious mind: it will try to allow us to extract data from our unconscious mind when we wish to do so (which is currently not possible). We can then use this information, together with other information in our conscious mind to, for example, make better decisions.

The Commission is funding this project with €6.5 million over 4 years