

Innovation: Mind-reading headsets will change your brain

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The Emotiv headset picks up the electrical activity of neurons firing inside a person's brain and interprets your thoughts to control a computer game (Image: Emotiv)

Innovation is our new column that highlights the latest emerging technological ideas and where they may lead.

This week, engineer Adam Wilson made global headlines by updating Twitter using his brainwaves. "USING EEG TO SEND TWEET" he explained.

Wilson's achievement was actually pretty trivial. He used a system called BCI2000, found in hundreds of laboratories across the globe, that can do the job of a keyboard for any software program. But it was significant precisely because it was trivial: mind-reading tech is going to have a massive impact this year.

In the coming months, cheap headsets that let you control technology with the electrical signals generated by your firing neurons will go on sale to the general public. Our relationship with technology – and our brains – will never be the same again.

Escaping the lab

Researchers have developed systems that read brainwaves – in the form of electroencephalogram (EEG) signals – in order to help people suffering from disabilities or paralysis control wheelchairs, play games

, or type on a computer. Now, two companies are preparing to market similar devices to mainstream consumers.

Australian outfit Emotiv will release a headset whose 16 sensors make it possible to direct 12 different movements in a computer game. Emotiv says the helmet can also detect emotions.

Compatible with any PC running Windows, it will ship later this year for \$299 (see image). They have shown off a game where the player moves stones to rebuild Stonehenge using mind power alone ().

Californian company NeuroSky has also built a device that can detect emotions: the firm says it can tell whether you are focused, relaxed, afraid or anxious, for example.

Rather than selling it directly to the public, NeuroSky is licensing its set-up to other companies, including Mattel, Nokia and Sega. Mattel, for example, will soon sell a game which involves players levitating a ball using thought alone ().

Mind hacks

These devices are remarkably cheap, especially when compared to the price tags on research-grade EEGs, which can run to hundreds of thousands of dollars. Emotiv's headset will retail for \$299, while Mattel's game will cost just \$80. At such low prices, these dirt-cheap brain interfaces will likely be popular – and not just with people who want to play with them.

Consider what happened when the most revolutionary interface of recent years appeared – the wireless controller of Nintendo's Wii games console. Legions of hackers started experimenting; and millions of people have now seen how the interface can be repurposed to make an industrial robot play tennis (with video), track a person's head movements and .

You can expect some similarly mind-blowing hacks to result once Emotiv and NeuroSky release their devices. That'll certainly help make for some compelling viewing on YouTube and accelerate the development of brain controllers.

But the most interesting consequence of the coming flood of brainware isn't technological at all. Parents, and anyone else whose schooldays are fading into memory, will be acutely aware that today's youngsters have a facility with interactive technology that can be acutely disorienting.

There's already speculation about how the internet, gaming and other interactive technology is changing the brains of the next generation – albeit not necessarily well-founded. But for the generation after that, it will be normal to control machines using thought alone. Given the awesome adaptability and plasticity of the human brain, how will our biological hardware and software adapt?