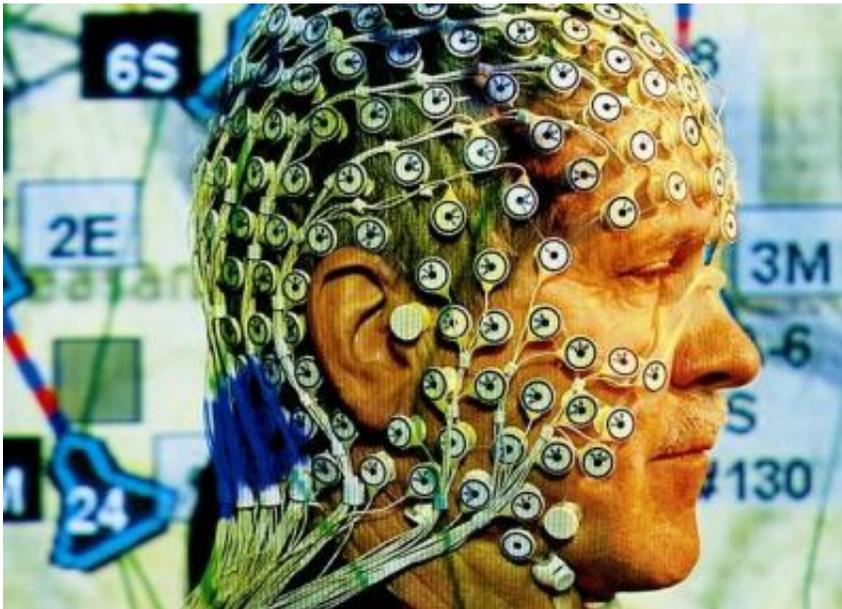


US Army Invests in 'Thought Helmet' Technology for Voiceless Communication

September 22 2008, by Lisa Zyga



A thought helmet (not pictured) could allow soldiers to silently and securely issue and receive commands. Image credit: Jeff Corwin Photography, Boeing.

In the future, soldiers may be communicating silently with sophisticated "thought helmets." The devices would harness a person's brain waves and transmit them as radio waves, where they would be translated into words in the headphones of other soldiers.

The US Army has recently awarded a five-year \$4 million contract to researchers from the University of California at Irvine (led by UCI's

Mike D’Zmura), Carnegie Mellon University, and the University of Maryland to study the concept. It will likely be a decade or two before the thought helmet becomes a reality, but the rough technology is already under investigation. Researchers have been working on other brain-computer interfaces, such as Emotiv Systems’ brain-wave headset for video games, which is expected to be available commercially next summer.

The Army's version would of course be more sophisticated and reliable than the gaming headset. To make the thought helmet a feasible piece of equipment for soldiers, scientists need to combine advances in computing power together with our understanding of the human brain.

At the moment, the thought helmet concept consists of 128 sensors buried in a soldier’s helmet. Soldiers would need to think in clear, formulaic ways, which is similar to how they are already trained to talk. The key challenge to making the system work is a software system that can read an electroencephalogram (EEG) generated by the sensor data, and pick out when a soldier is thinking words, and what those words are.

Because the brain is a complex system and generates such large amounts of data, researchers must also make improvements in computing power. Soldiers will also have to be trained to think "loudly" to make it easier for the system to pick out their words from the brain’s background noise. Also, every individual’s EEG signals are a little different, so users and computers will have to be calibrated so that computers recognize each person’s unique mental pattern.

In early versions, recipients will most likely hear messages rendered by a robotic voice in their headphones. But the researchers also think it’s possible to render commands in the speaker’s own voice, as well as indicate the location of the speaker relative to the listener.

For people concerned about the ethics of the technology, Elmar Schmeisser, the Army neuroscientist overseeing the program, reassures that the technology will not allow mind-reading. As he explains, since every user has to be trained with the system, it would be impossible to use the technology against an individual's will and without their cooperation.

Instead, the researchers are interested in potential civilian benefits. One such application might be a Bluetooth headpiece which could read speakers' thoughts and transmit them to the person they're calling - eliminating those loud, one-sided conversations in public.

via: [Engadget](#) and [Time](#)

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