

# CONSCIOUSNESS ASSESSMENT & COMMUNICATION

mind**BEAGLE**<sup>®</sup>

[www.mindBEAGLE.com](http://www.mindBEAGLE.com)



Imagine being able to think, hear, and feel - but not move or communicate. Over 40% of patients diagnosed as vegetative are reclassified as (at least) minimally conscious when assessed by expert teams. g.tec now introduces a new tool called mindBEAGLE® that uses BCI (Brain-Computer Interface) technology for quick and easy assessment of DOC patients and even provides basic communication with some of them. A BCI detects changes in brain activity induced by the user's mental activity. The EEG (Electroencephalogram) is used to measure brain signals, which are automatically analysed and classified on a standard laptop.

mindBEAGLE® uses auditory and vibro-tactile stimulation to elicit typical brain responses that are based on a certain level of awareness and conscious processing in the patient's brain. Also, imagining certain movements (such as grasping with the left or right hand) can be used to communicate through a BCI (such as "yes" or "no"). In the assessment phase, mindBEAGLE® will provide reliable information about the level of awareness and consciousness of the patient. The system also supports a longitudinal screening to investigate stability and improvement of responses or daily changes in awareness. As soon as the patient can produce reliable brain signals, which typically requires training periods ranging from five minutes to a few hours or days, mindBEAGLE® may be used as a communication tool. As long as patients have enough cognitive functions to understand spoken messages, they can be trained to use certain different mental strategies to provide simple YES/NO answers to questions. The system uses auditory or tactile stimuli for patients who cannot see or hear. mindBEAGLE® automatically performs statistical analyses of signal parameters to optimize performance, and some features can be adjusted to customize the desired reliability of the YES/NO output or other features. The development of mindBEAGLE® was supported by the EC research project DECODER ([www.decoderproject.eu](http://www.decoderproject.eu)).



The mindBEAGLE® system consists of a portable medical grade biosignal amplifier, an EEG cap with active electrodes, a standard laptop computer with the mindBEAGLE® software, in-ear phones for auditory stimulation and vibro-tactile stimulators to be attached to the patient's body.