

# mindBEAGLE<sup>®</sup>

CONSCIOUSNESS ASSESSMENT & COMMUNICATION

## mindBEAGLE: The first EEG-based BCI System Ever for Communication with Complete Locked-in Patients

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# mindBEAGLE: The first EEG-based BCI System Ever for Communication with Complete Locked-in Patients

*Schiedlberg, 2017/06/13.* Frontiers in Neuroscience recently published an article presenting mindBEAGLE as the very first and only EEG-based Brain-Computer Interface (BCI) that enables communication with patients who suffer from locked-in syndrome (LIS), complete locked-in syndrome (CLIS) or disorders of consciousness (DOC). It is widely known that these patients need BCIs that do not rely on visual stimuli and are easy to use. Paradigms based on non-visual evoked potentials and motor imagery can be effective for these patients. Therefore, mindBEAGLE has been developed and works with auditory, vibro-tactile (both based on P300) and motor-imagery paradigms in less than 20 minutes. In the study, 9 out of 12 LIS patients could communicate by using the vibro-tactile or motor-imagery paradigms. There were even 2 CLIS patients that could use the mindBEAGLE system to communicate. The results show that the system can restore communication to different patients.

*“The data reported in this paper were collected in a real world setting and demonstrate that the BCIs can revolutionize the management of several neurological disorders. Despite the substantial or complete loss of voluntary movements and speech, LIS and CLIS patients using this technology may continue to interact with the environment and participate in decisions. This achievement would represent a dramatic improvement of their quality of life.”* - Rossella Spataro, MD, Neurologist at the ALS Clinical Research Center, University of Palermo, Italy and co-author of this publication in Frontiers in Neuroscience.

## What is mindBEAGLE?

mindBEAGLE is a product of Guger Technologies OG, a company based in Austria. With co-funding from the Horizon 2020 program of the European Union, Guger Technologies adapted Brain-Computer Interface (BCI) technology for LIS and CLIS patients, creating a much more practical way to measure brain activity and perform easy and fast assessments of patients that can no longer communicate through behaviors, such as eye movements. Compared with fMRI, the mindBEAGLE system does not require physicians and is easy to use on a daily basis. It gives physicians more information about the conscious state of the patients and enables basic communication with some of them.

## Communication with mindBEAGLE?

To communicate with patients, there are two non-verbal options: tactile stimuli and motor imagery. Communication via tactile stimuli may be possible if the patient focuses on the vibration on a specific body part (e.g. right hand). When the patient is asked a simple YES or NO question, she or he has to focus on the vibrations on the left hand to answer YES. If the patient wants to answer NO, she or he has to focus on vibrations on the right hand. Communication via motor imagery is possible through the imagination of hand or arm movements. In this case, the movement of the left hand means YES and the movement of the right hand means NO.

Watch the video: <https://youtu.be/QSa3rRAT2jg>

Online Publication in Frontiers in Neuroscience:  
<http://journal.frontiersin.org/article/10.3389/fnins.2017.00251/full>

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