





H-BRAIN

Develop Brain - Improve skills



About Us and the technology

- H-Brain team develops low latency bio & neurofeedback systems for the best acceleration of humans through the power of neuroscience.
- There is no doubts that our brains deserve just as much attention as our bodies to succeed maximum at no stress. Therefore, we developed a H-brain technology to improve skill and achieve better results in sport, education and professional & daily life.
- Neurofeedback is a neuromodulation technology that allows a person to adjust the parameters of their own brain activity.
- Our technology, developed with input from experienced neuroscientists, professional athletes and industry leaders, incorporates proven neuroscientific principles and machine learning algorithms, based on 10+ years of academic research.
- Using our system, everyone can achieve inspiring results.

The target we aim

The previous results of the researchers demonstrate that it is quite common for the reinforcement signal to lag behind changes in neuronal activity, leading to inefficient training and therapy and large scatter in biofeedback results.

Our goal is to increase the effectiveness of training and therapy using biofeedback systems and expand the corresponding arsenal of technical means implemented in the form of integral highly ergonomic devices.

Our biofeedback solutions provide deep insights into brain and body functions for empowering of psychophysiological and functional state of a person regulation with real-time low latency biofeedback trainings that allow the brain to perceive an artificially created feedback loop as part of its own neural network.

We enable mind & healthcare professionals to perform complex EEG and other biosignals assessments and offer powerful brain modulation.

All this allow a person to "feel" the activity of his brain and learn how to control it.

How it works. Scheme

Fig. 1 - the dependence of the degree of preservation of the training effect (one of the performance indicators) on the delay in the presentation of the neurotransmission signal;

Fig. 2 - the appearance of the proposed technical solution.

In Fig. 2, the positions indicate the following:

- 1 - a block containing a multichannel analog-to-digital converter (ADC) for digitizing multichannel EEG & other biosignals and an on-board computer;
- 2 - status indicators;
- 3 - power button;
- 4 - USB & wireless interfaces for interactions with a computer or charger;
- 5 - EEG electrodes;
- 6 - headphones for presenting neural feedback via an acoustic channel;
- 7 - compact high-speed monitor for presenting neural feedback via visual channel with various built-in biosensors;
- 8 - example of a video stimulus reflecting the current parameters of rhythmic activity;
- 9 - indicator for monitoring the magnitude of the total delay of the feedback signal in relation to neuronal activity;
- 10 - button for setting the parameter of neural feedback, frequency band;
- 11 - button for setting the parameter of the neurotransmission EEG lead, which is calculated by the feedback signal;
- 12 - a button for setting the parameters of neural feedback, the desired delay.

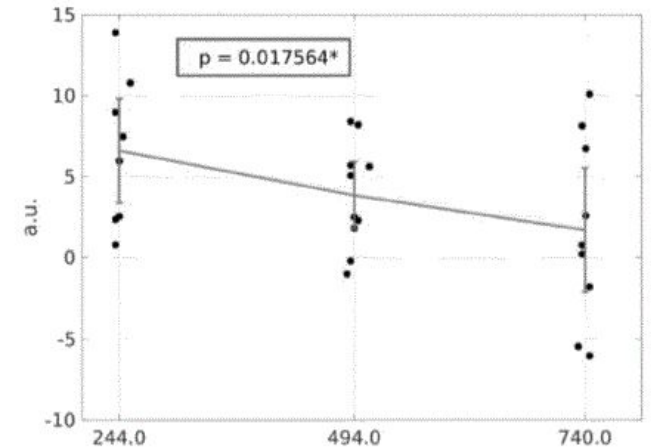


Fig. 1

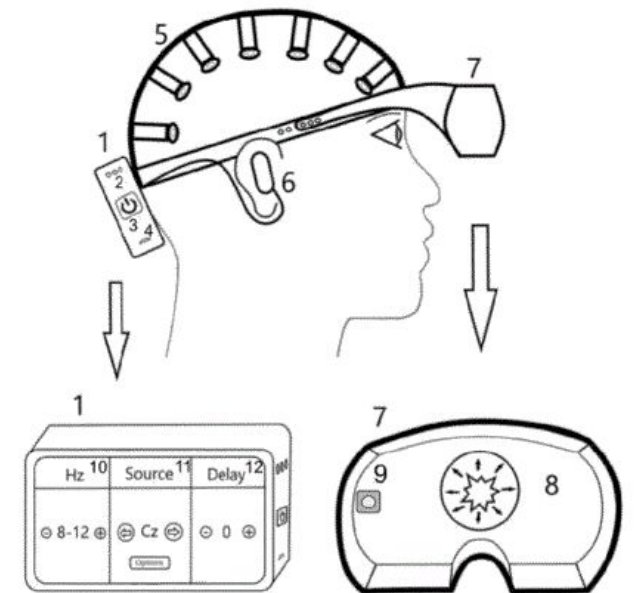
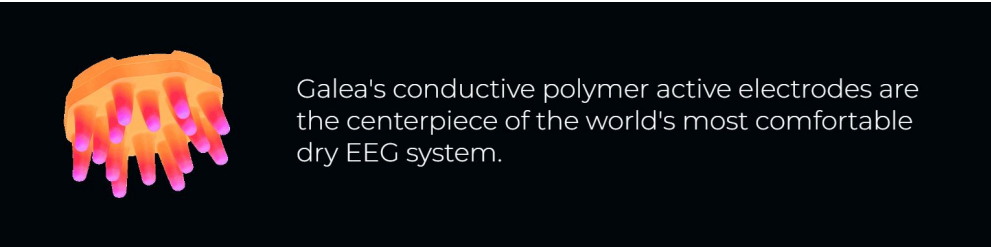
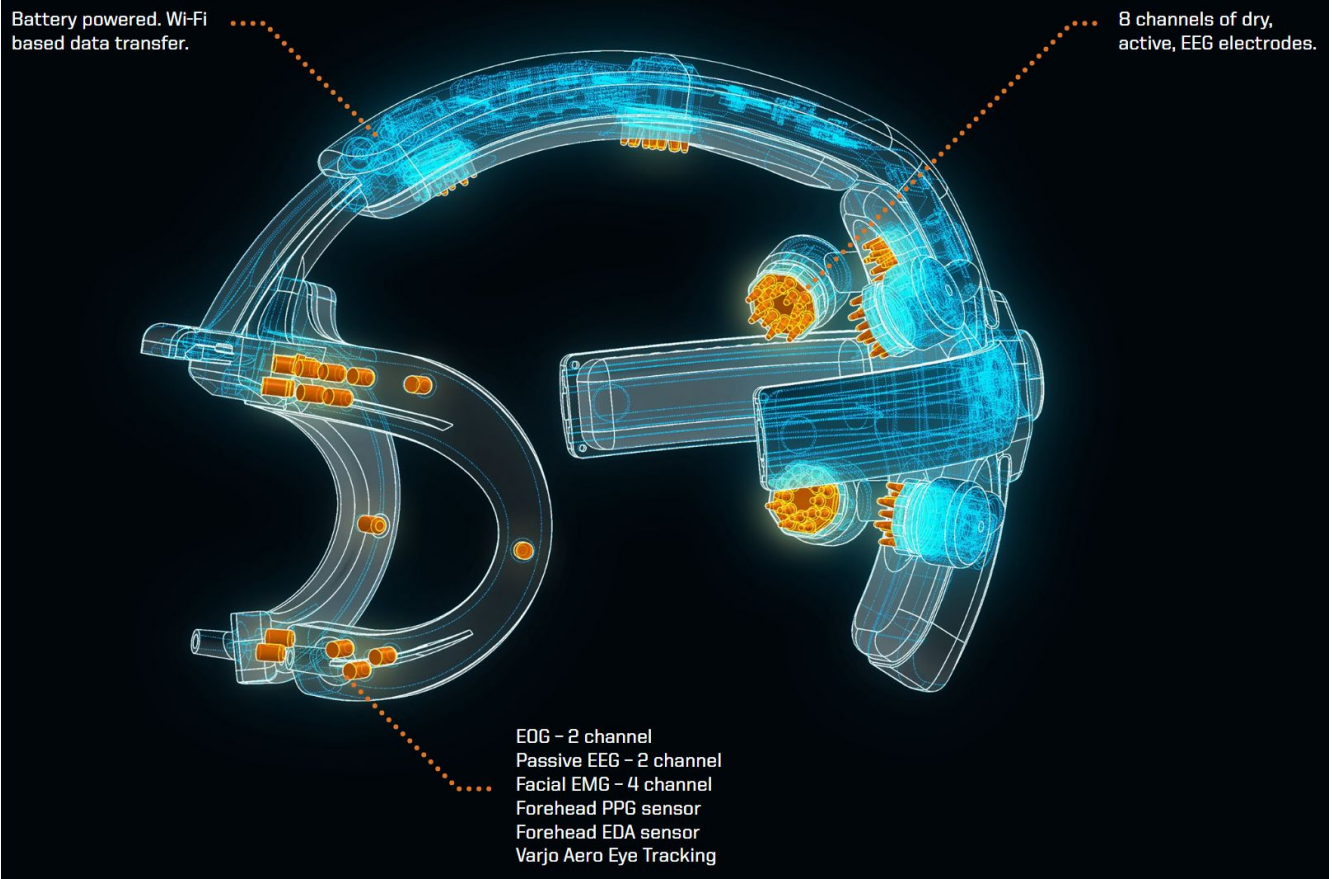


Fig. 2

How it works. Galea Headset is our current main hardware



How it works. Applications

GALEA: Applications & It's Signals



- Attention assesment



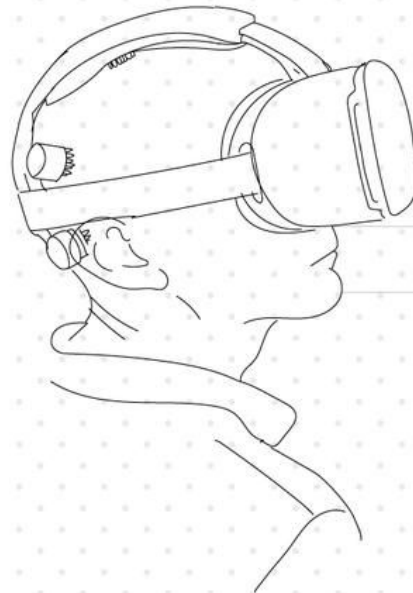
Neurorehabilitation



Stress Management



Facial expression



- Cognitive and social interaction
- Attention assesment

EOG
Electrooculography



- Cognitive flexibility
- Attention
- Neurorehabilitation

EEG
Electroencephalography



- Facial expression
- Facial palsy rehabilitation

EMG
Electromyography



- Cognitive load
- Arousal levels
- Affective states

EDA
Electrodermal activity



- Cognitive Load
- Arousal levels
- Affective States

TEMP
Skin Temperature



- User Engagement
- Affective State
- Stress Management

HR
Heart Rate



RESEARCH APPLICATIONS

SIGNALS

How it works. What areas we improve

- Professional training for athletes, pilots, etc - H-Brain monitors and improves concentration skills and reaction, which are key for the professional qualities.
(Athletes performance acceleration - Sport transformation)
- Rehabilitation (Healthcare) - with the H-Brain system patients restore brain neuro wires and their motor functions in faster path with sustained results
- Wellness & Brain fitness - H-Brain activates stress reducer mechanisms and trains brains for better results in work and study

How it works. Sessions intensity

- For professional sportsmen: 30 min daily
- For brain fitness: 30 min twice a week
- For stress reducer: 15 min a day 2-3 days a week

Our Advantages

- the use of unique math algorithms for low-latency (less than 100 ms) allocation of parameters of rhythmic bio & brain activities, that
 - provides means for monitoring the magnitude of the total delay of the feedback signal in relation to neuronal activity, and
 - allows the system to form a feedback loop with a characteristic time constant comparable to that of natural neural networks of the brain;
- ensuring the mobility and portability of the device;
- the most effective therapy and trainings:
 - faster achievement of a certain power of brain rhythms, and
 - long-term sustained increase in the power of these rhythms.

Software Price Plans

Direct to consumer biz model (B2C)

Headset +1Y Soft
subscription:

B2C for 1 mo - 200\$

B2C for 1 y - 2000\$

Partner biz model (B2B)

Headset +1Y Soft
subscription:

B2B for 1 mo - 500\$

B2B for 1 y - 5000\$

Rent and packs of sessions TBC



Disclaimer

This presentation does not cover and, moreover, does not limit the entire scope of options for the implementation of this technical solution, but is only illustrative material of a particular case of its implementation.

