NEURAL NAVIGATOR

CE FDA CLEARED

Precision makes Perfection

Navigated TMS motor mapping

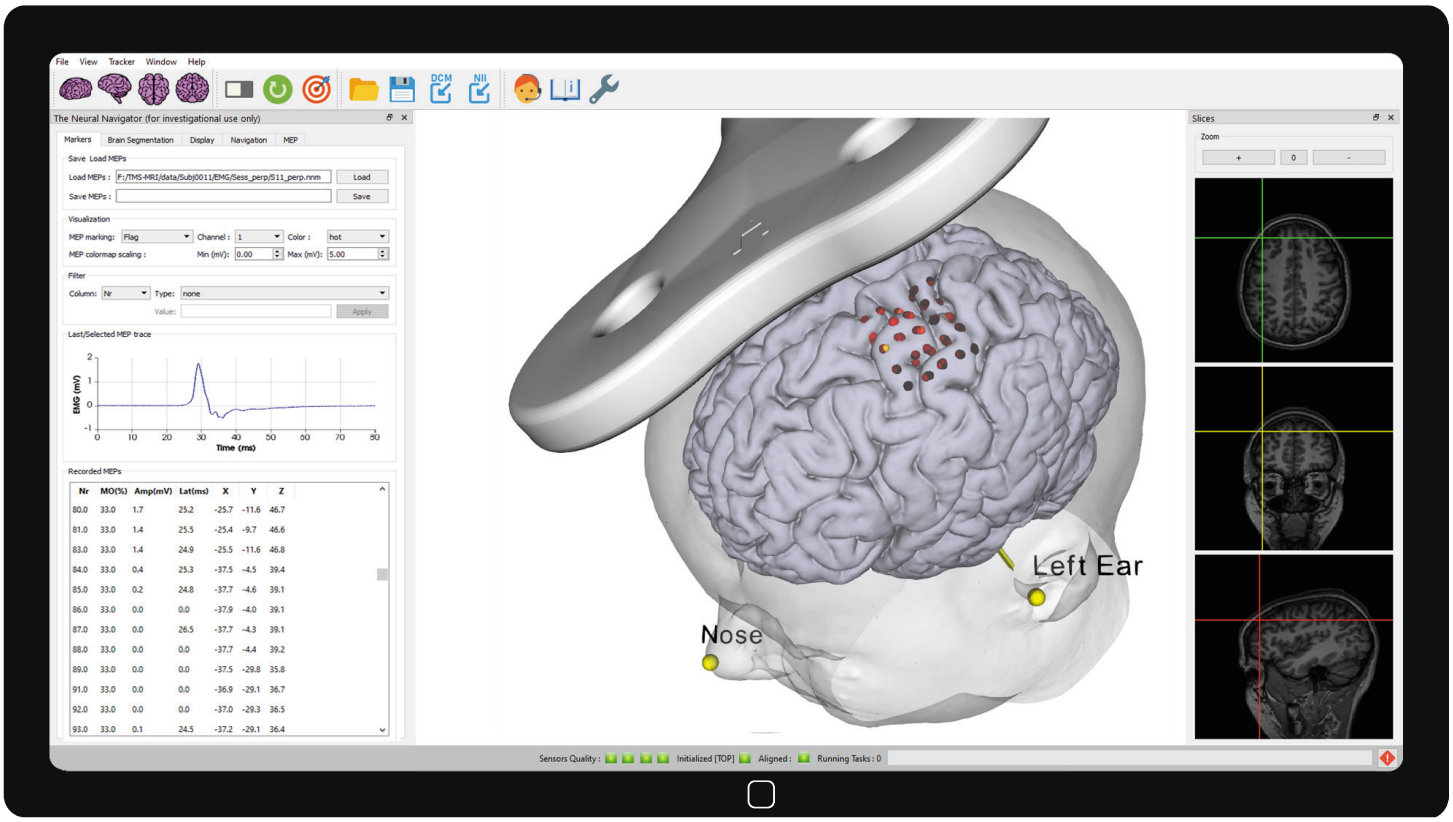
- MRI-guided mapping of motor-evoked potentials
- Automatic brain segmentation and target placement
- Import of MRI data through PACS
- Certified for medical use in USA, EU, Australia & more

MRI-guided mapping of motor-evoked potentials

The Neural Navigator Navigated MEP (NavMEP) integrates our high precision navigation system with the powerful features of our Brain4MEP EMG device. The Neural Navigator NavMEP is designed to map the functional motor area onto the brain surface, using MRI-guided neuronavigation, monophasic Transcranial Magnetic Stimulation (TMS) and simultaneous electromyography (EMG) recordings. The functional motor maps can be used for presurgical planning or monitoring of neural changes during stroke rehabilitation.

The Neural Navigator NavMEP records the stimulated brain region, the stimulation intensity and the features of the motor-evoked potential. It integrates this information and presents it as an intuitive functional motor map onto the brain surface.

The Neural Navigator NavMEP can read MRI images through PACS integration or from an external data source. The software contains an automatic segmentation algorithm, which subtracts the brain surface from the raw MRI images and automatic placement of registration markers. The neuronavigation device allows uninterupted tracking of both the TMS coil and the head and allows accurate reproduction of previously stimulated targets.



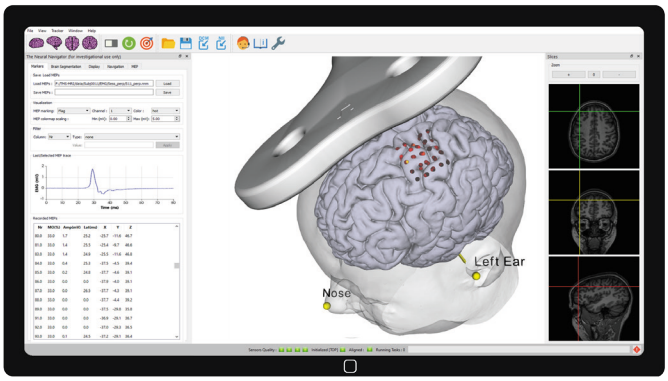
MAIN COMPONENTS

Magnetic position tracking
The Neural Navigator uses simultaneous real-time magnetic position tracking of the TMS coil and the patient's head in order to ensure accurate TMS coil placement. Magnetic position tracking allows continuous TMS coil tracking without disruptions due to line-of-sight obstructions and is robust to electromagnetic distortions during stimulation.

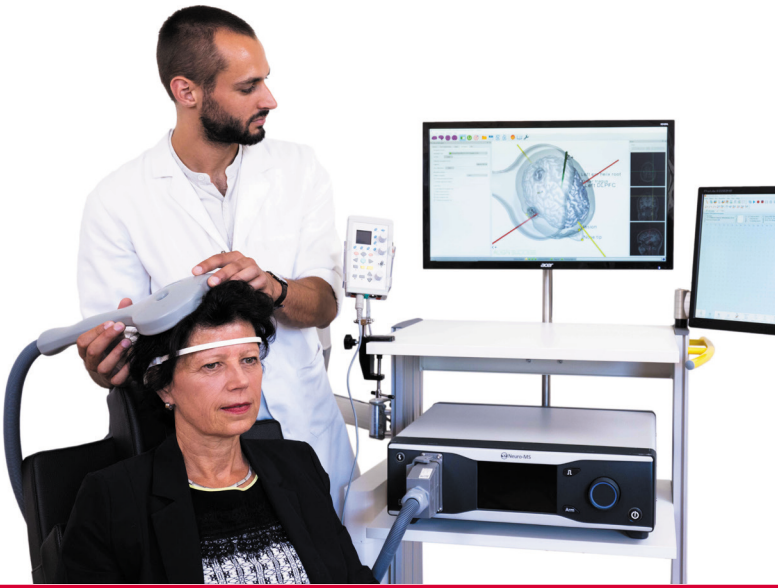
Monophasic TMS: NeuroMS
The NeuroMS can induce a strong monophasic electrical field with very low electromagnetic interference even during charge and discharge, which makes it ideal for the recording of motor-evoked potentials using electromyography (EMG).

EMG: Brain4MEP
The Brain4MEP device records EMG signals with a sampling frequency of 20000 Hz, allowing very accurate quantification of motor-evoked potential characteristics.

The software suite
This comprehensive software suite offers 3D and 2D visualization of MRI data, automatic brain segmentation and automated placement of markers and targets. It allows visualization of recorded motorevoked potentials onto the brain surface, which can be customized to your liking.



Full solution
We also offer a full neuronavigated TMS setup, including the Neural Navigator NavMEP and a TMS setup from one of our partners.



ACCESSORIES (optional)

TMS Treatment Chair
This reclining chair is especially designed for use during navigated TMS motor mapping. The materials in the chair are chosen such that magnetic tracking is undisturbed. This product is CE certified (class I) for clinical use.

SPECIFICATIONS

The Neural Navigator NavMEP allows 2D and 3D visualization of structural and functional MRI data. It supports automated identification of facial markers and popular treatment targets and allows full-automatic brain segmentation.

The Neural Navigator NavMEP employs an easy-to-use registration algorithm, which allows real-time navigation of the TMS coil with a precision of 4 mm or better. The TMS coil can be guided to a functional or structural target or to a previous stimulation target. It contains tools to monitor and optimize navigation accuracy, including head movement compensation and distance-to-target measurements. The Neural Navigator NavMEP records the stimulated brain region, the stimulation intensity and the features of the motor-evoked potential. It integrates this information and presents it as an intuitive functional motor map onto the brain surface.

The Neural Navigator allows reproduction of previously used TMS coil placement on the patient's individual MRI and on a generic head model. It provides several tools to guide and optimize the reproduction of previous TMS coil locations.

Supported MRI data types
The Neural Navigator is fully compatible with the most commonly used MRI formats, including DICOM and Nifti data formats. It allows import of MRI data through PACS integration of from an external data source.

Position tracking hardware
The BrainTRAK™ position tracking device digitizes 3D position and orientation of the hand held pointer and the TMS coil at a rate of 100Hz. It adopts a weak pulsed DC magnetic field generated by a small emitter, and measures magnetic induction in the sensors located inside the pointer and TMS coil socket to determine location and orientation. The spatial accuracy is better than 1 mm within a range of ~70cm from the transmitter. The tracking hardware operates in a stand-alone case, with its own power supply, and connects to the PC or laptop through a USB port. The system can be used in combination with a laptop, greatly increasing mobility. The complete navigation setup fits in a regular sized suitcase, which makes it ideal for bed-side investigations.

Technical
Electrical: Power line 100 - 240V ~ 50/60 Hz; input power 50 VA. Type: Class I Device with Type B Applied Part (probes). Installation class 2, Safety class 1. Operation environment: temperature 5°C to 40°C; between 10% and 90% non-condensing humidity; Maximum allowed height 2000m, maximum air pressure 79.4 kPa. Storage/transportation conditions: ambient air temperature between -40 °C and 70 °C in environments with a relative humidity between 5% and 95%. IP class: IP20. MDD Device class: IIa

Regulatory
The Neural Navigator is CE certified as a class IIa medical device in the European Union, FDA-approved in the USA, InMetro and ANVISA certified in Brazil, Health Canada certified for medical use in Canada and TGA certified for medical use in Australia. In these regions the Neural Navigator can be used for clinical purposes. The Neural Navigator as an electrical medical device is IEC606011 3rd edition (Electrical Safety) and IEC60601-1-2 3rd edition (electromagnetic compatibility) compliant. RoHS and WEEE compliant

BRAIN SCIENCE TOOLS
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