

# xensor™

electrode digitizer



Optimal precision in electrode digitization.



# xensor™

## Real-Time Digitization of Sensor Positions in 3D

**xensor** is the time-efficient and straightforward solution for precise and reliable digitization of sensor positions, as for example EEG electrodes.

The system's intuitive and user-friendly workflow in combination with an infrared-based high-accuracy measurement

system enables the user to easily pinpoint, digitize and visualize the positions of EEG electrodes in real-time.

Precision and reliability are essential not only for EEG source localization but also for registration of optode positions in NIRS or coregistration of EEG with

fMRI or MEG. In order to enhance the accuracy, **xensor** comes with an individual head shape generation feature. Thanks to this feature, the generated head-models are based on the subject's head proportions, resulting in realistic output to ensure reliable registration of electrode positions.



Real-time digitization



A list of electrodes gives a clear indication of the digitization progress.



Precise results with high-accuracy IR camera

### Core Features & Benefits

- Real-time tracking, registration and storage of electrode positions
- Continuous feedback on the location of the pointer tool and acquired electrode positions gives the user complete control over the process
- A guiding electrode selection tool detects current location of the pointer tool with relation to the subject. With instant suggestions of the matching location, the selection of the right electrode is fast and easy
- Automatically compensates for head movements
- High-accuracy digitization with the use of infrared camera (accuracy deviation of less than 2 mm)
- 3 head models with different head geometries available (import of individual head models via **asa** and/or **visor2** software possible)
- The head model is fitted to the acquired head shape points rendering a realistic virtual head which results in optimal localization results
- Effortless switching between three different head model views (original, best fit and deformed)
- A wireless remote control allows the users to switch easily between different steps in the workflow
- Step-by-step sampling of electrodes with the possibility to pause during the process
- Tracking hardware is not sensitive to electro-magnetic fields or metal objects in the surrounding space
- Standard pre-defined electrode positions are supplied for all standard **waveguard** caps (import of custom electrode layouts possible)
- Export of electrode positions in ASCII format and **asa** .elc format



# A User-Friendly and Straightforward Way to Obtain Reliable Results

## 1 Start the process!

Start the process by loading one of the predefined **waveguard** electrode layouts or your custom layout.



## 2 Register the fiducials

Correlate the patient with the head model by indicating 3 fiducial points as reference: the nasion, left and right ear position.



## 3 Generate head shape points

Acquire head shape points for exceptional registration accuracy by moving the pointer tool along the subject's head. With the acquired points the head model is transformed to a realistic head shape based on the geometry of the acquired points.



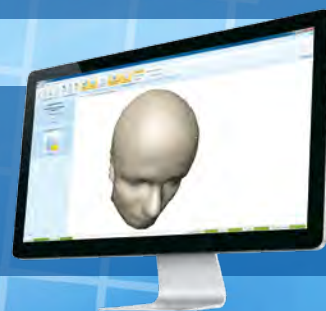
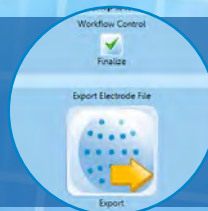
## 4 Register electrode positions

Digitize electrode position in real-time! The intuitive guiding electrode selection tool gives instant suggestions on the matching position, making the process straight-forward and simple.



## 5 Export electrode positions

The acquired electrode positions are ready for export to ASCII format or **asa**.



# xensor™ System Components

## Tracking tools

A wireless pointer tool is used for acquiring electrode positions. The position and orientation of the tool is tracked and visualized real-time on a monitor.

A head reference tool is affixed on the patient's head, to allow the tracking of the patient's head movements.



Pointer tool



Head reference

## xensor software on a high-performance PC

xensor software is delivered on a high-performance Windows 7/8 PC for optimized work efficiency.

## Optical tracking system

The electrode digitizer system is based on the NDI infrared camera system. The camera sends out infrared light which is reflected by multiple reflective spheres on the tools. This produces highly accurate location information that is used for the digitization of each electrode position.

## Remote control

xensor comes with a wireless remote control which allows easy switching between different steps in the workflow. Press left or right to go back or proceed with the procedure, choose the upper or lower button to rotate the 3D head model in different directions. Going through the digitization workflow with the remote control is as easy as that!



xensor is intended for educational and research use only.

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