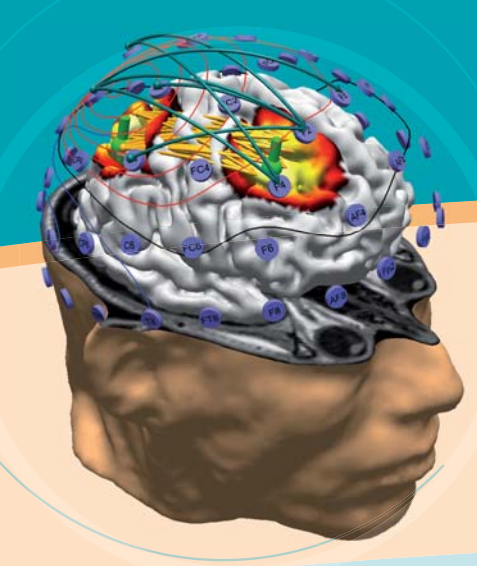


COMPUMEDICS NeuroScan™

®CURRY SCAN 7 NEUROIMAGING SUITE

®CURRYSCAN7 Neuroimaging Suite - Basic and Advanced Source and Image Analysis.

The **CURRY Neuroimaging Suite** software is divided into a number of license modules that can stand alone or work together to maximize your labs' flexibility. The **Basic** and **Advanced Source Analysis** licenses of the CURRY Neuroimaging Suite, consist primary of features and functions of the CURRY 6 software and greatly expand on those features.

CURRY Neuroimaging Suite provides a new architecture to the software that allows for greatly expanded functions and data handling. Ease of use has also been carefully considered. It has never been easier to process data in CURRY. The CURRY software uses a **more advanced database structure** that allows for optimized data management. Within the database, subjects can inherit the parent's parameters, allowing automated processing to be built in to the database. Additionally, CURRY **Macros** can be developed to handle virtually any processing task including batch processing, complete with the ability to design interactive and tutorial programs.

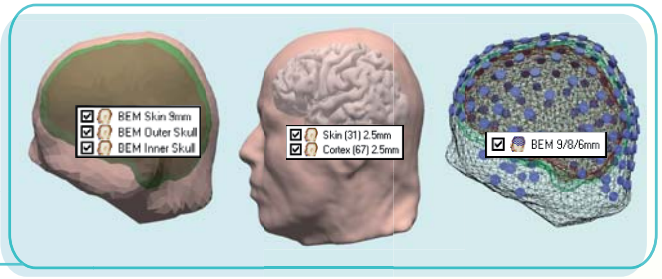
HIGHLIGHTS

- Integration of EEG, MEG, ECoG, ECG, MCG, with MRI, fMRI, CT, PET, SPECT
- Complete data processing from filtering to source analysis
- Event support, template-based event detection
- Principal and Independent Component Analysis (PCA, ICA) and filtering
- Individual realistic head models using the Boundary Element Method (BEM)
- Pre-computed BEM and Finite Element Method (FEM) head models
- Dipole fits - Dipole confidence ellipsoids are computed
- Dipole scans, extended source (patch) scans, and MUSIC scans
- Beamforming based on dipolar or extended sources
- Current density analysis, extended sources, Lp norms, sLORETA, eLORETA, SWARM
- Sensor Coherence and Source Coherence Analysis
- Export of results in Excel, MATLAB, and SPM formats
- Statistical Analysis
- Report generator
- Windows multi-document user interface
- Data import wizards for functional and image data
- Multi-core support using thread-based multitasking and parallelization
- Hardware accelerated real time rendering of 3D scenarios
- Context-sensitive help system
- Online updates

Selected Features in Detail

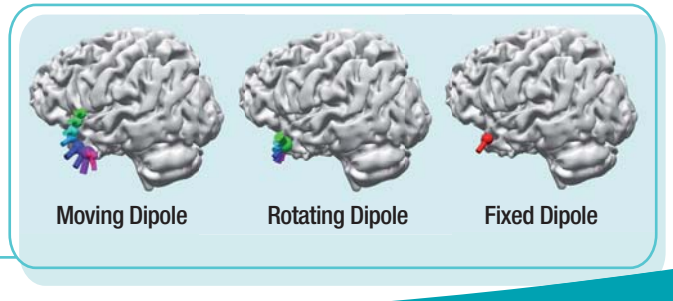
Head Model

CURRY can perform source reconstruction using the well-known spherical shell head models. However, one of its unique and powerful features is to generate a high-resolution realistic head model based on anatomical information. Such a realistic head model derived from individual MR Images (or CT) increases the localization accuracy of source analysis. A built-in procedure performs fully automatic generation of the realistic head model geometry (triangle nets) from T1-weighted MR images. CURRY also comes with pre-computed realistic head models that are applicable to all EEG data, including an FEM mesh with anisotropic skull layer.



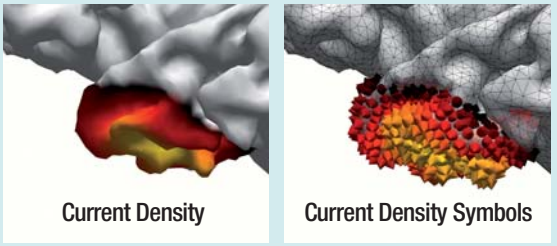
Dipole Fits

Based on the measured EEG and/or MEG data, the sensor positions and the head model, a fit of one or more dipoles can be done. The position of the dipoles can be completely free (moving dipole) or can be restricted (rotating or fixed dipole, mirror or regional constraints). Dipoles can be constrained to stay in the vicinity of a given location. Thus, it is possible to include prior knowledge from imaging modalities such as fMRI, PET, or SPECT.



Current Density Reconstructions (CDR)

A current density map is another independent analysis. It computes a current pattern on a regular 3D grid or the cortex that would explain the measured EEG or MEG at a certain time point. Now, all points on the surface can be active simultaneously. In order to come up with a solution, additional assumptions are needed. For example, the minimum norm constraint (L1, Lp, or L2 norm), maximum smoothness constraints (LORETA), and statistical measures (sLORETA) can be applied. SWARM can also be applied providing an sLORETA-weighted minimum-norm CDR.



Current Density | Current Density Symbols

Deviation and Beamformer Scans

During a scan, many locations throughout the brain are considered. For each location, a measure is calculated for the possibility that activity in that location could account for the measured EEG or MEG signal. Deviation scans determine if a dipole in this location would be correct. Beamforming is a technique that increases the spatial selectivity for each location.

Talairach coordinates and Atlas support

By specifying AC, PC, and the brain extensions, results can be transformed into Talairach coordinates and extensive anatomical and functional atlas information (Brodmann areas) can be accessed.

Documentation of Results

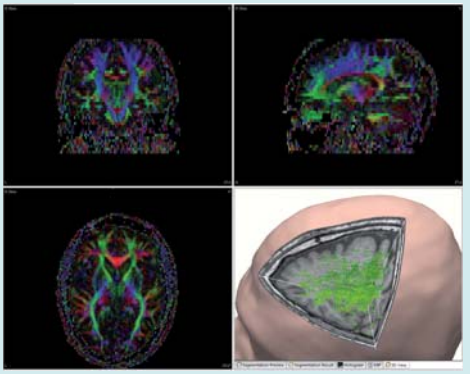
CURRY provides logging to a window and to a file with selectable verbosity. Extensive hardcopy features allow you to create .bmp,.jpg,.emf,.gif images in addition to the suggested high resolution format .png. A built-in report generator allows to create MS Word (rtf) documents on-the-fly.

Anatomy-Based Coordinate Systems

Landmarks (Nasion, Pre-auricular points, AC, PC, MS) and brain extensions serve for anatomy-based coordinate output (PAN/PPN systems, Talairach coordinates). Output coordinate systems can be changed at any time.

DTI Fiber Track Imaging

DTI FA image data allows you to view image data in color, where the different colors indicate the primary orientations of the fiber tracks. The results can be segmented in order to display the fiber orientations in very fine detail. This type of imaging is used to show connectivity, such as the dominating fiber tracks involved where there is a seizure disorder, or to show how currents are conducted within the brain.

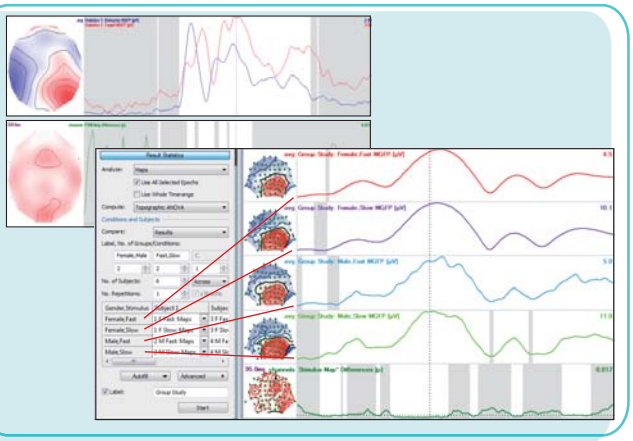


Averaging MRI Data Files

MRI data files may be averaged to create your own averaged data sets. Normalization using Talairach space allows the differently sized brains to be averaged together with minimal distortion.

Statistical Analysis

Whether you are using a single subject or a group design, test for statistical measures of significance in your data using Topographic Analysis of Variance (TANOVA). TANOVA uses assumption-free randomization statistics, which make less assumptions than classical parametric tests and are therefore more robust.



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COMPUMEDICS®
www.compumedics.com

Compumedics USA, Inc.:
6605 West WT Harris Blvd, Suite F
Charlotte, NC 28269
Toll Free: +1 877 717 3975
Ph: +1 704 749 3200
Fax: +1 704 749 3299

Compumedics Limited, Australia:
Headquarters
30-40 Flockhart Street
Abbotsford VIC 3067, Australia
Ph: +61 3 8420 7300
Fax: +61 3 8420 7399
Free Call: 1800 651 751

Compumedics Germany GmbH:
Global HQ for Compumedics DWL
Josef-Schüttler-Strasse 2
D-78224 Singen, Germany
Ph: +49 7731 79 76 9-0
Fax: +49 7731 79 76 9-99

2 DECADES of ADVANCED BRAIN RESEARCH

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