

# CURRY 6™

**True Multi-Modal Neuroimaging**

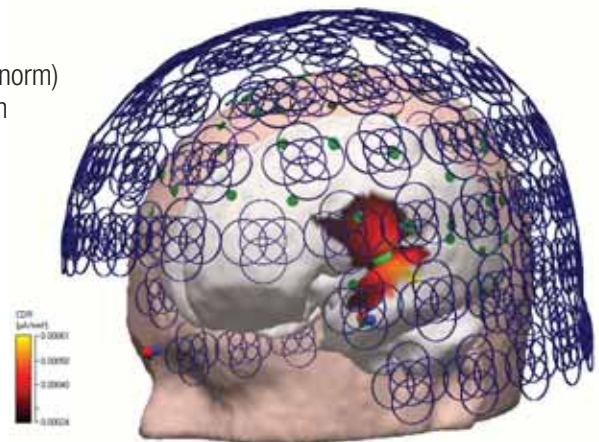


## What's new in CURRY 6?

**The following is a summary of new or enhanced features since the release of Curry 5:**

### Highlights

- Multiple devices, combined EEG / MEG evaluations
- Template based, improved event detection, automated selective averaging
- Artifact reduction via PCA-component projection
- Vector Beamformer scans (3D grid, cortical surface with and without normals)
- SWARM current density reconstruction (sLoreta-weighted accurate minimum norm)
- Minimum Lp norm current density reconstruction with automatic regularization
- Timecourse display for scan dipoles and current density analyses
- Improved DICOM wizard for anatomical images
- Automated, volume based co-registration for 2nd/3rd image dataset
- Talairach coordinate support
- Built-in anatomical and functional atlas
- Multiple cut-planes showing image data in 3D
- Cortical surface inflation
- Extended toolbars
- Montage editor
- Report generator
- Export of results to Excel, Matlab, and SPM
- Improved performance for multi-core/-processor systems through parallelization



Dipole and current density analysis of combined EEG and MEG data

### User Interface

- Extended toolbar; toolbar icons show up in menus and context menus
- Report generator window (see results)
- New view mode showing Functional Data and Maps with horizontal delimiter
- New true-color icons
- UI refresh during long computations
- Parameters that are used but not editable are read-only now, not disabled
- Option to save a temporal movie for all windows in display area
- Option to adjust the width of the parameters scroll bar
- Option to adjust the width and color of the drawing area focus indicator

### Database

- Option to add built-in image data to a study
- Option to launch windows explorer from context menu

### Functional Data Import Wizard

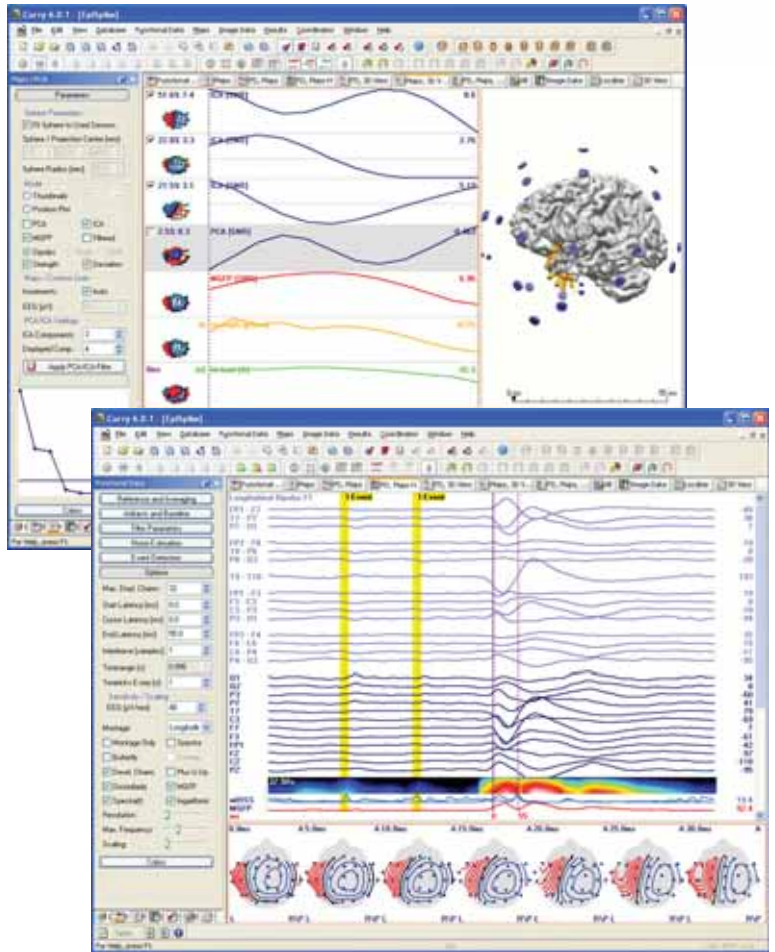
- EGI file format support
- CTF file format support
- 4D Neuroimaging (BTI) generic file format support
- Neuromag epoched (fif) generic file format support
- Stellate 6.0 file format support
- XLTEK rev K file format support
- Column heading autodetection for digitizer file import wizard
- Display of compensation coils in 3D preview
- Label matching recognizes 360 labels, Oostenveld's 5% system labels added
- Option to read epoched data files as continuous

## Functional Data

- Functional Data toolbar
- New Reference and Averaging parameters
- New Options parameters
- Multiple device support (EEG + MEG), parameters per device
- Graphical montage editor
- Montage and channel reordering, separators between channels
- Event display and editing
- Template based event detection, automated selective averaging
- Adjustment of start/end of latency via ctrl+cursor keys and alt+cursor-keys
- Adjustment of start/end of latency via text fields
- Option to select a single latency using Shift+DoubleClick
- Option to display time-resolved spectra computed with STFFT
- Option to display dissimilarity
- Option to display data covariance matrix
- Option to use predefined EEG frequency bands for filtering
- Optimized computation of percentile 20 noise level for large number of samples
- Optimized display of cursor (time stamps, thickness)
- Export of PCA/ICA-filtered data
- Export of events as epoched file, new study automatically opens

## Maps

- Maps toolbar
- Multiple device support (EEG + MEG), combined maps and PCA/ICA analysis
- Artifact reduction via PCA-component projection
- Option to select number of maps in thumbnail view
- Option to display of dipole "loadings" and goodness-of-fit for scan and CDR dipoles
- Line indicating SNR=1 in component strength plot



Functional Data and Maps

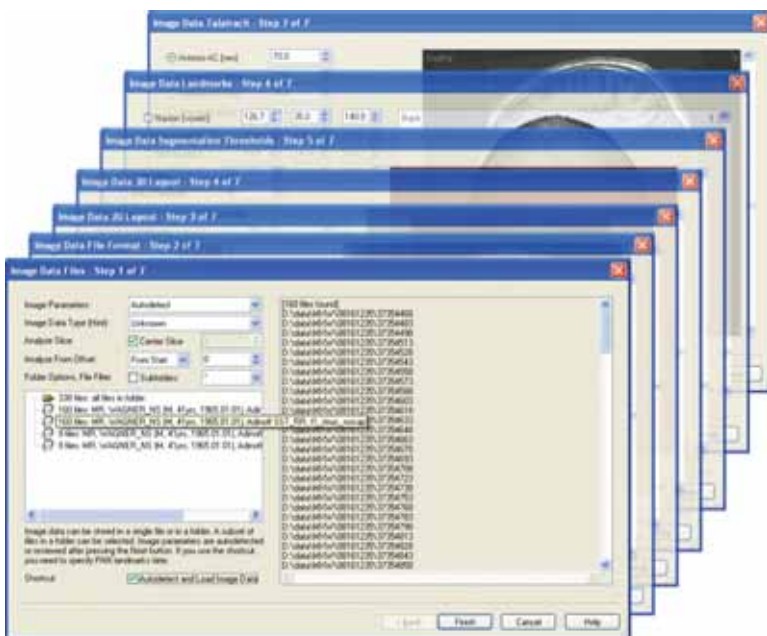


Image Data Import Wizard

## Image Data Import Wizard

- GE Signa 3, 4, 5, and LX file format support
- Siemens Magnetom file format support
- Imp (Source/Slice) parameter file format support
- DICOM Lossless JPEG and RLE format support
- Folder contents preview and selection based on DICOM series and/or file sizes
- DICOM file sorting according to study/series IDs
- DICOM: enhanced slice distance detection
- DICOM: correct interpretation of (nested) undefined length tags
- RGB support (color channel selection)
- Signed image support
- Option to autodetect additive and multiplicative value for signed and float image data
- Option to include slices in subfolders in "image data folder" mode
- Option to autodetect and load all slices without going through the wizard pages
- Option to correct for wraparound artifacts
- Display of file size and number of bytes read (per slice) in wizard
- Vertex landmark removed
- Review mode where next always jumps to the next page instead of next item
- Talairach co-ordinate support (new landmarks and wizard page)
- PAN landmark autodetection using volume-based co-registration with Image Data 1
- Talairach parameter autodetection based on Image Data 1
- Voxel size check using volume-based image data co-registration with Image Data 1

## Image Data

- Image Data toolbar
- Built-in anatomical and functional atlas
- Options parameters for cursor, raw slice, atlas and display options
- Menu buttons in Marker and Segmentation parameters for quick functionality access
- Tasks for adding second and third image data
- Tasks for reviewing landmarks and Talairach parameters
- Option to display in radiological (R,L) orientation
- Option to see through stop markers in segmentation preview
- Option to omit fore half of image in segmentation preview and segmentation result
- Option to segment atlas structures
- Option to move cursor to nearby intensity COG for marking electrodes
- Option to move cursor to nearby intensity COG and export to Localize
- Option to update cursor while drawing markers
- Option to extend lowermost slice
- Option in BEM geometry to use existing markers for cortex segmentation
- Option to display the difference of two image data sets
- Option to delete Localize entry in Image data context menus
- Option to prepare inflation when creating a triangle mesh
- Option to prepend a (custom) label to all results of BEM geometry setup
- Option to interpolate image data
- Option to use active coordinate system for orthogonal view alignment
- Option to create Voxel mesh for 3D display of disconnected segmentation results
- Option to create tetrahedra mesh for third party FEM software support
- Option to create cube mesh for third party FEM software
- Option to save meshes in third party FEM software (CAUCHY) format
- Option to mark dipoles, electrodes, markers during image data export
- Option for RF inhomogeneity correction during image data export
- For image data export, use image data display alignment and interpolation
- Alpha-blending of atlas and results into image data (using transparency)
- MIP, Segmentation preview, segmentation result share the same view setting
- Display of volume conductor (spheres or BEM)
- Display of electrodes
- Display of landmarks
- Display of maps as option in lower right
- Display of atlas labels in tooltips
- Number of BEM models increased to 30
- Number of Overlays increased to 100
- In BEM geometry setup, minimum cortex-skull distance increased to 3.0mm
- In BEM geometry setup, minimum skull thickness decreased to 3.5mm
- Inion of built-in image data moved down 10mm



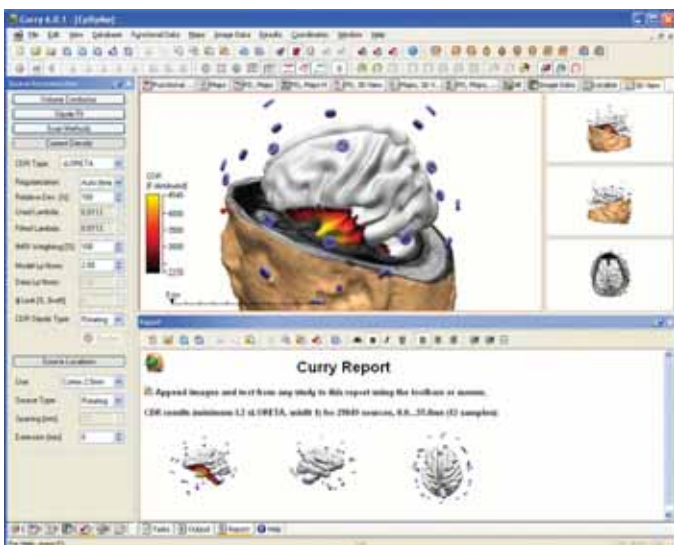
Image Data and Help

## Source Reconstruction

- Multiple device support (EEG + MEG), conductivity factor fit
- Infinite Homogeneous volume conductor model
- Volume conductor selection shows details about BEM models now
- Possibility to select "All" as the number of dipoles in simulation mode
- Dipole "cross-validation" with one channel per dipole each switched off
- Extended source scan now creates scan currents instead of scan dipoles
- Vector Beamformer scans (3D grid, cortical surface with and without normals)
- CDR dipoles enable timecourse display for current density analyses
- sLORETA vectors with orientations from underlying MNLS
- sARETA (sLORETA with norm < 2)
- SWARM current density reconstruction (Sloreta Weighted AccuRate Minimum norm)
- MNLS renamed to Minimum Norm; Lp norms with automatic regularization
- Option for time-dependent regularization for Minimum Norm,
- Optimized seedpoint search for dipole fits
- Optimized leadfield handling requires less recomputations
- Optimized sorting of surfaces in source locations so that cortical surfaces appear first

## 3D View

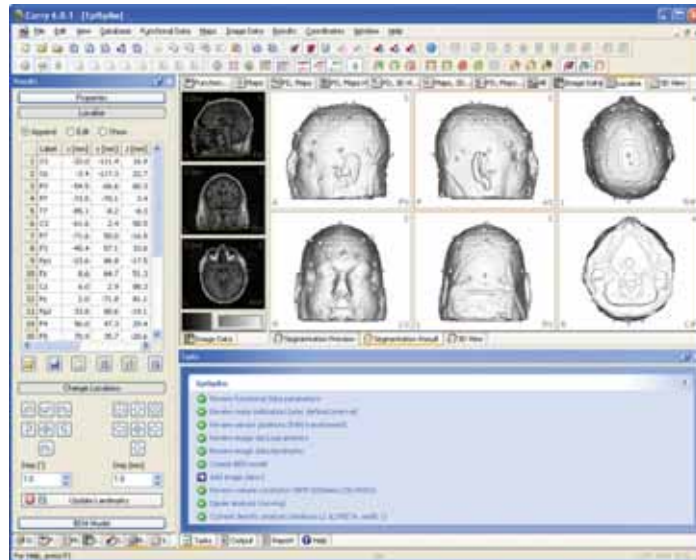
- 3D View toolbar
- Ellipsoid mode toolbar button
- Multiple cut-planes showing image data, automatic flip mode
- Cortical surface inflation, with avi export
- Two custom views
- Optimized performance using advanced OpenGL features
- Option to enable a safe mode in case there are display problems
- Option to display Localize locations
- Option to display distances from reference
- Option to display contour and difference maps for reconstruction results
- Option to display of lead field
- Option to adjust rotation time
- Option to export cursor position to Localize
- Rotate eternal mode
- Manual scaling for dipoles and CDR/Scan meshes
- New Maximum (as opposed to movie) mode for CDR, Scans.
- Offer to use 3.0° as the rotation stepsize when saving rotation as avi file
- Optimized performance using advanced OpenGL features
- Up to 3 transparent objects simultaneously



3D View and Report

## Localize

- New context menus
- Edit mode user interface with option to switch off location editing
- Tooltip for large table entries
- Change location parameters
- Option to load rs3 files
- Option to load Curry 3 format pom files
- Option to load raw x,y,z column files
- Option to reject background hits
- Option to move sensors around using updated anatomical landmarks
- Option to append (instead of replace) loaded or imported locations
- Option to project locations onto surface
- Option to import landmarks, electrodes
- Retrieve normal orientation from image data
- Creation of anatomical landmarks based on functional landmarks
- New electrode positions I1, I2, PO9, PO10 in 10/20 system setup



Localize and Tasks

## Results

- Report generator with toolbar, full-featured text editor and export to MS Word
- Coordinates Menu
- CTF, MNI, Talairach coordinate systems added
- Result (dipole, scans, cdr, leadfield) export to Excel (csv) files
- Result (dipole, scans, cdr, leadfield) export to MATLAB files
- Result (scan cdr, cdr) export to SPM/Analyze files
- Electrode/coil locations saved with results
- Option to clone BEM and surfaces
- Option to open Windows Explorer from result tree context menu

## Miscellaneous

- Optimized performance for multi-core/-processor systems using parallelization
- Option to send email to Helpdesk with system info and screenshot
- Option to stop long computations by pressing ESC
- Option to stop long computations by deleting a special file in user's application data
- Option to adjust minimum frame rate for movies via defaults file
- Option to adjust default save mode for unfilled studies via defaults file
- Option to user-define color scales via defaults file
- Option to copy whole window to clipboard
- Option to save hardcopy images in png, gif, jpg, bmp, emf formats
- Preselected video codec for avi export (Microsoft Video 1, 100% quality)
- New false color scales, e.g. black..blue..red..yellow

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