Some Ibis Project Users

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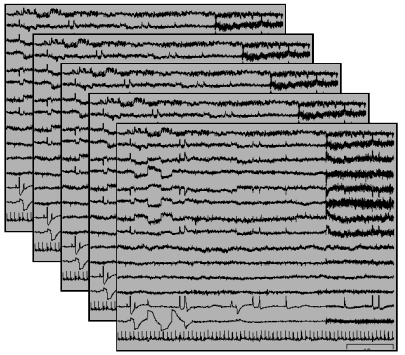
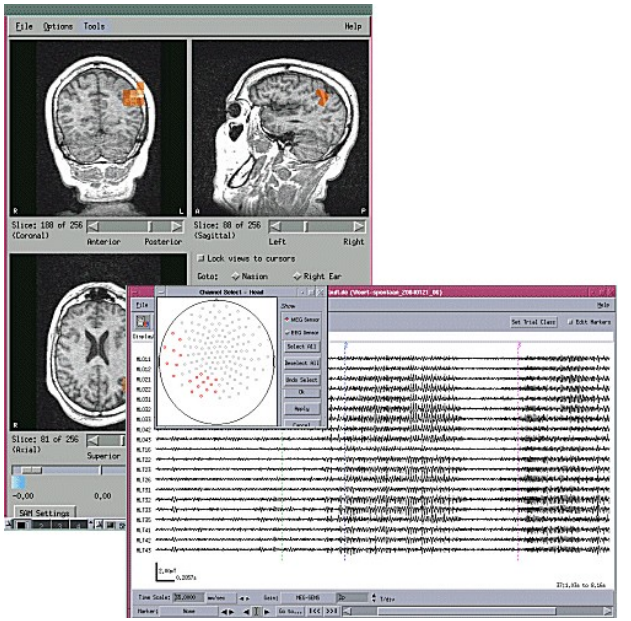
VU Medical Center
MEG Functional Imaging

Magneto Encephalography System (MEG)

courtesy CTF MEG Systems



MEG signals



Analysis tool for MEG data

courtesy VUMC MEG Centrum

- Reconstructs source of electrical currents in the human brain based on magnetic fields measured just above the scalp
- Multiple Sclerosis, Altzheimer, phantom pain

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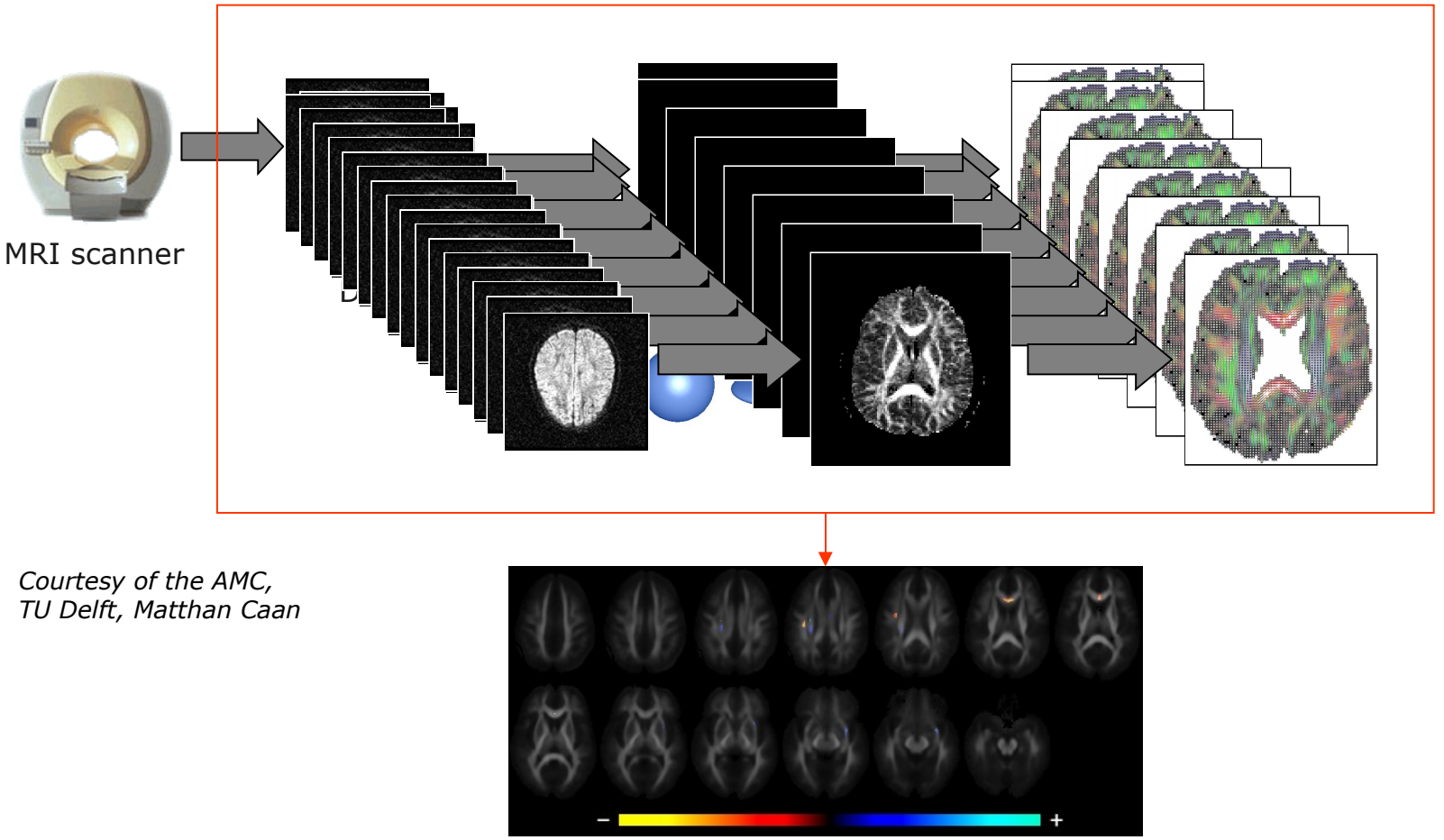
VU Medical Center MEG Functional Imaging

- Locating the sources of brain activation is computation intensive (fit data to model)
- Existing commerically available non-Java software from MEG International Services
- Test on local machine on test data set
- Full test on 340 data sets, 116 Gigabytes, would take several weeks
- Deploy to the grid to analyse scans of many patients in parallel
- Runs for a less than two hours
- Moved bottleneck from computation to medical doctors

VU Medical Center / AMC: MRI DTI-based Population Studies



Courtesy of the AMC, TU Delft, Matthan Caan

- Diffusion Tensor Imaging
- Successful characterization of schizophrenic patients vs. controls

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VU Medical Center / AMC: MRI DTI-based Population Studies

- New techniques to discriminate populations with pattern classification techniques
- Tract-based spatial statistics (TBSS) was used as an analysis tool.
- Image analysis is computation-intensive
- Existing non-Java software, FSL written mainly by FMRIB Analysis Group, Oxford University, UK
- 3844 brains compared
- Sequentially, this would take 12 weeks 24/7
- Done in 1 weekend

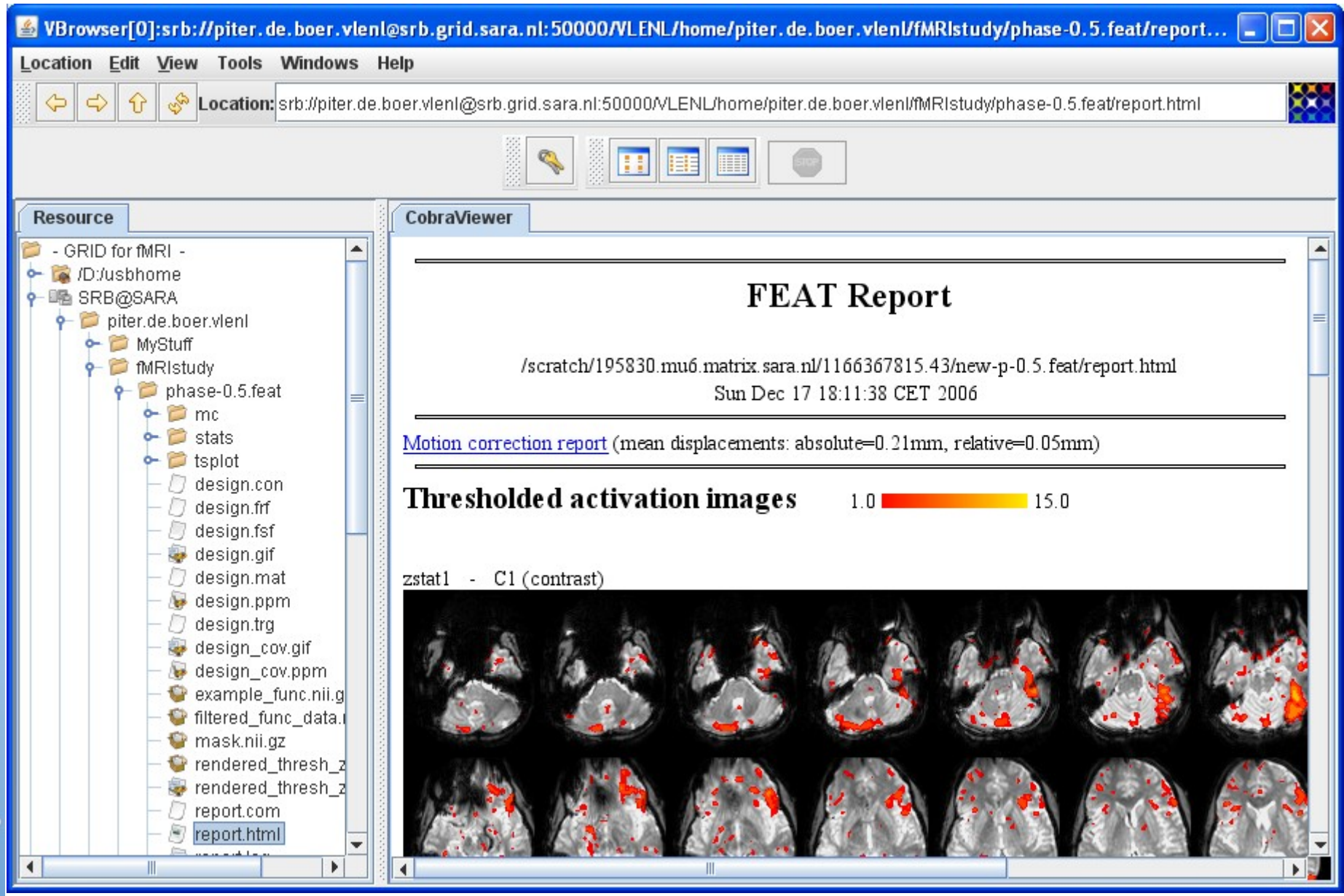
VU Medical Center Tools

- Generic task farming framework based on scripting
  - Place executable in a directory
  - Place data set in directory
  - Parameter file
  - Use JavaGAT to run executable on all datasets
  - Monitor progress
  - Copy back all results and output
  - Security is of key importance
- Keith Cover from the VUMC wrote the framework by himself! (with some support)

AMC: Vbrowser

- Used by Medical Doctors
- Runs on their desktops, typically MS Windows
- Looks exactly like the windows explorer
- Browse through data files
  - Local disk
  - Hospital storage resource broker
  - The grid

AMC: Vbrowser



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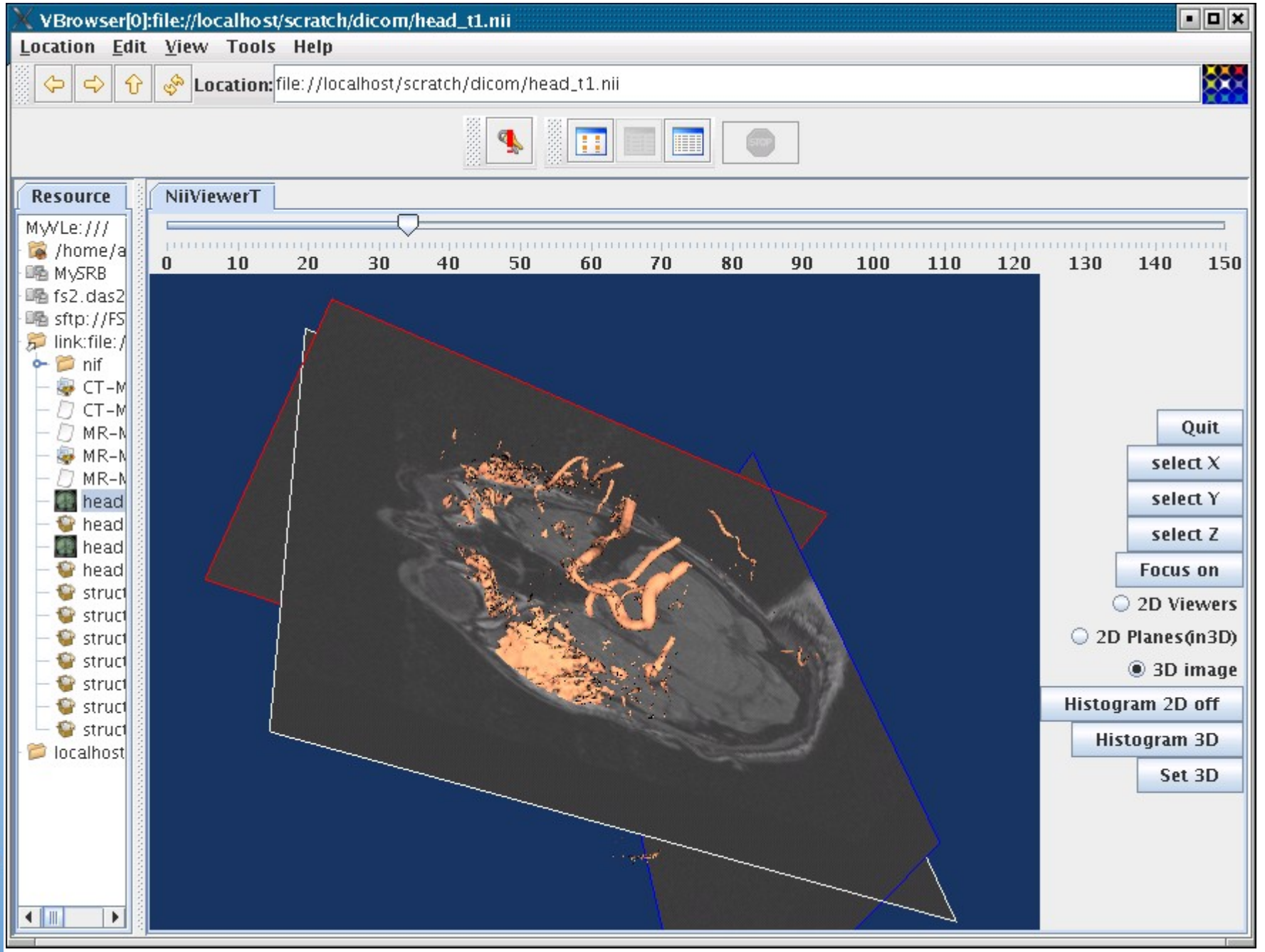
medical data management

AMC: Vbrowser



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medical data management

D-Grid

- Large German Grid project
  - HEP-Grid (High Energy Physics)
  - C3-Grid (Climate Resaearch)
  - WISENT (Energy Meteorology)
  - InGrid (engineers)
  - TextGrid (Textual Research)
  - MediGrid (Medical Research)
  - AstroGrid (Astronomical Research)
- Several subprograms use JavaGAT
- D-Grid Integration Project provides official JavaGAT support for D-Grid
- **ProC workflow engine**

Analyse data of Planck Satelite

Analyse Cosmic Microwave Background