

## LONI Image Data Archive



# IDA Data Management

- Multiple data sharing levels within projects
- Archiving
- Visualization
- Querying
- Forming data collections
- Downloading

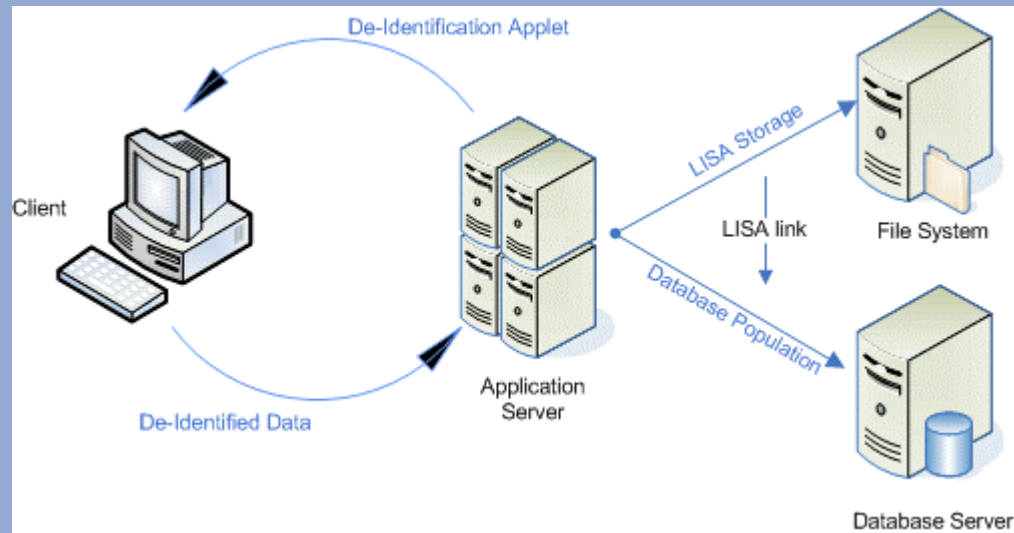
The image displays two overlapping browser windows from the LONI website. The background window shows the 'Image Database Search Results' page, which includes a search bar, navigation links, and a table of search results. The foreground window shows the 'LONI Image Viewer' interface, which features a central image of a brain slice, navigation controls, and a sidebar with 'SELECT ORIGIN & ROW' and 'SELECT SLICE' options.

Subject	Species	...
000_0102	Human	
000_0103	Human	
000_0104	Human	
000_0105	Human	
000_0106	Human	
000_0107	Human	
000_0108	Human	
000_0109	Human	
000_0110	Human	
000_0111	Human	
000_0112	Human	
000_0113	Human	
000_0114	Human	
000_0115	Human	
000_0116	Human	



# Archiving Overview

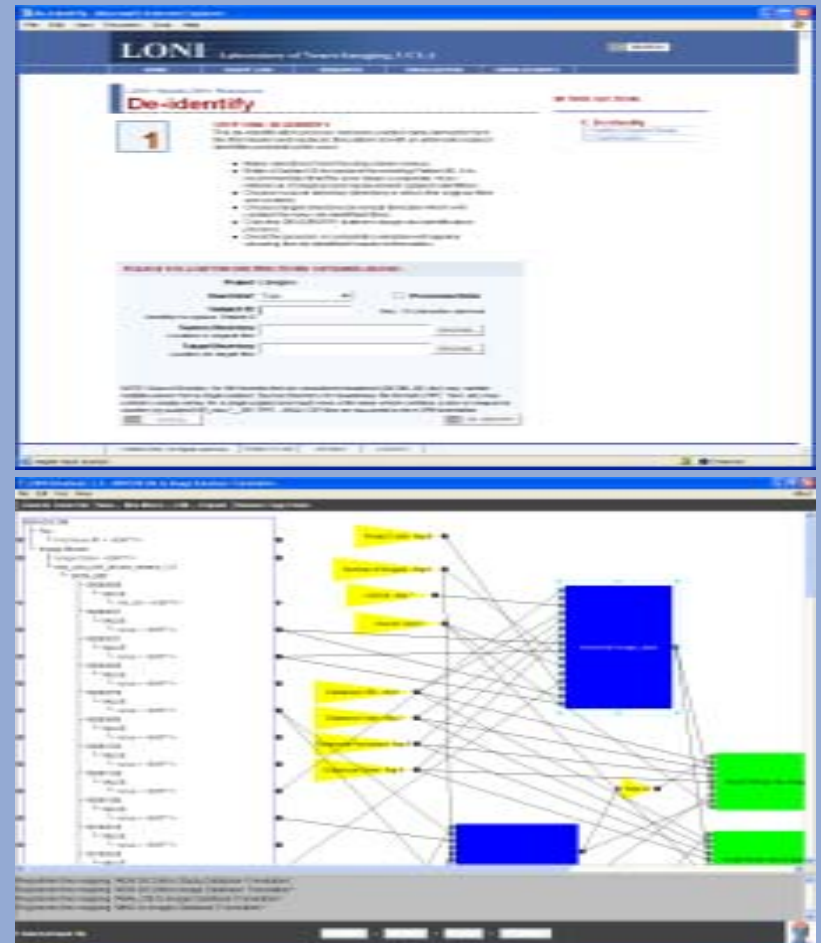
- De-Identification
- Transmission
- Storage
- Database Population





# Database Population

- Metadata sources
  - User-supplied metadata is entered via the web GUI
  - Image header-supplied metadata is extracted via source-specific Debabeler mappings

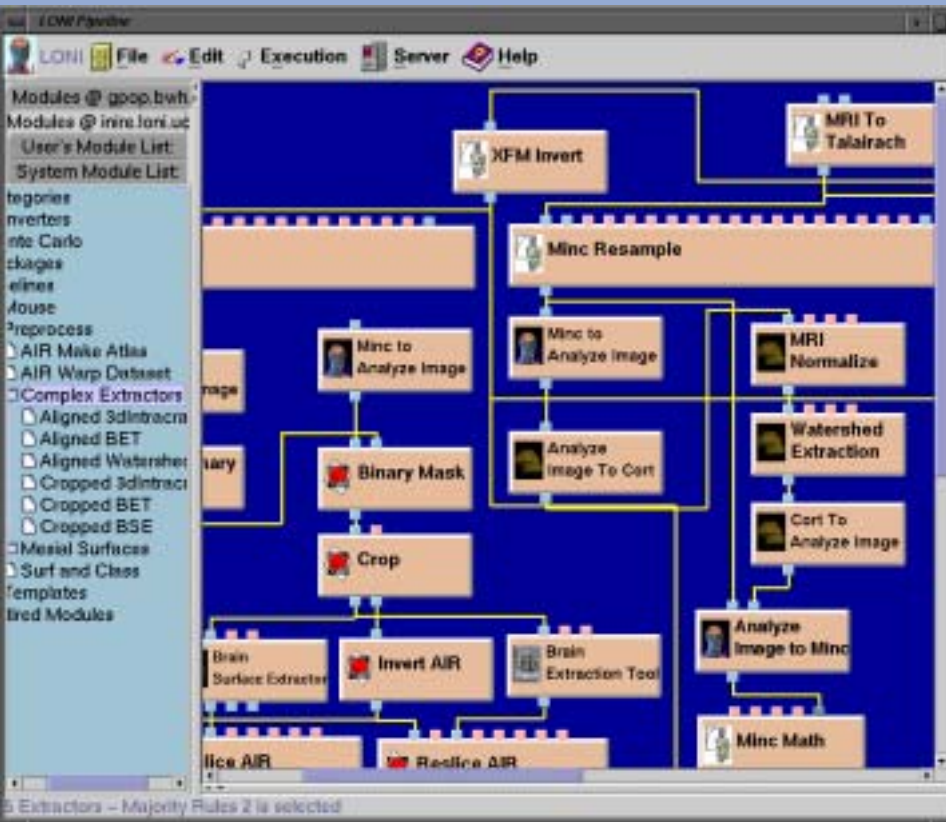


# Storage

- LONI Information Storage Architecture (LISA)
  - Provides encrypted transfer of files between sites
  - Enforces permissions
  - Enables an efficient transfer of many files at once (less protocol handshaking eliminates the overhead of transferring many little files)
  - Assigns an identifier to each file that is unique across sites



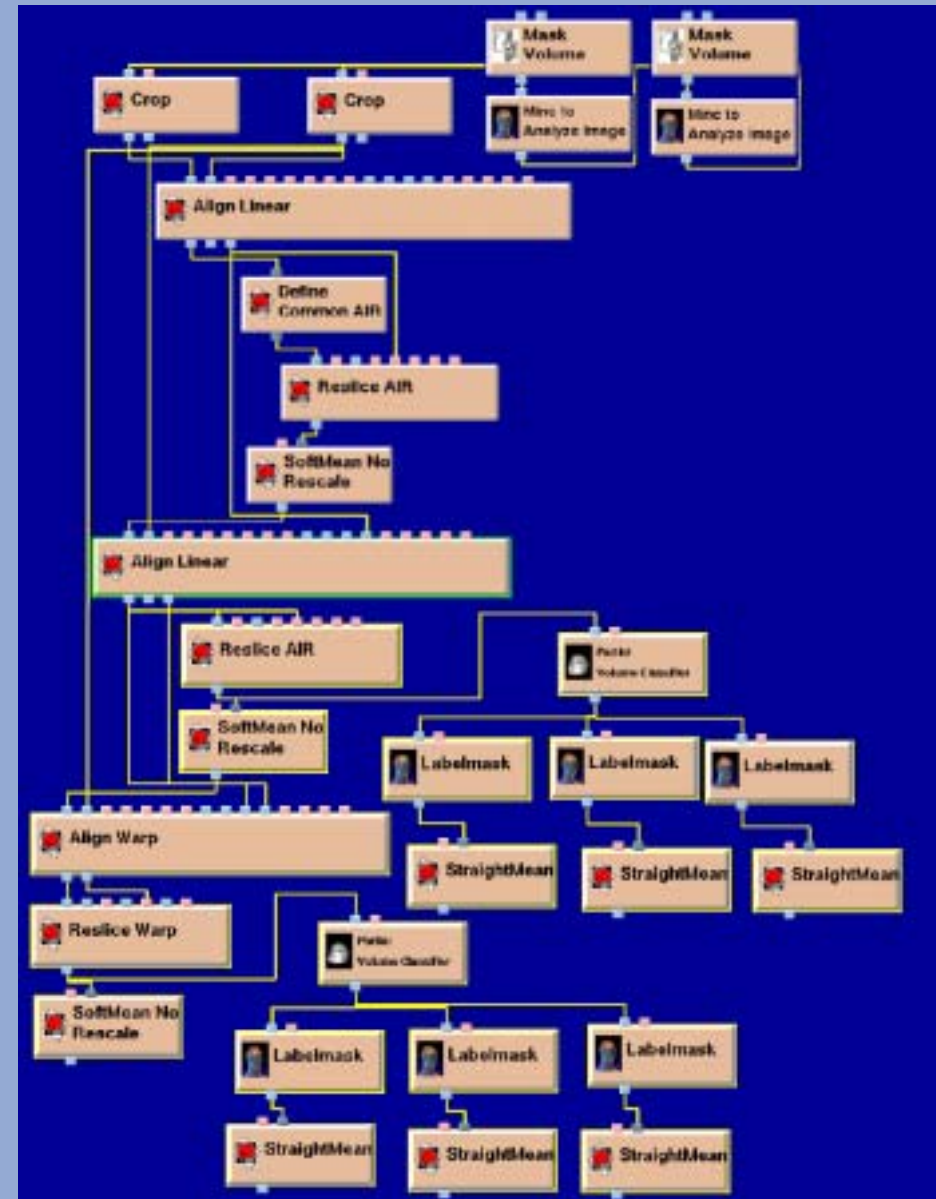
# Principles of an Integrated Processing Environment



- General
  - Capture current and future modular package designs
- Interoperable
  - Seamless interaction of different packages
  - Platform independent
- Simple and flexible
  - Visual programming
  - Custom methodology
- Powerful
  - Dataflow execution model
  - Distributed computing

# Example – Atlas of Normal Young Adults

- T1-weighted MRI average of 452 subjects in a linearly least distant space
- Final registration to atlas space is non-linear
- CSF, gray and white matter probability maps generated in atlas space
- Modify inputs for atlases of new populations



# Atlas of Normal Young Adults

## Processing

- 19 hours of processing using 48 processors
  - 81% processor efficiency
  - 31 days for a single processor
  - Without automation, analysis requires > 4000 man hours
  - 15391 intermediate files – 46.3 Gb
- Controlled by a laptop (PIII)

