SHAring NeurOImaging Resources

What is Shanoir ?

Shanoir is an open source web application designed to:

- Archive and Index
- Search and Retrieve imaging data
- Share imaging data

With:

- a user-friendly secure web access
- a database model build on an ontology [1]

(OntoNeuroLOG, from the NeuroLOG [2] project)

In order to:

- Enhance data availability and integrity
- Structure the data / Manage data provenance
- Facilitate collaborative research works
- Pool acquisition resources

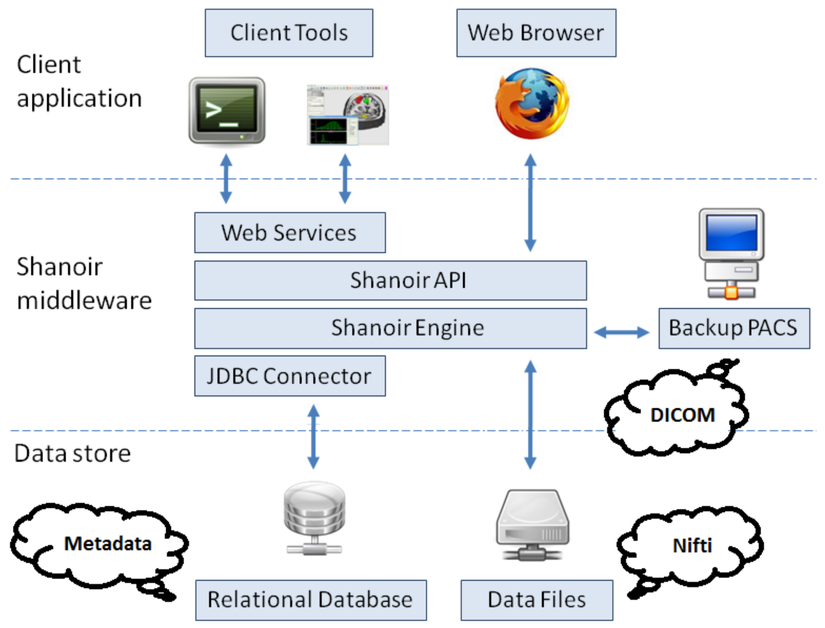
[1] **Ontology** : formal representation of knowledge as a set of concepts and the relationships between those concepts within a domain.

[2] **NeuroLOG** : http://neurolog.i3s.unice.fr/

Shanoir Functionalities

- Data organization
- Study card mechanism
  - Study cards are used to align Dicom meta-data to the semantic concepts
  - Study cards allows to map information that are not present in DICOM tags
  - The study card is applied during the DICOM import
- Clinical scores
  - Shanoir offers features for attaching Instrument-based assessments scores (i.e. neuropsychological tests such as EDSS or MMS)
- Clients applications
  - Client applications (e.g. MedInria) can query and retrieve the data from Shanoir through freely available web-services (SOAP) in Java (*ShanoirTK*) or C++ (*QtShanoir*).

Shanoir Architecture



Shanoir is organized as a repository of neuroimaging files coupled with a relational database where additional metadata are stored.

Online Visualization of stored data

Data de-identification and patient privacy

Download stored data

Support for processed (derived) data

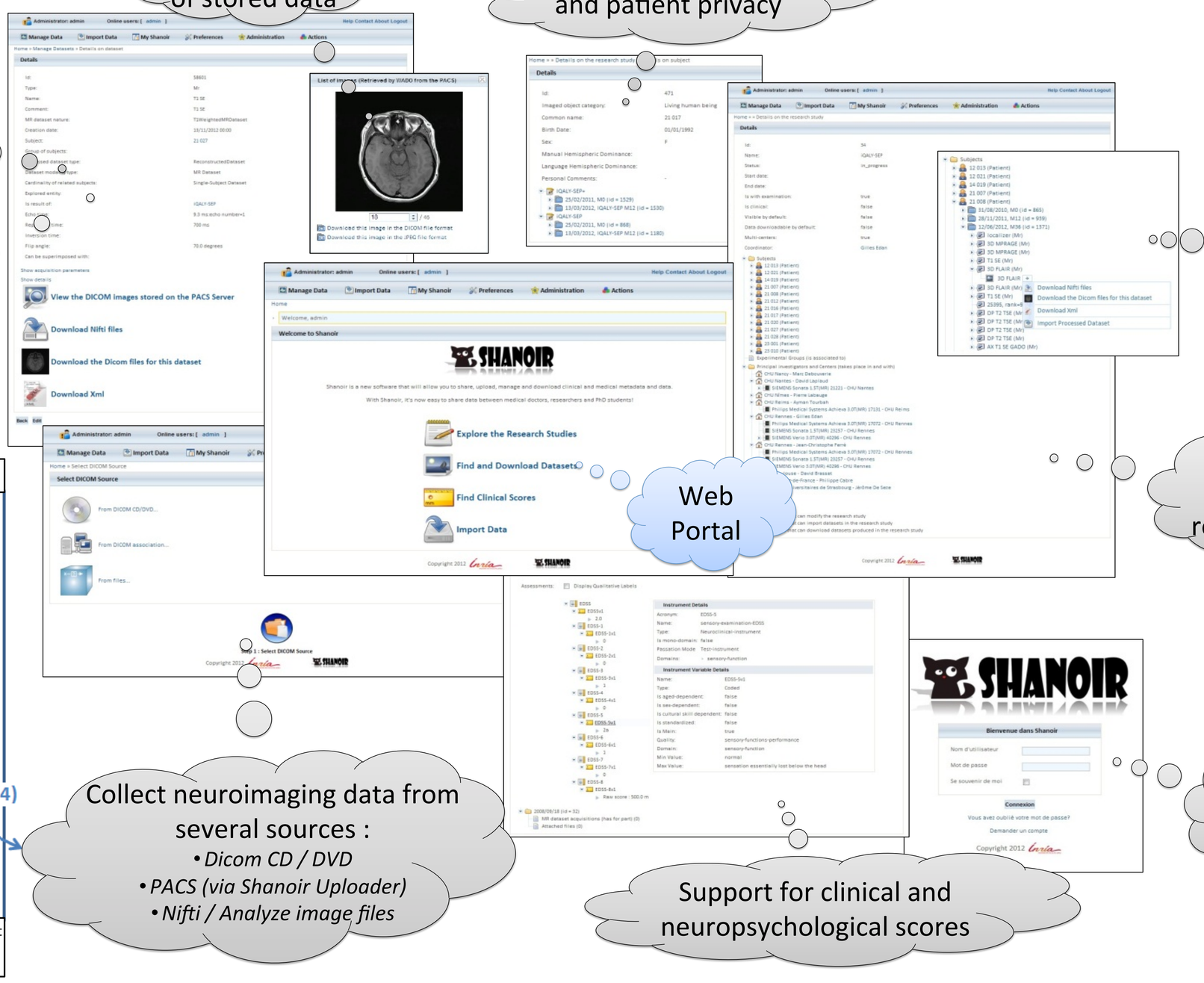
Download Processed data

Support for multi-centric research studies

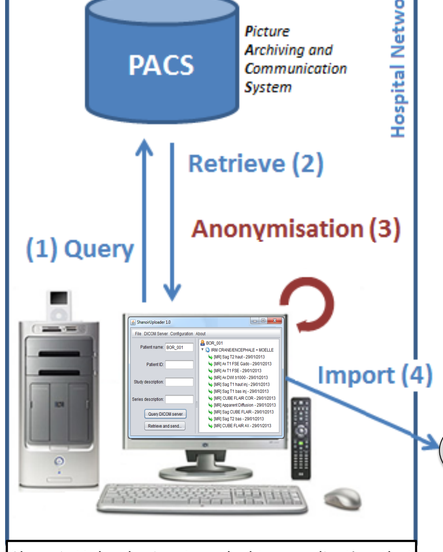
Web Portal

User access control

Support for clinical and neuropsychological scores



Shanoir Uploader



Shanoir Uploader is a Java desktop application that securely transfers data between a PACS and a Shanoir server

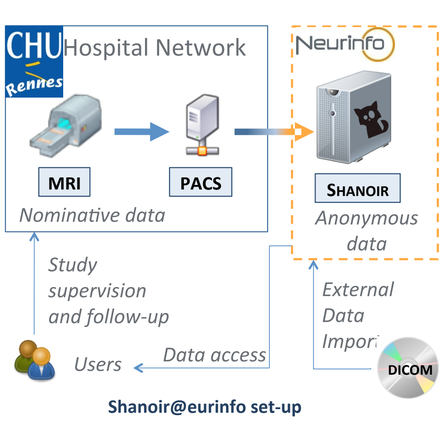
Collect neuroimaging data from several sources :

- *Dicom CD / DVD*
- *PACS (via Shanoir Uploader)*
- *Nifti / Analyze image files*

Screenshots of the Shanoir web interface

Neurinfo Platform

Neurinfo[2] is a **research** platform, from the University of Rennes I, located at the University Hospital of Rennes. It operates a Siemens 3T Verio™ MRI and uses **Shanoir** to manage and publish its data as well as data from **multicentric studies**.



Shanoir@eurinfo set-up

27	Centers
53	Users
55	Studies
1706	Subjects
2268	Examinations
1126 GB	Raw Data (DICOM)
989 GB	Processed Data (Nifti)
20 GB	Meta-Data
27	Centers

Shanoir@Neurinfo figures(mid-2013)

[2] http://www.neurinfo.org/

OFSEP Platform

The OFSEP[3] project wants to include a nationwide, **clinical**, cohort, representing about half of the MS patients living in France, for a **longitudinal follow-up** (clinical, biological and neuroimaging data). **Shanoir** has been chosen to be the OFSEP neuroimaging storage platform.

Image Resources Centers (IRC) for the OFSEP project

- **4** IRCs have already installed it
- **11** IRCs are installing it
- **13** IRCs are interested

Research Project Centers working on nested cohorts

- **21** centers are already using a MRI protocol sequences including the one recommended by the OFSEP
- **8** more are coming up

MR models diversity in OFSEP

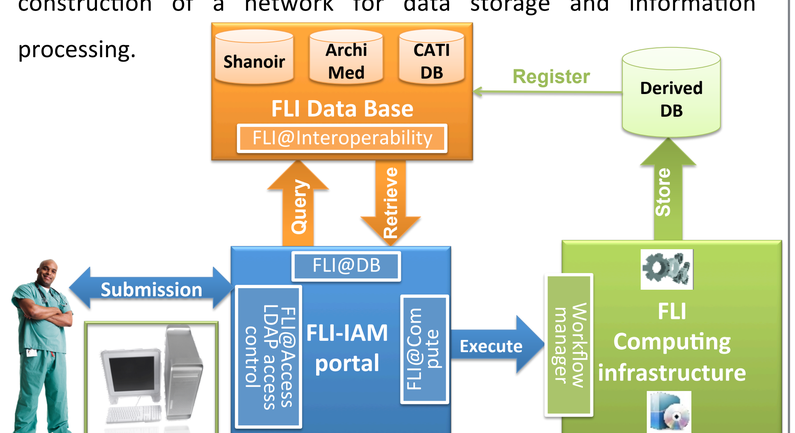
8	**Siemens - Aera 1,5T**
7	**Philips - Achieva 3T**
2	General Electric - DISCOVERY MR750w 3T
2	Philips - Ingenia 1,5T
2	Siemens - Avanto 1,5T
2	Siemens - Skyra 3T
1	General Electric - Signa HDxt 3T
1	Philips - Achieva 1,5T
1	Philips - Ingenia 3T
1	Siemens - Espree 1,5T
1	Siemens - Spectra 3T
1	Siemens - Symphony Tim 1,5T
1	Siemens - Trio 3T
1	Siemens - Verio 3T

http://www.ofsep.org/

[3] OFSEP : **Observatoire Français de la Sclérose en Plaques**

FLI Platform

FLI[4] is research infrastructure aiming to build an organised and standardized network for the in-vivo imaging in France. The IAM[5] node is a consortium of teams that will contribute to the construction of a network for data storage and information processing.



[4] **France Life Imaging**
https://its.aviesan.fr/index.php?pagendx=593

[5] **Information Analysis and Management**
https://its.aviesan.fr/index.php?pagendx=304

Contact

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