https://fli.aviesan.fr/

France Life Imaging (FLI): The Information Analysis and Management (IAM) Node

https://project.inria.fr/fli/

France Life Imaging (FLI) is a large-scale research infrastructure aimed at providing a coordinated and harmonized network in *in-vivo* imaging
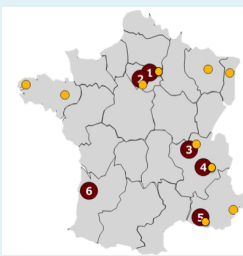
Objectives

- To coordinate nation-wide research activities concerned with *in-vivo* imaging and combine the skills to push the current technological barriers.
- To provide scientists a convenient access to a complete range of imaging technologies (150 imaging systems) **and integrated services**. In addition, the infrastructure will be open to collaborations with industrial partners.
- FLI will also propose training opportunities associated with imaging platforms. FLI complements *"France BioImaging - FBI"* (Cellular Imaging), selected by the call for infrastructure projects in 2010. Together these two projects constitute the French contribution to EuroBioImaging on the ESFRI roadmap.

The FLI national infrastructure is composed of 7 Nodes

- 6 localized nodes: *"Paris Sud"*, *"Paris Centre"*, Bordeaux, Grenoble, Lyon, and Marseille
- **and 1 transversal node for data storage and analysis (FLI-IAM).**

Organization of the scientific activities and training performed through workpackages

- WP « *In-vivo molecular imaging* », WP « *Instrumentation and technological , development*», WP « *Interventional Imaging* », WP « *Quantitative multimodality image analysis* », WP « *Training* », WP « *Platforms management* »

- ● 6 physical nodes
- ○ +1 transversal node for Information Analysis and Management (IAM)

## Information Analysis and Management - IAM Node

Objectives

- Build an *in-vivo* information analysis & management infrastructure, for :
  - **The Clinician** : to conduct large and/or clinical and preclinical research studies involving new innovative in-vivo medical imaging and new innovative therapeutic procedures.
  - **The Pharma**: to provide pharma and CRO companies high technological computational solutions in in-vivo imaging.
  - **The medical imaging community** : to allow experimentation and validation of new innovative in-vivo imaging solutions.

Strengths

- Based on high technological expertise and experience
  - From data management solutions: ArchiMed, CATI, SHANOIR, …
  - From medical image processing solutions: BrainVisa, MedInria, VIP platform, …
  - From large national clinical cohorts: CATI, OFSEP, …
- Based on expertise of participating teams
  - The partners come from laboratories of the geographic nodes of FLI that are involved in the field of information processing.
  - The partners come also from additional labs from partner institutions such as CNRS (ICUBE, I3S), INRIA (Rennes, Sophia-Antipolis, Saclay), INSERM (Brest, Nancy) in order to bring to IAM more specific expertise and experience in the field of analysis and management of in-vivo imaging data.

FLI-IAM Node Organization
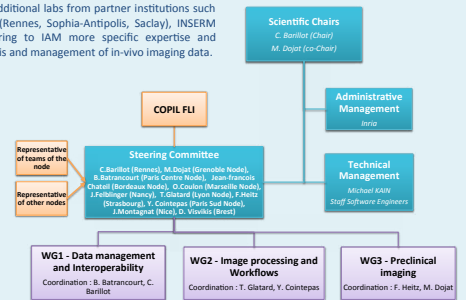
FLI-IAM Node Main Achievements

The IAM node consist in developing a versatile software platform made up of several sub-components, which allows inter-connection of hardware facilities and software platforms.

- The software development is organized according to the three Working Groups:
  - WG-1 "Interoperability and data management" aims to specify and implement image data management services allowing:
    - Implementation of heterogeneous and distributed storage solutions.
    - implementing raw data, derived data and meta-data indexing (e.g. through the use of semantic models or ontologies).
    - supporting the execution of images processing services.
    - Implementation of these concepts onto three initial software platforms (Shanoir, Cati, Archimed) for demonstration and pilot study.
  - WG-2 "Image processing and workflow" aims to specify and implement pipeline execution services in FLI allowing:
    - The upload, download, sharing and deletion of data files that are not in databases.
    - The invocation and monitoring of pipeline execution.
    - The selection of data from databases for processing –interaction with the data interoperability WG.
    - The download and installation of software packages.
    - The design and deployment of pipelines.
    - The services will be based on the following existing tools : medInria, BrainVisa, and the VIP platform.
  - WG-3 "Preclinical imaging" aims to specify and implement an infrastructure to store and manage preclinical in-vivo imaging as well as provide services for image analysis.
    - It addresses the development of a web-oriented management system of preclinical brain imaging data through the extension of existing clinical imaging software architecture (CATI-PA, Shanoir, MediBase).
    - It addresses the development of a catalog of software and processing systems dedicated to data processing of small animals imaging.
    - It aims to promote the use of cohorts in preclinical studies.

FLI-IAM Usage Scenarios

FLI-IAM Stack Architecture

FLI-IAM Computational architecture