

NeuroLOG Presentation

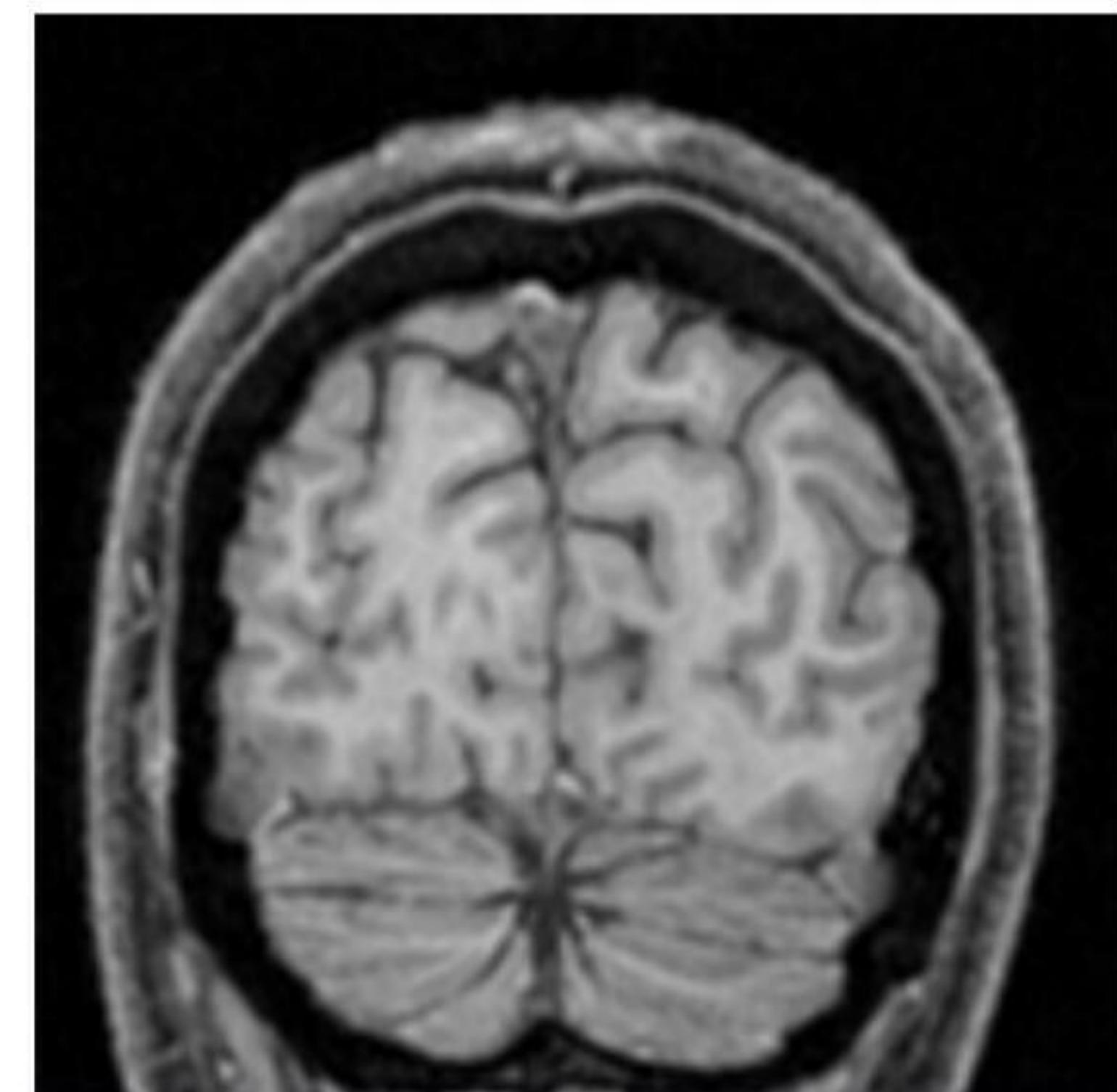
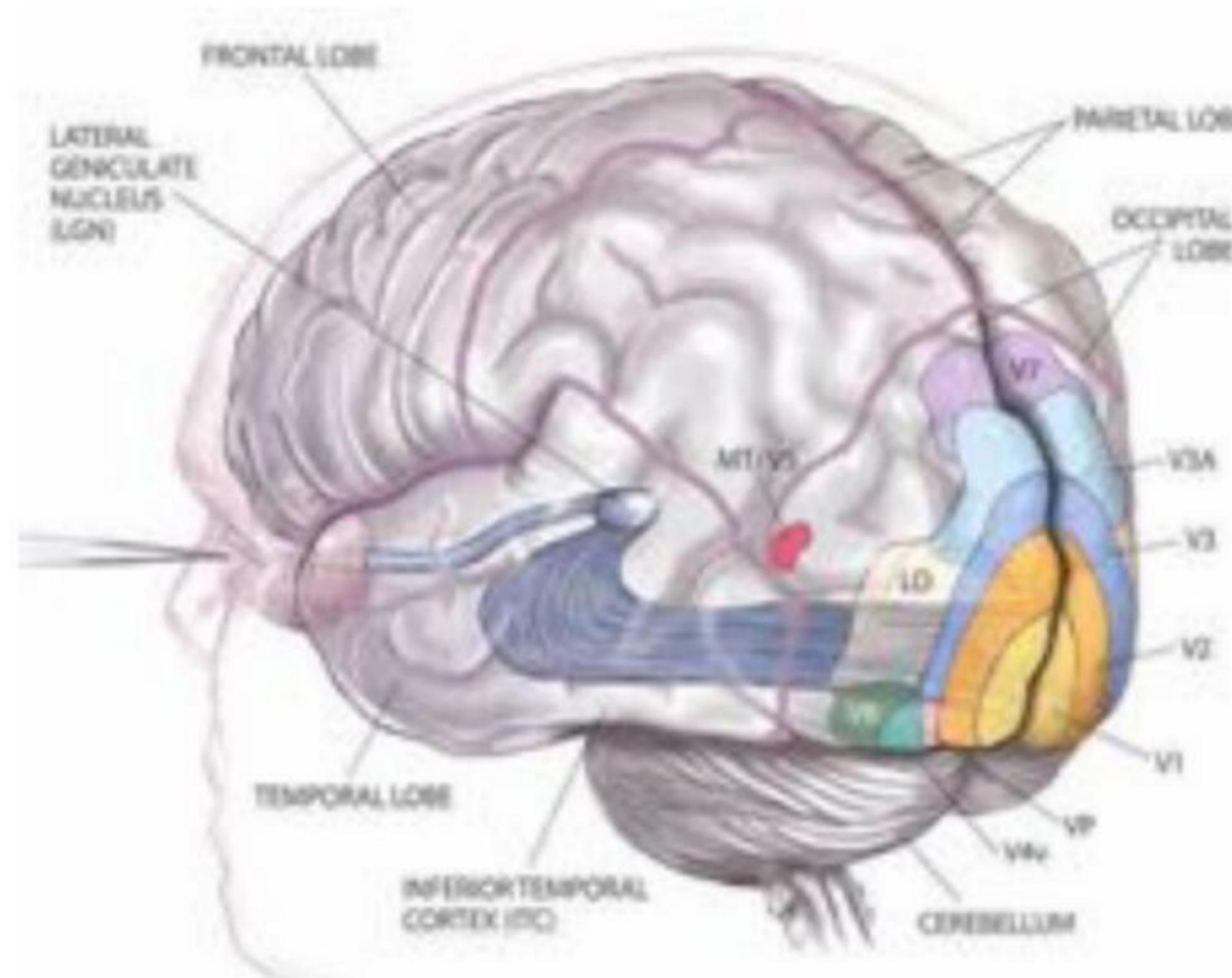


Johan Montagnat
Paris, September 7, 2009

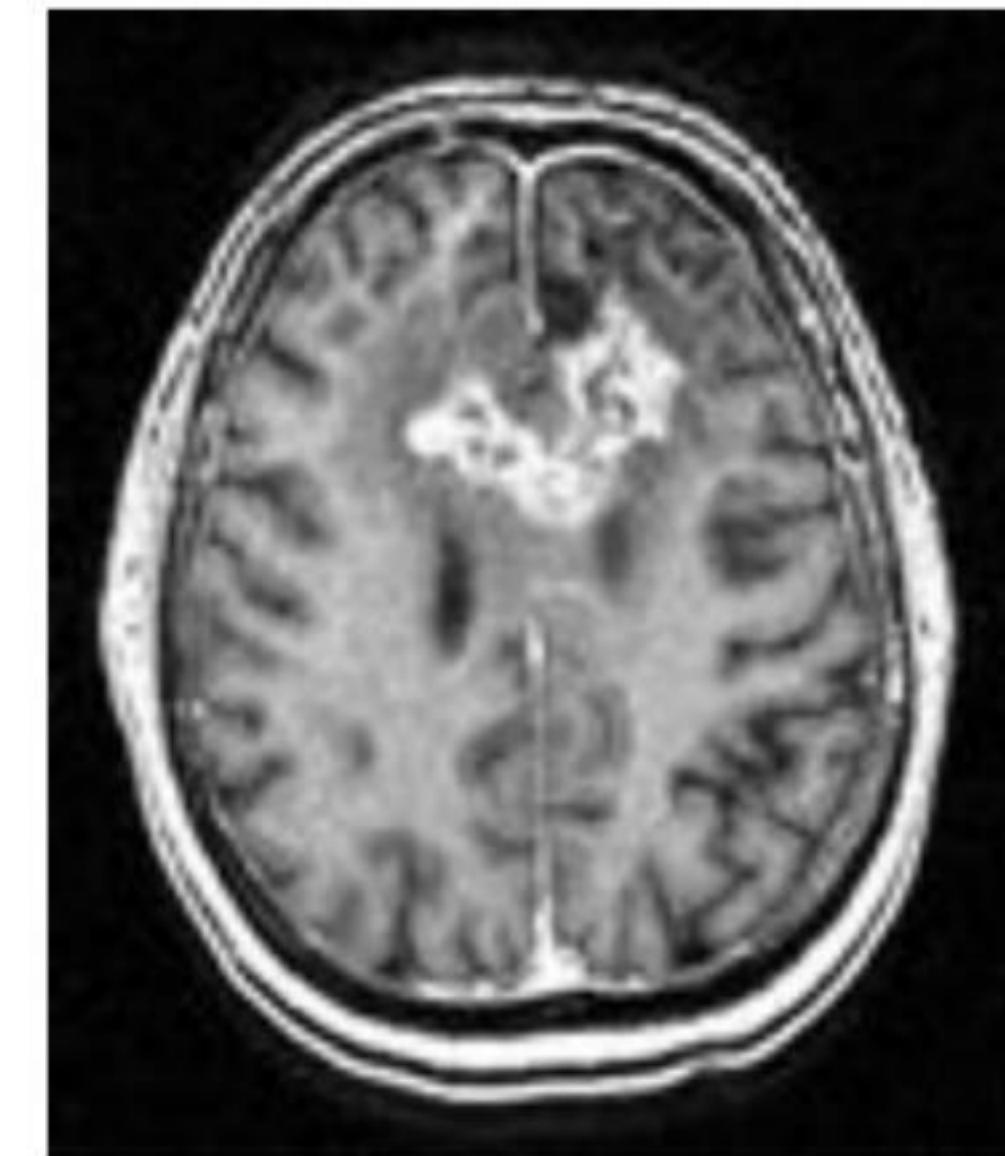
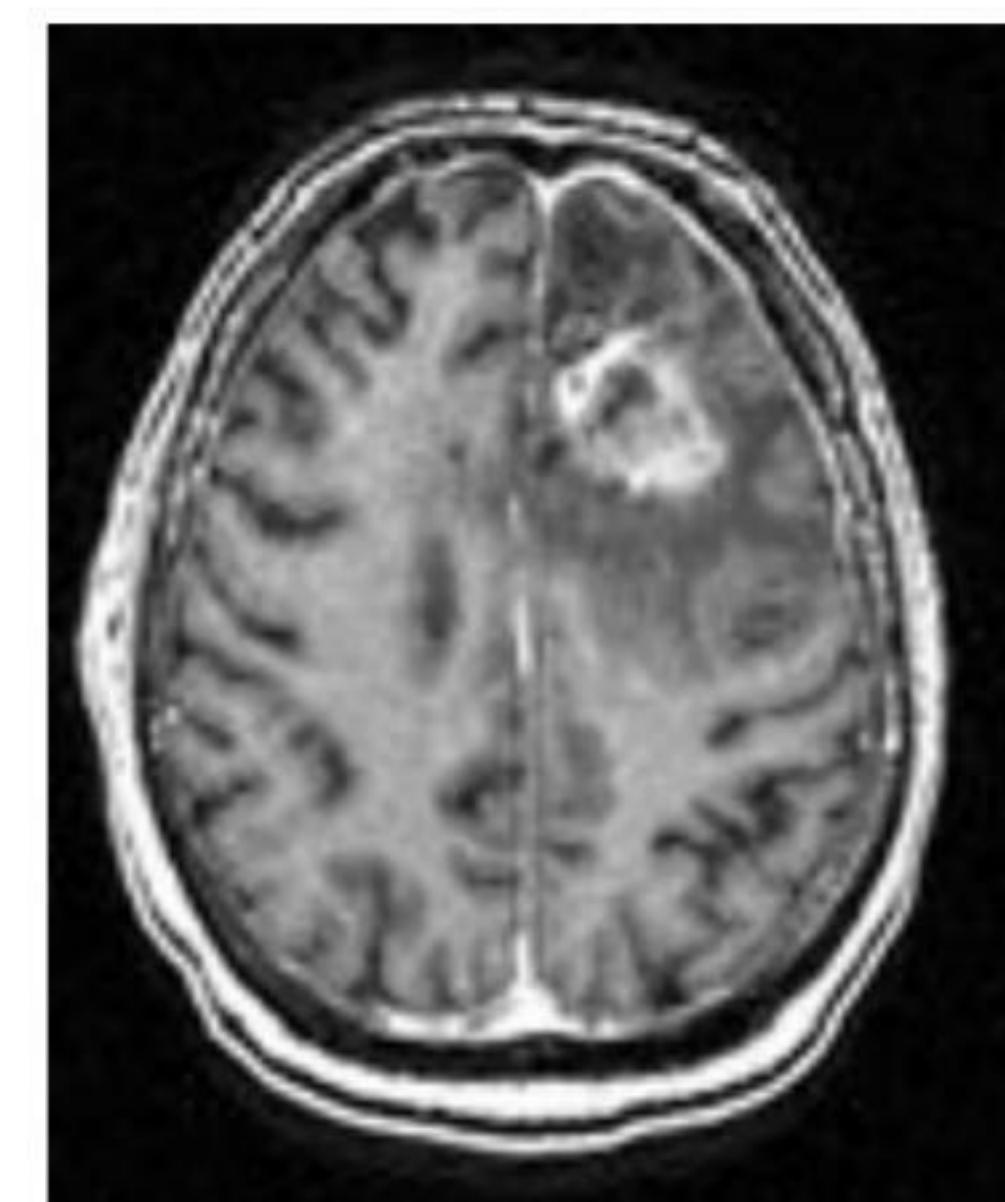
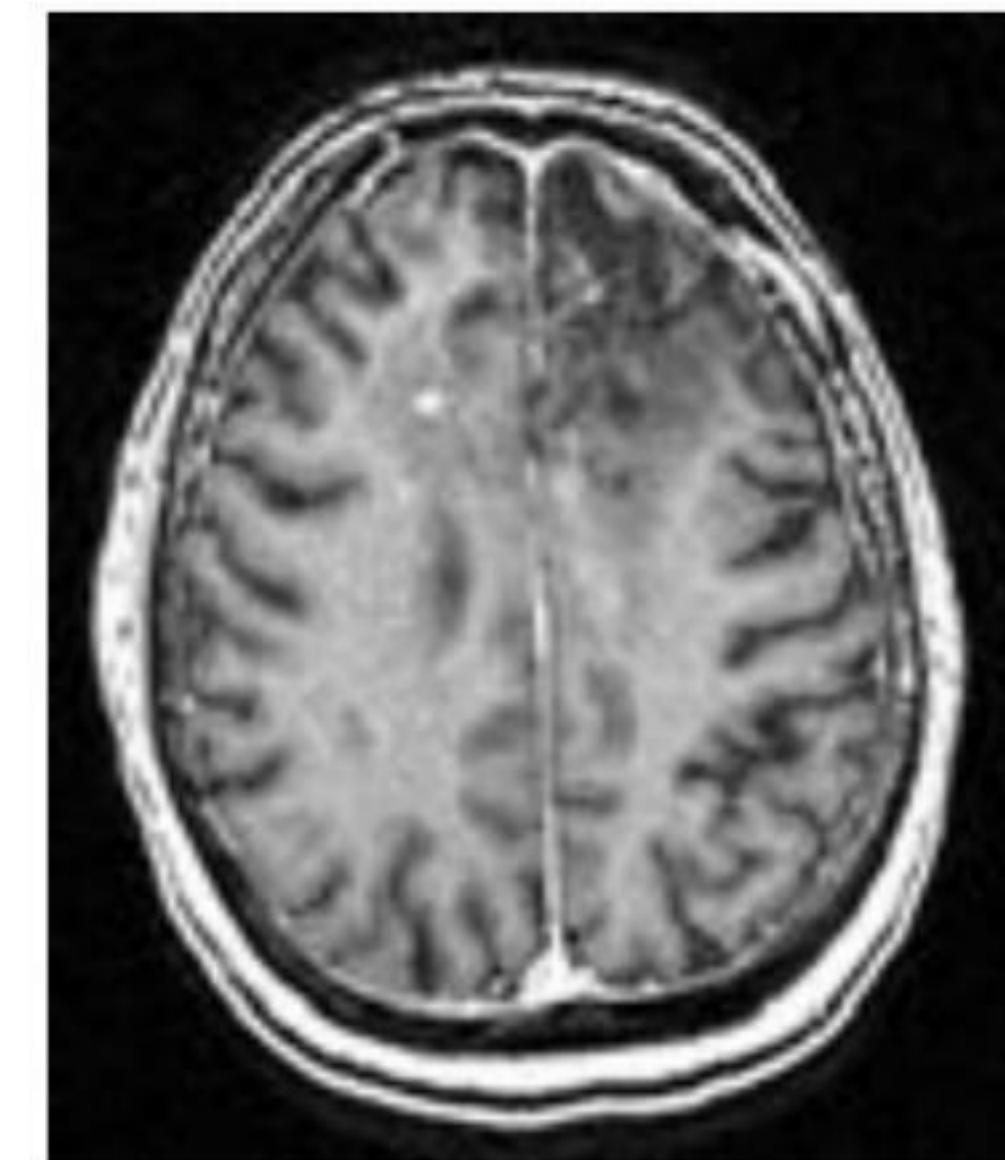
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ANR

- **NeuroSciences**

- Computational science & major challenge for this century (population aging, brain disorders growth, brain function understanding...)
- Data intensive (medical image databases, statistical studies). Heterogeneous, semi-structured, sensitive data sets.
- Complex data analysis procedures. Compute intensive.



- **Multiple sclerosis**
 - Early diagnosis
 - Evolution prediction
- **Brain stroke**
 - Lesions volume variations
 - anatomo-functional relation
- **Tumors**
 - Tumors classification
 - Impact of chemotherapy
 - Anatomo-functional relation
- **Commonalities**
 - Data sets: MR modalities, brain anatomy & functions
 - Processings & procedures: Registration, normalization, skull stripping, tissues classification...



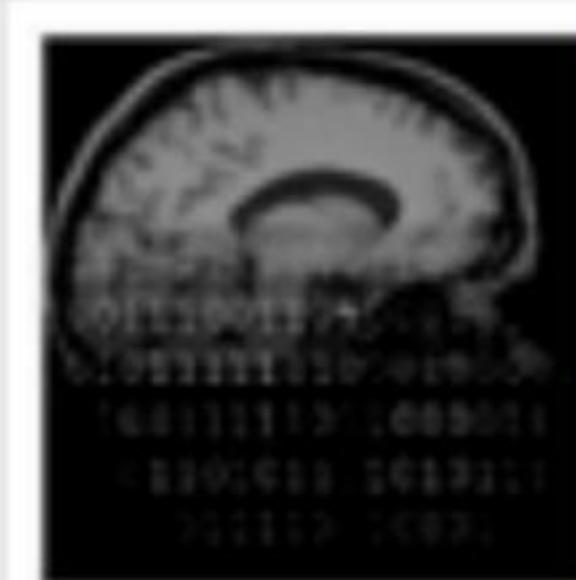
- **Software integration (TechLog, software engineering ANR call)**
 - Management and access to partly structured, heterogeneous and distributed data in an open environment (files, metadata, semantic data)
 - Access control and protection of sensitive medical data
 - Control of workflows implied in complex computing processes on grid infrastructures
- **Interface to grid infrastructures**
 - Leverage existing grid technologies
 - Federating distributed data and image processing tools to tackle the neurosciences community requirements
- **Address application area requirements**
 - Extraction and quantification of relevant parameters for 3 test-bed applications
 - Ease resources sharing (data sets, data analysis procedures, computing resources)
 - Foster collaborative work



- **7 academic partners**
 - I3S, IRISA, GIN, MIS, IFR49, INRIA Sophia, LRI
- **2 companies**
 - SAP, Visioscopie
- **Collaborating hospitals**
 - Pitié Salpêtrière (Paris)
 - Michalon (Grenoble)
 - CHU Rennes
 - Antoine Lacassagne (Nice)

software technologies
databases and
knowledge
medical imaging

- **Grid infrastructures increasingly used in health technologies**
 - Need to go beyond hospital network and regional PACS
 - Growing international community (mostly research, increasingly closer to clinics)
 - Growing visibility: JFR'08 (Paris), IBMISPS'09 (Boston)...
- **Large gap between today grid infrastructure and medical environment**
 - Low level foundational middlewares
 - Complex requirements from the health community (data representation, computing constraints...)
 - Very sensitive data
- **Transitional model, towards HealthGrids**
 - Neurosciences community
 - Emphasis on user needs + strong data control policies
 - Limited scale deployment
 - Bridging local and grid resources



NEUROLOG

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Neurolog meetings

Phone meetings number: **08 25 04 03 02**, code **63870504#**

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2010

- **January 5-7, 2010: Colloque STIC, Cité des sciences, Paris**

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2009

- **September 15, 2009, 11am: steering committee**
- **September 7-8, 2009, 10am-5pm: 2nd year project meeting, Paris**
- **September 1, 2009, 11am: steering committee**
- **August 31, 2009, 10am, Nice: viewer and security features**
- **July 21, 2009, 11am: steering committee**
- **July 7, 2009, 11am: steering committee**
- **June 23, 2009, 11:30am: steering committee**
- **June 9, 2009, 11am: steering committee**
- **May 12, 2009, 11am: steering committee**
- **May 4-7, 2009, Middleware integration week, Sophia Antipolis**
- **April 28, 2009, 11am: steering committee**

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- **Proposal organization**

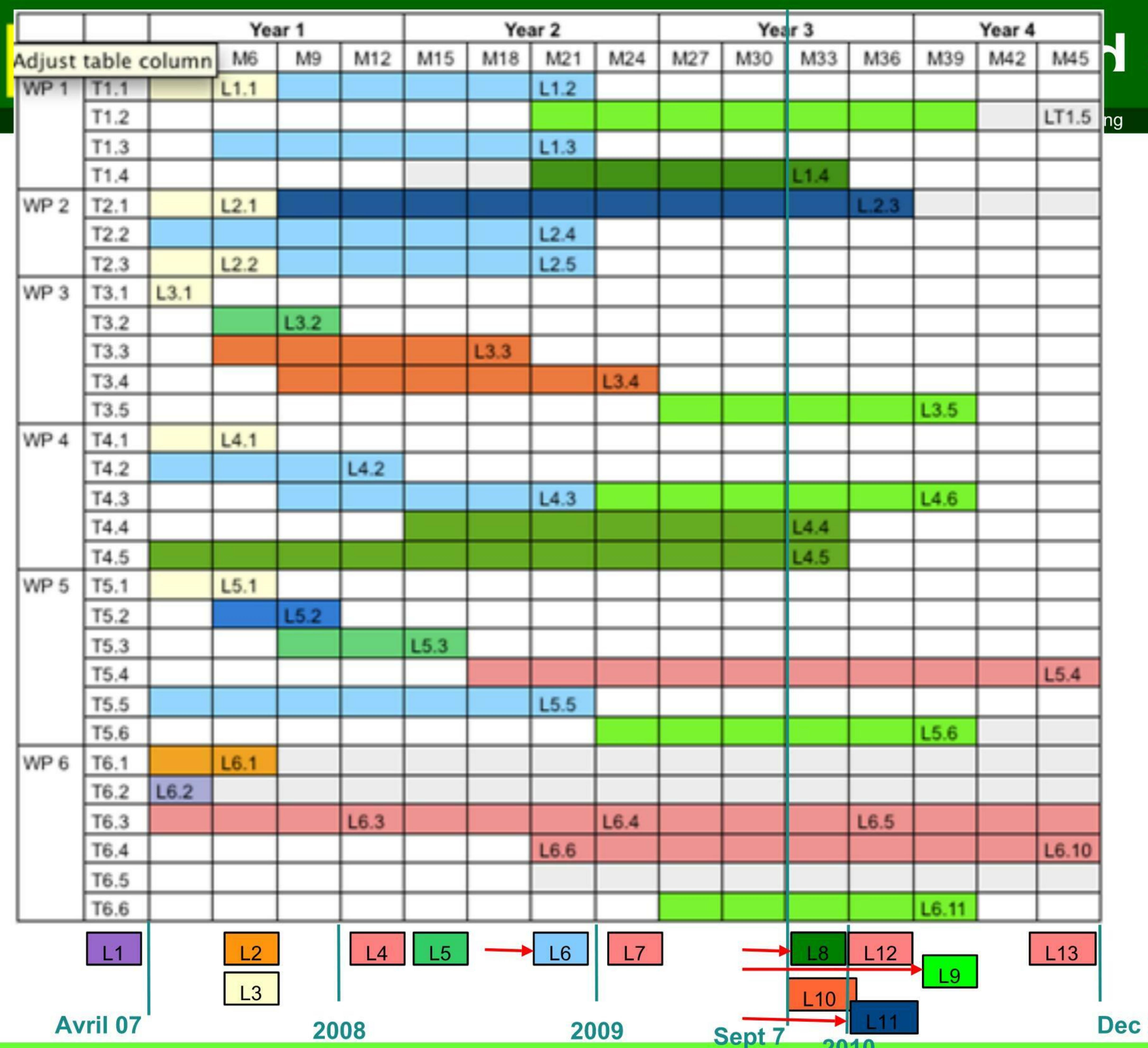
- Work packages

- WP1: distributed data management and query (**IRISA**)
 - WP2: application ontology and processing semantic (**IRISA**)
 - WP3: security in a clinical context (**Visioscopie**)
 - WP4: distributed, cooperative application using grid infrastructures (**I3S**)
 - WP5: clinical applications (**GIN**)
 - WP6: management and dissemination (**I3S**)

- Transversal tasks

- TT1-3: data security (**I3S**)
 - TT1-4: data-processing coupling (**I3S**)
 - TT1-5: data deployment (**IRISA**)
 - TT2-4: ontology of processings (**IRISA**)
 - TT2-5: domain ontology (**GIN**)
 - TT3-5: access control and authorization (**I3S**)
 - TT4-5: domain computing services (**I3S**)

Timeline schedule



- **Tools**

- Integrated Development Environment (IDE): **Netbeans**
- Source code repository: **Subversion**
<https://nyx.unice.fr/svn/neurolog/>

Issue tracker: **TRAC**

<https://nyx.unice.fr/projects/neurolog>

Embedded documentation

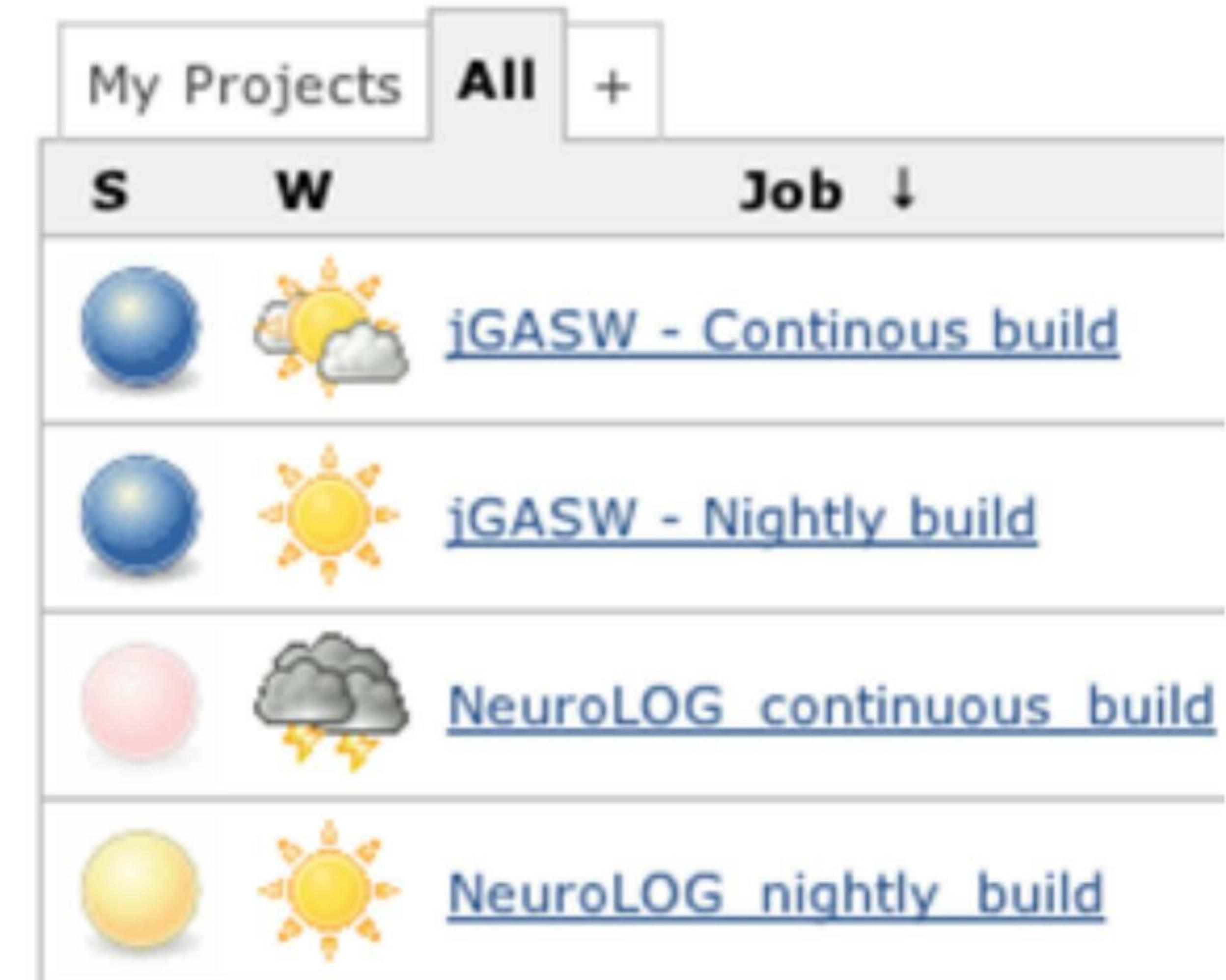
<http://neurolog.unice.fr/~gaignard/NeuroLOG/doc/html>

Continuous integration: **Hudson**

<http://neurolog.unice.fr:9003/>

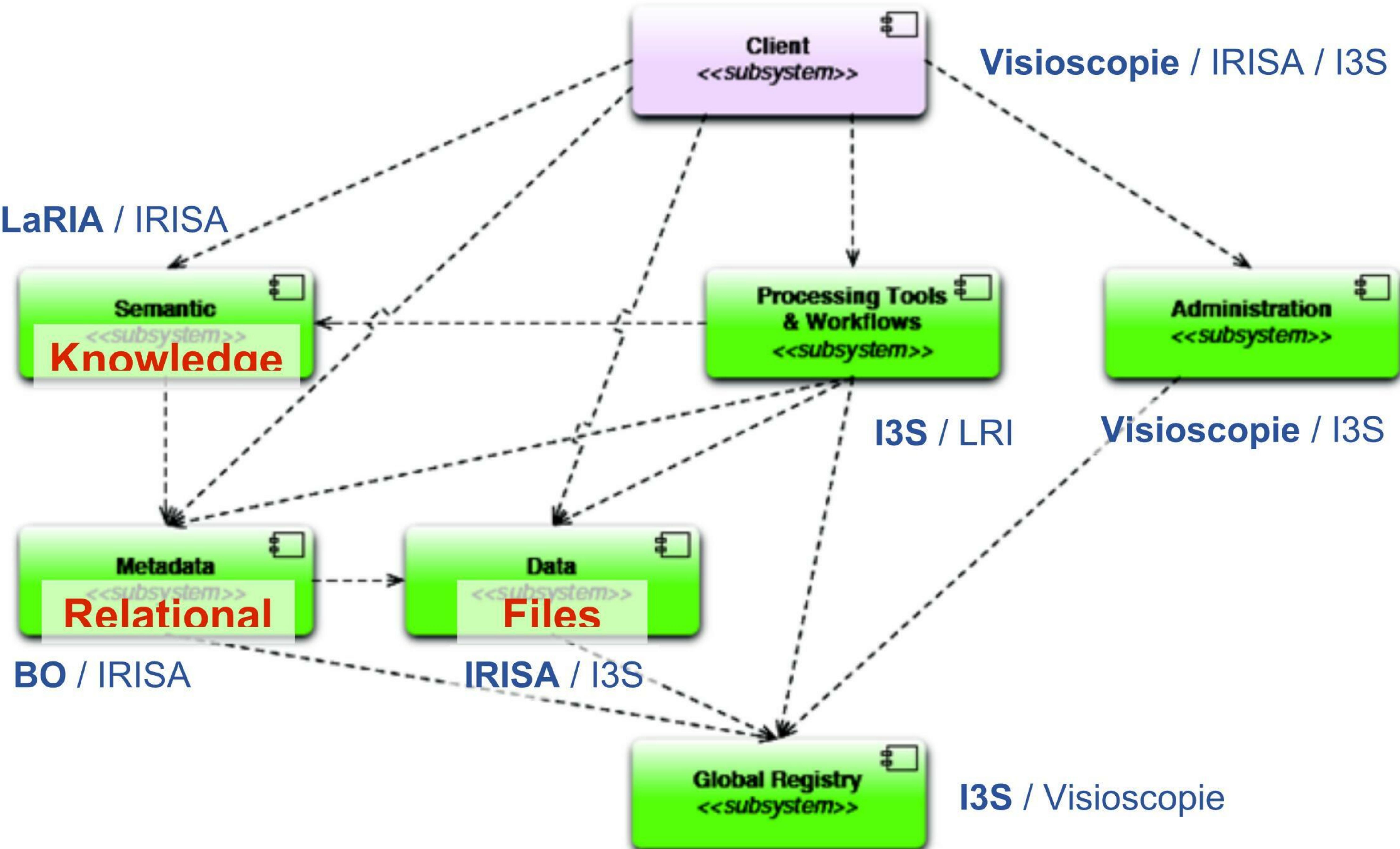
- **Practices**

- Unit testing
- Code coverage reporting
- Bug reporting



Software architecture

Software technologies for integration of process, data and knowledge in medical imaging



Software technologies for integration of process, data and knowledge in medical imaging

