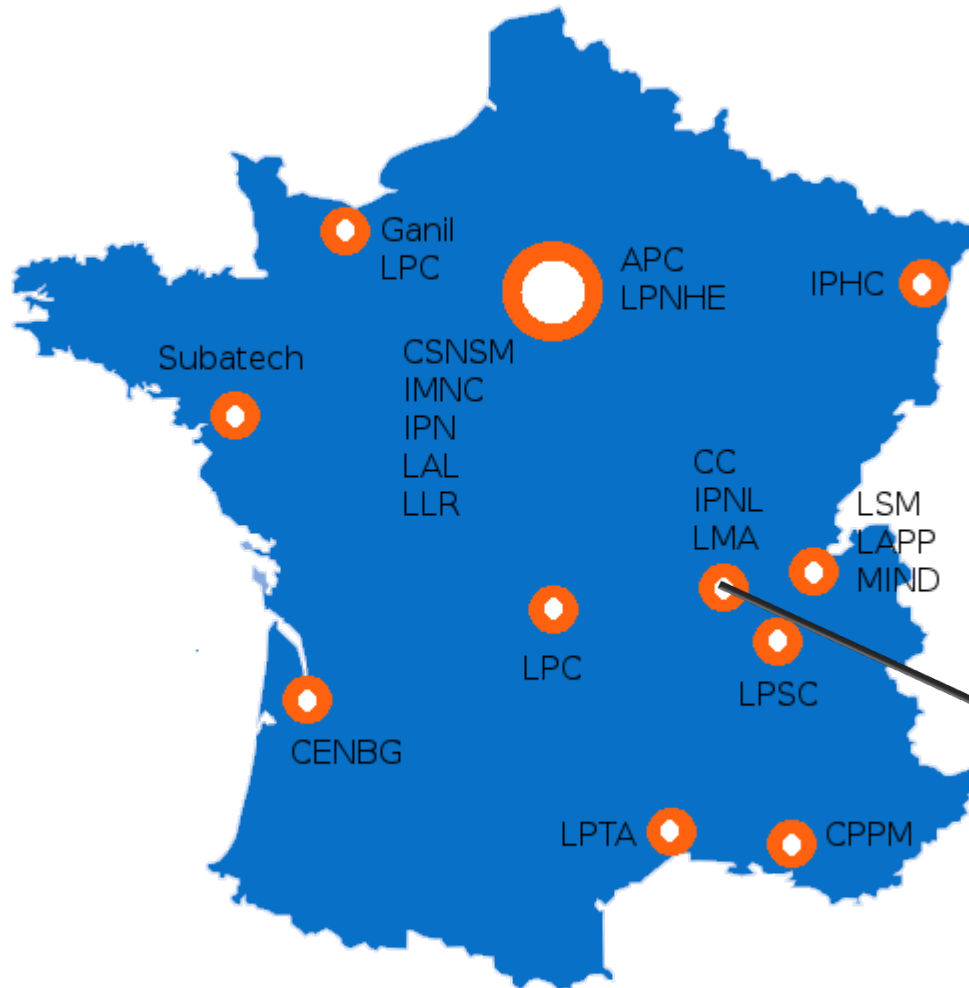


# Prospects and needs for iRODS at CC-IN2P3

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- ▶ Brief status of iRODS usage at CC-IN2P3:
  - Users.
  - Architecture.
- ▶ What is needed or missing for us in iRODS ?
- ▶ Where are we heading with iRODS ?
  - Future plans.
  - Scalability.

# What is CC-IN2P3 ?



- **IN2P3:**
  - one of the 10 institutes of CNRS.
  - 19 labs dedicated to research in high energy, nuclear physics, astroparticles.
- **CC-IN2P3:**
  - computing resources provider for experiments supported by IN2P3 (own projects and international collaborations).
  - resources opened both to french and foreign scientists.



- ▶ Researchers of various disciplines:
  - Data sharing, management and distribution.
  - Data processing.
  - Data archival.

- Physics:

- High Energy Physics
- Nuclear Physics
- Astroparticle
- Astrophysics
- Fluid mechanics
- Nanotechnology



- Biology:

- Genetics, phylogenetics
- Ecology



- Biomedical:

- Neuroscience
- Medical imagery
- Pharmacology (in silico)

- Arts and Humanities:

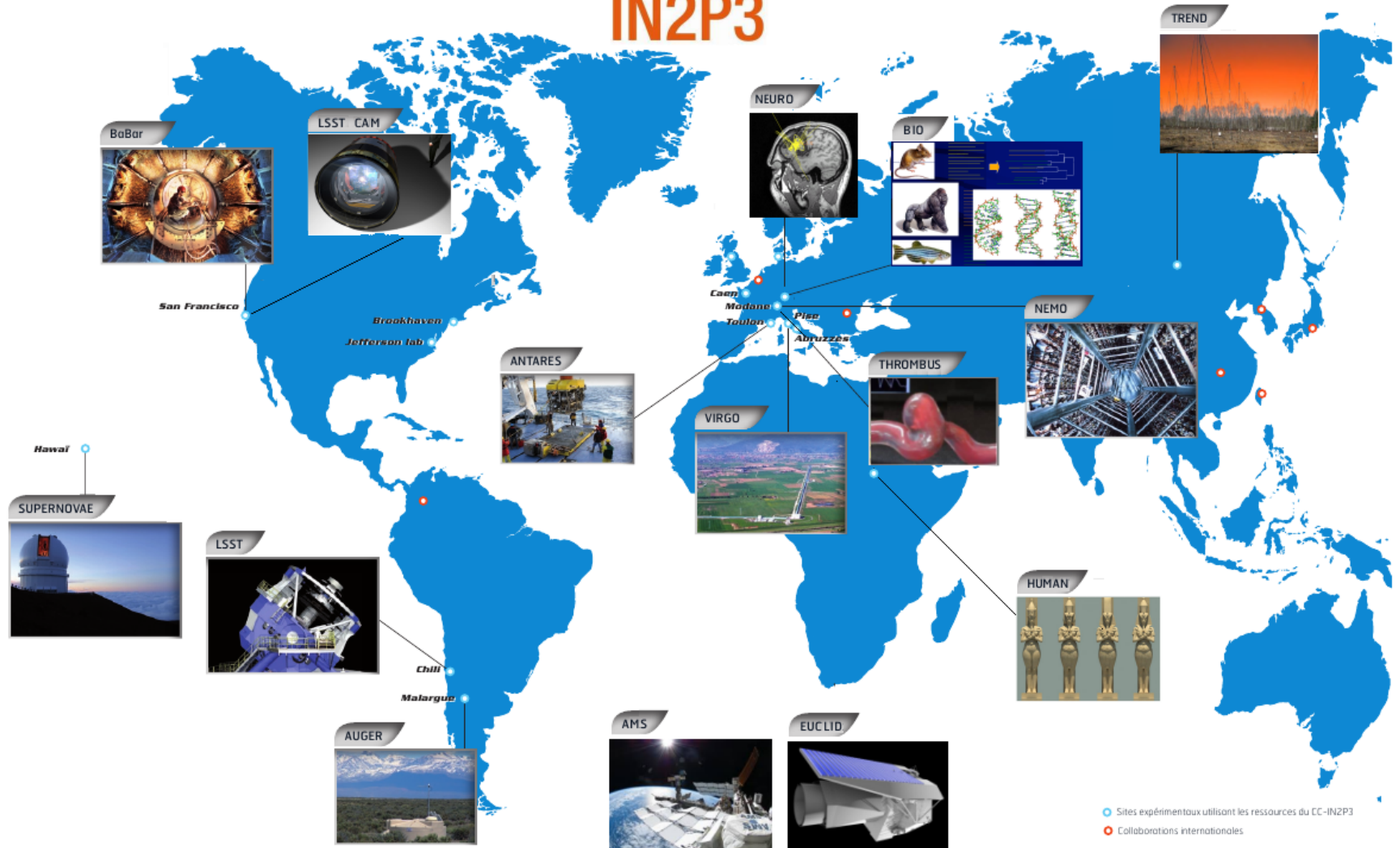
- Archeology
- Digital document storage
- Economic studies



- Computer science

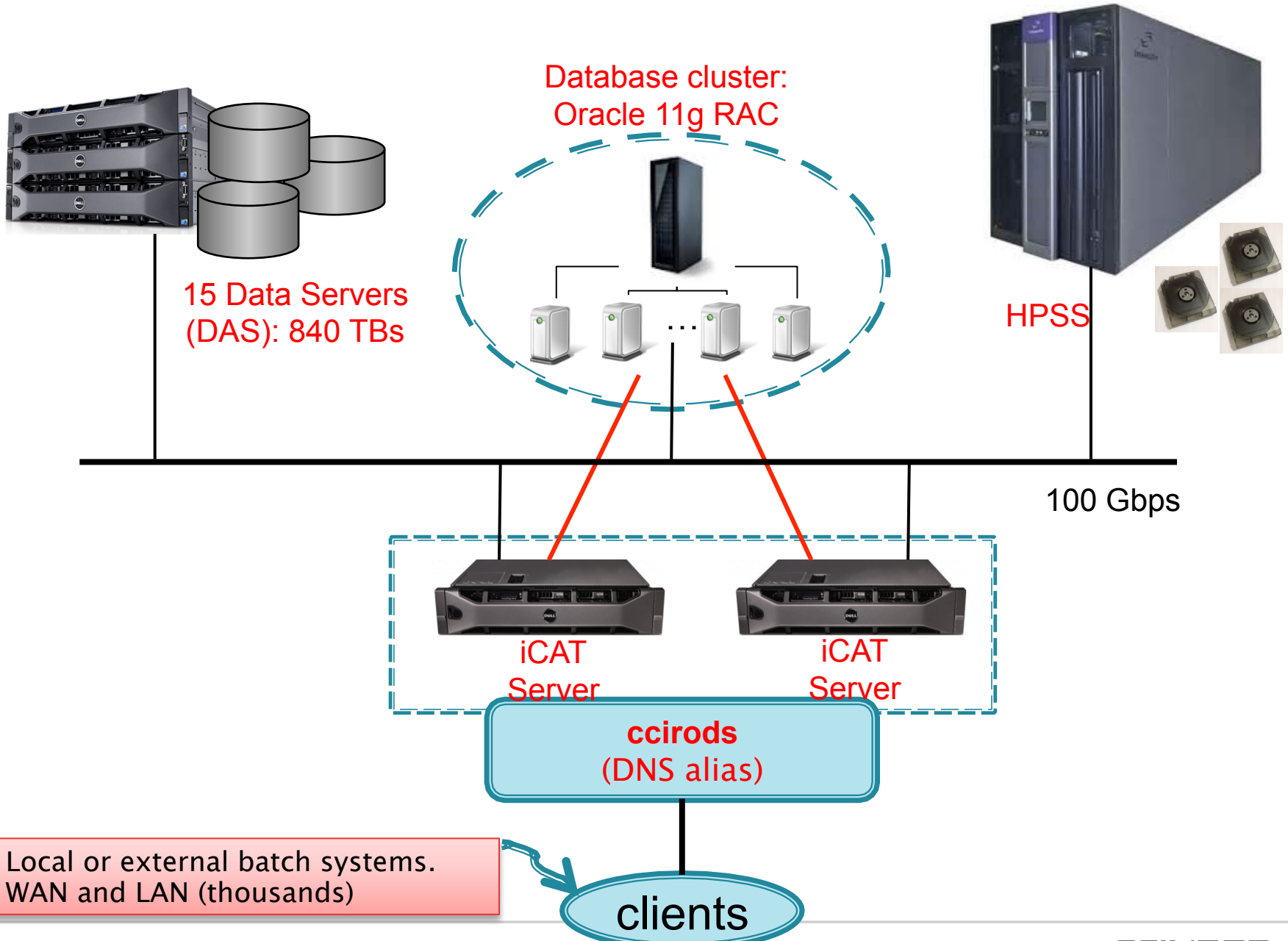


# iRODS IN2P3

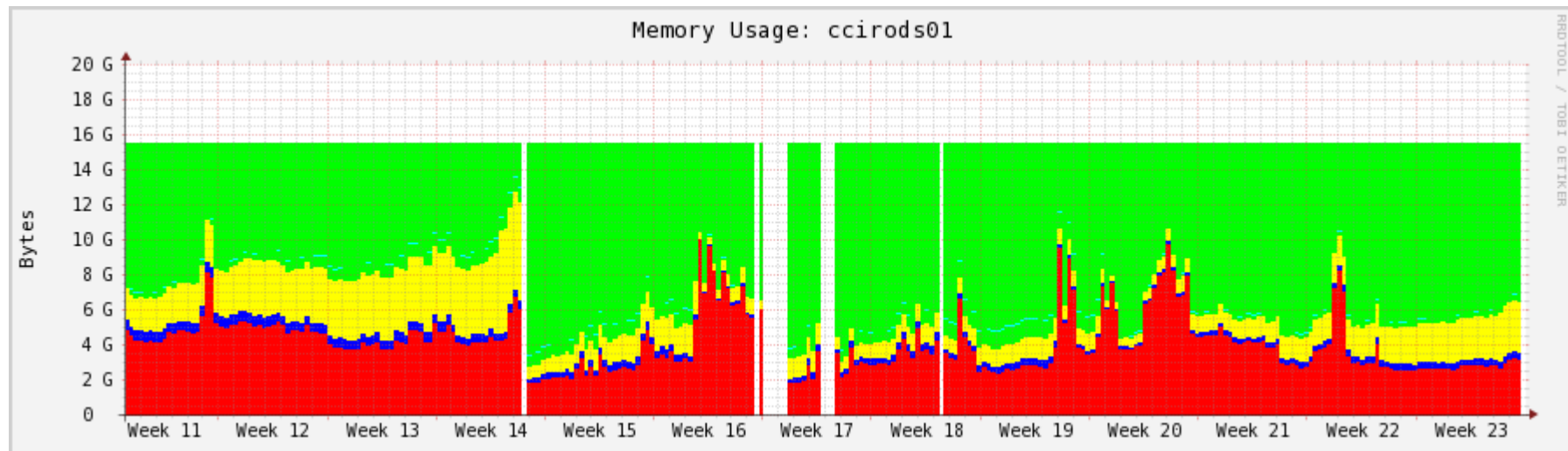


- ▶ 23 zones.
- ▶ 41 groups.
- ▶ 469 users:
  - Maximum of 800k connections per day.
  - Maximum of 6.4m connections per month.
- ▶ 80 millions of files.
- ▶ 9700 TBs of data as of today:
  - Up to +30 TBs growing rate per day.

# iRODS Server side architecture



- ▶ Connection control:
  - Very important as client activity not under control.
  - Can go wild (especially memory usage):



- Usage of CCMS: mainly protecting the iCATs.
- ▶ Improvements needed:
  - Better to queue the client requests instead of rejecting them immediatly.
  - If connection limit reached, even privileged user cannot login.



## ▶ Rule management:

- Up to 10 of thousands of delayed rules in queue (eg: replication onto tapes).
- Some rules (like admin rules) have higher priority (eg: disk cleanup).

➔ Scheduling priority needed: no need for fancy scheduling.

- Adding a name stick to rule id: easier to manage (for iqdel etc...).
- Rule information stored on local filesystem ? Could be in the database ? (easier to have several irodsReServer in the same zone).

## On the client side.

- ▶ **Windows support.**
  - icommands v3.0 still being used.
- ▶ **Should remain multiplatform as it is (various Unix flavors used).**
- ▶ **GUIs:**
  - Old Windows explorer still being used.
  - Unmaintained php browser still being used.
- ▶ **APIs:**
  - Support of PHP APIs.
- ▶ **Bulk download:**
  - Extremely important for collections with small files.

# GUI example (developed at CC-IN2P3)

The screenshot displays the JUX (Java Universal eXplorer) interface. The main window shows a file browser with a tree view on the left and a file list on the right. The file list includes various files and folders, with 'FILE-DICOM.IMA' selected. A 'JUX image viewer (1/2)' window is open, displaying a medical image. A 'JUX metadata - FILE-DICOM.IMA' window is also open, showing the metadata for the selected file.

**JUX metadata - FILE-DICOM.IMA**

Name	Value
0002,0002 (Media Storage SOP Class UID)	1.2.840.10008.5.1.4.1.1.4
0002,0003 (Media Storage SOP Inst UID)	1.3.12.2.1107.5.2.12.21296.30000006011813445595300000002
0002,0010 (Transfer Syntax UID)	1.2.840.10008.1.2.1
0002,0012 (Implementation Class UID)	1.3.12.2.1107.5.2
0002,0013 (Implementation Version Name)	MR_2004A_VA25A
0008,0005 (Specific Character Set)	ISO_IR 100
0008,0008 (Image Type)	ORIGINALPRIMARYMND
0008,0016 (SOP Class UID)	1.2.840.10008.5.1.4.1.1.4
0008,0018 (SOP Instance UID)	1.3.12.2.1107.5.2.12.21296.30000006011813445595300000002
0008,0020 (Study Date)	20060118
0008,0021 (Series Date)	20060118
0008,0022 (Acquisition Date)	20060118
0008,0023 (Image Date)	20060118
0008,0030 (Study Time)	144409.828000
0008,0031 (Series Time)	144455.750000
0008,0032 (Acquisition Time)	144457.144990
0008,0033 (Image Time)	144500.703000
0008,0050 (Accession Number)	
0008,0060 (Modality)	MR

- ▶ On the fly compression for upload/download (like what has been made for myirods with snappy lib).
- ▶ File versionning:
  - Extra value for small sites: could be a solution for sites needing a backup solution.
- ▶ Automatic replication of « hot » files between two physical resources.
- ▶ Monitoring/accounting modules added to iRODS (for small sites):
  - Everybody cannot have Nagios, Elastic Search etc...

- ▶ Volume increase: linear growth now.
- ▶ Reaching 10 PBs very soon.
- ▶ Massive migration to v4.
- ▶ Provide a REST interface to our storage systems through iRODS.
- ▶ Medium term archival service build on iRODS ?
- ▶ Scalability: throttle the clients requests, avoid overwhelming the servers.
- ▶ Feeling the rising competition with cloud technologies:
  - Even though they do not provide the same services or just a subset of what iRODS provides.