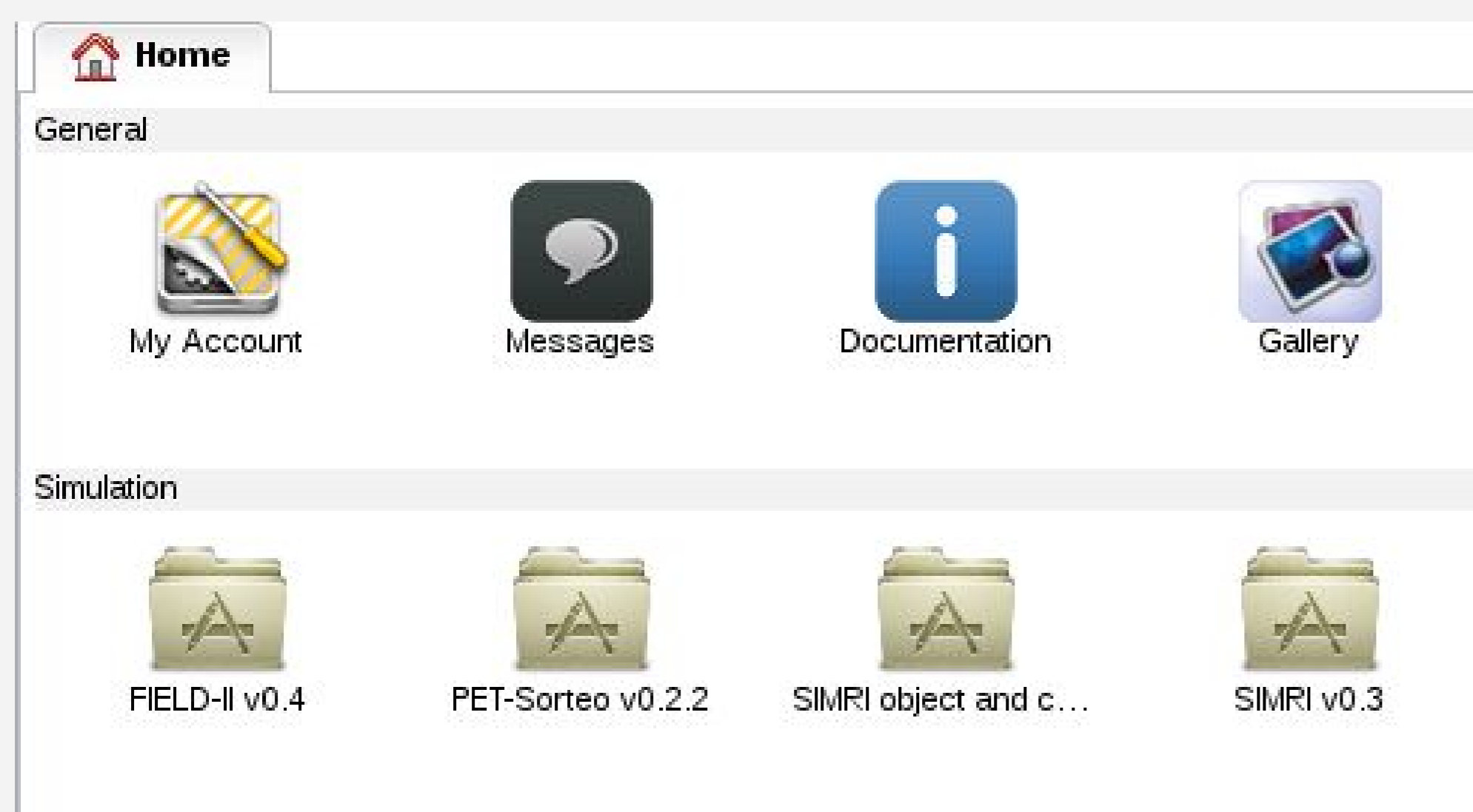


Summary

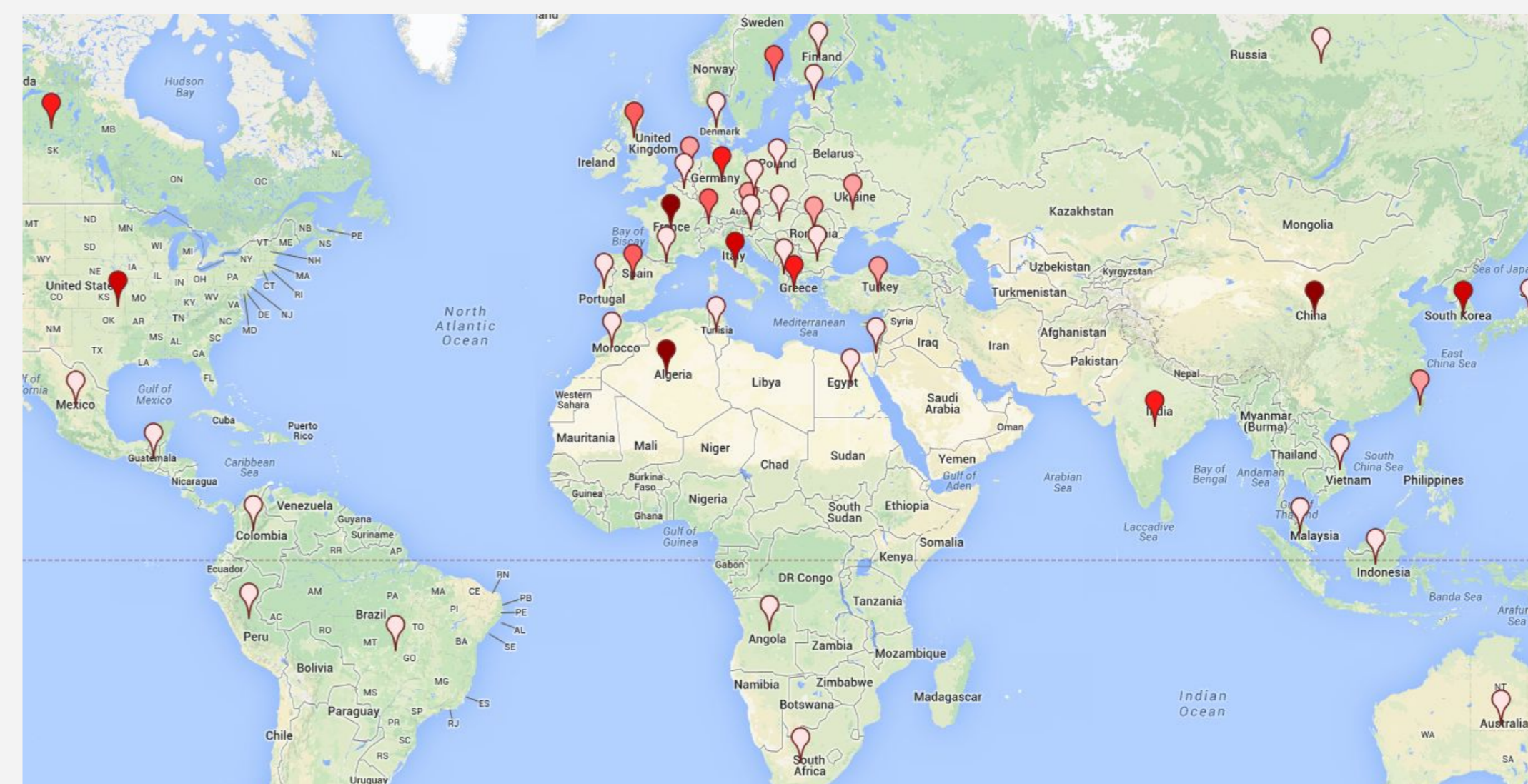
- VIP is an open platform for high-throughput medical simulation and data processing.
- Web portal available at <https://vip.creatis.insa-lyon.fr>



- T. Glatard, C. Lartzien, B. Gibaud, R. Ferreira da Silva, ... , and D. Friboulet, "A Virtual Imaging Platform for multi-modality medical image simulation", IEEE Transactions on Medical Imaging, vol. 32, no. 1, pp. 110-118, 2013.

Users

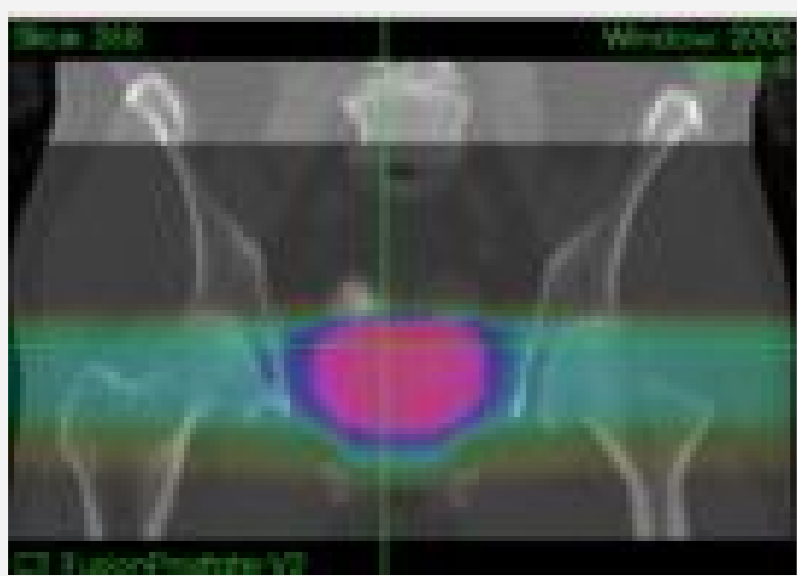
- 1000+ registered users (April 2017)
- 39 publications in journals (22), conferences (11), PhD and Master Thesis (6) since 2011



Geographical distribution of users

Applications

Monte-Carlo simulation



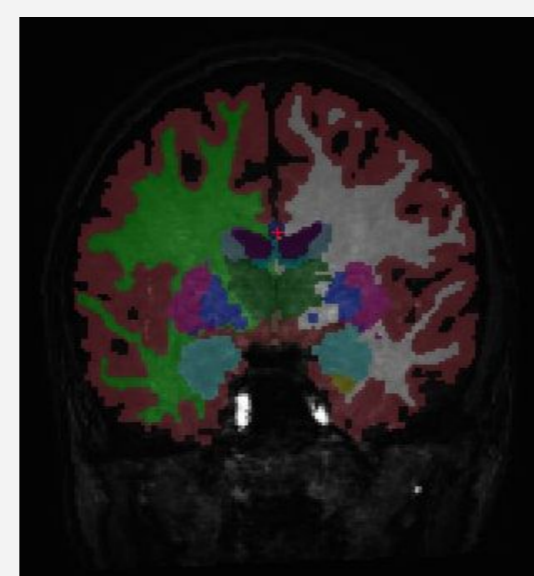
Prostate radiotherapy plan simulated with GATE (L. Grevillot and D. Sarrut)

Image simulation



Echocardiography simulated with FIELD-II (O. Bernard et al)

Neuroimage analysis



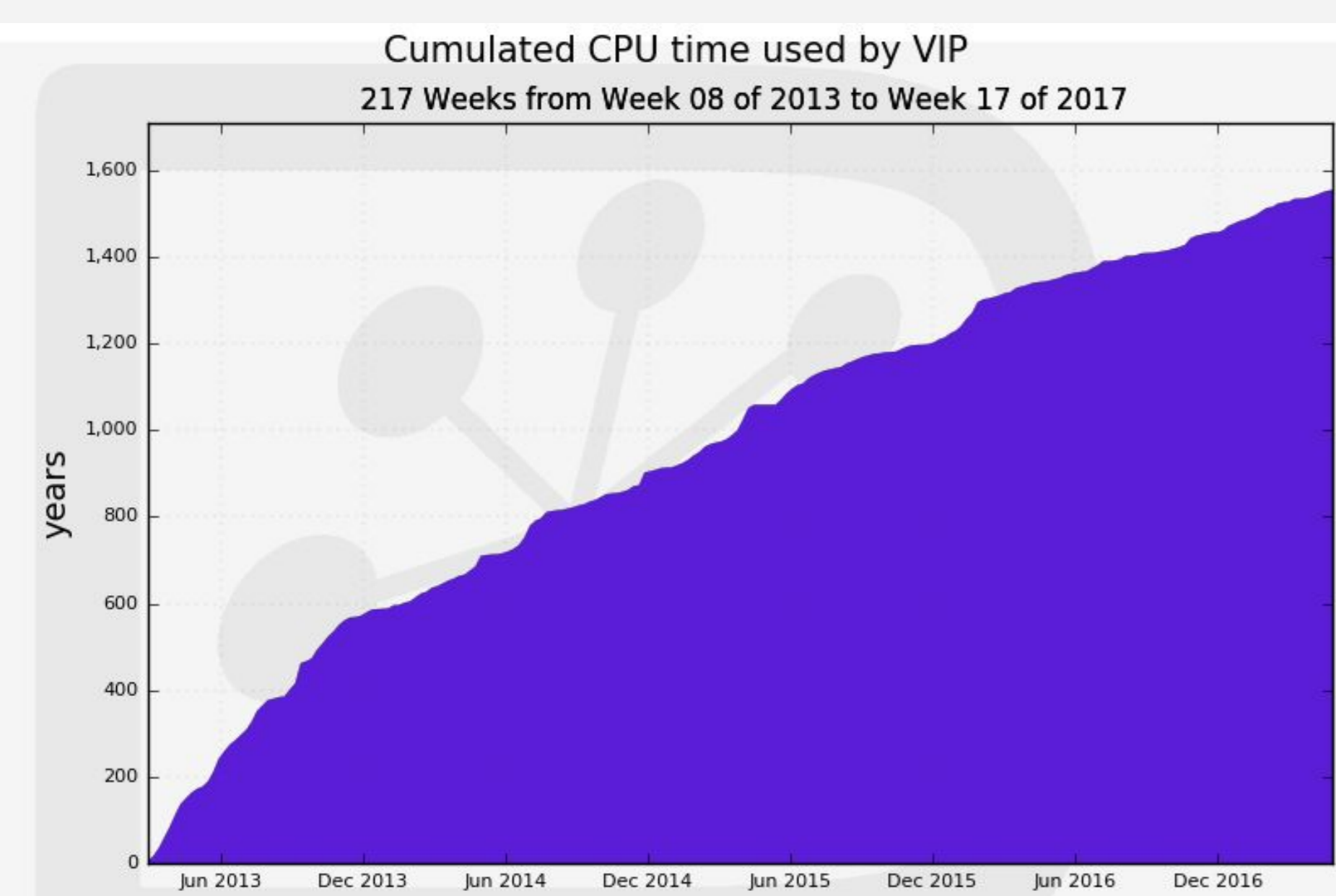
Brain tissue segmentation with Freesurfer

Available tools

- Simulation**
 - Multi-modality
 - Gate
 - Sindbad
 - CT
 - MRI
 - SimuBloch
 - Ultrasound
 - FIELD-II, CREANUIS
 - PET
 - PET-SORTEO
- Neuroimaging**
 - FSL (7 tools)
 - Freesurfer (2 tools)
 - France-Life Imaging tools
- Other**
 - Mean-Shift segmentation
 - Liver cartography
 - MRI RF Characterization

Infrastructure

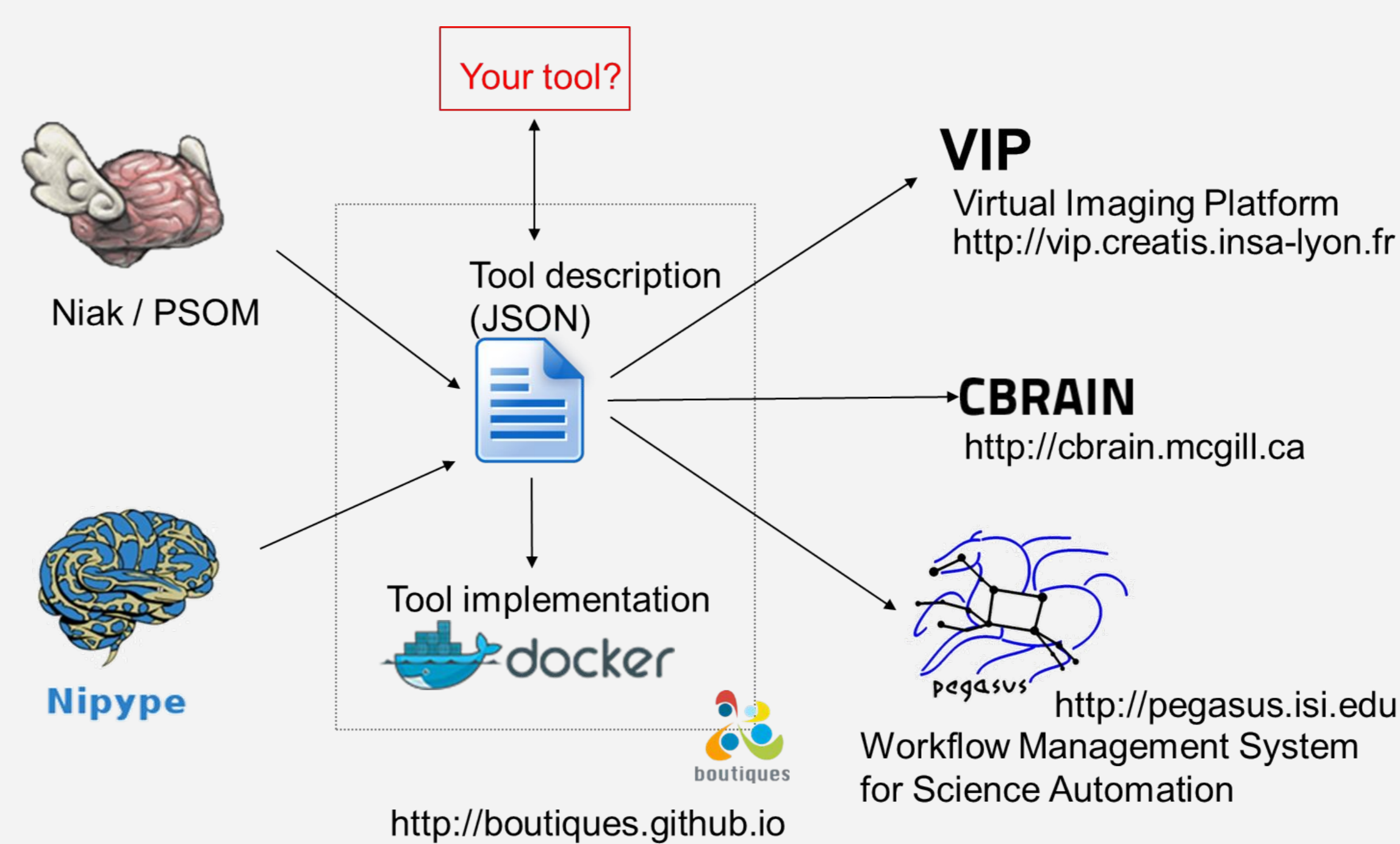
- Supported by EGI Infrastructure
- Uses biomed Virtual Organization (~100 sites in Europe and beyond)
- Consumes ~28 CPU years every month



Cumulative CPU time consumed by VIP users



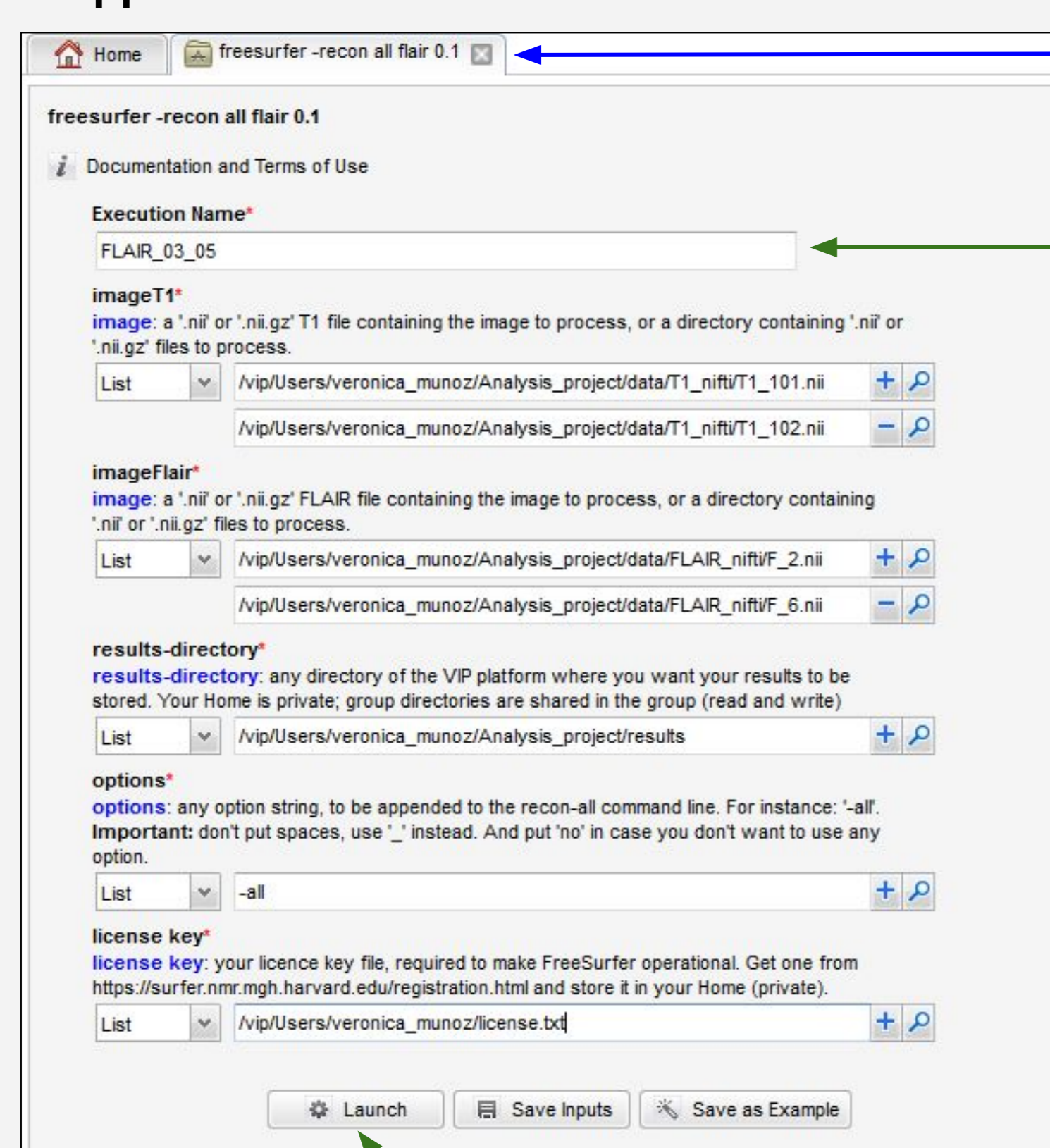
Tool integration through Boutiques



The application integration mechanism is based on Boutiques for a portable description in JSON, and Docker for the deployment. It allows the installation of new applications in a lightweight manner and with a reusable format.

Graphical user interface

Application launch form



On VIP home page, a button to launch your application

Just give a name to your execution

All inputs needed by your application: files, folders (result directory), command line arguments...

VIP exploits data parallelism (one independent job is created for each set of inputs)

You can save input list for next executions with "Save..." buttons

And launch your application

Execution monitor

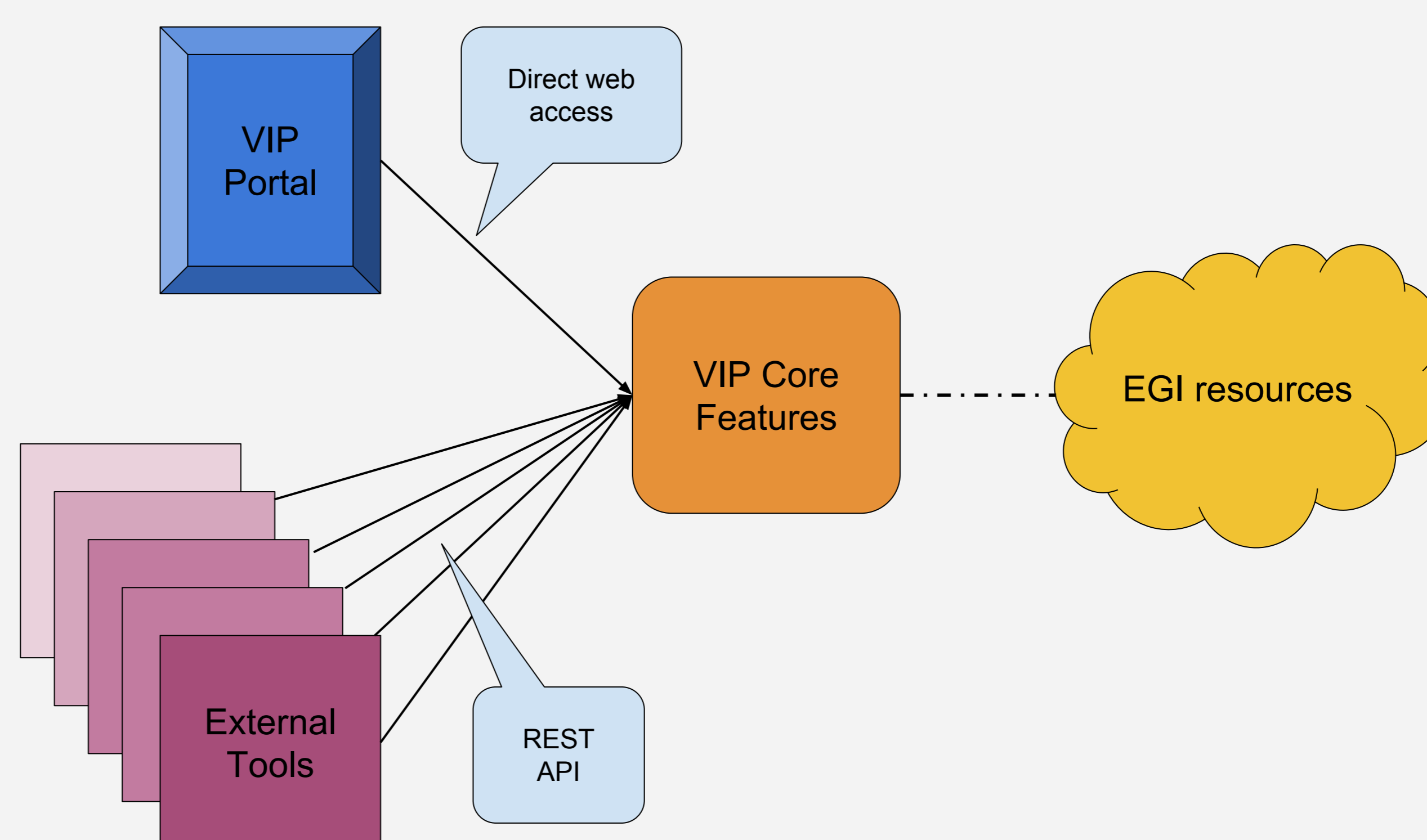
- Manage your executions
- Access to execution details
 - Graphical distribution of jobs in real time
 - Failed jobs are automatically relaunched
 - For each job you can watch and/or download output and error files...

On the home page, a button to monitor your executions

Other functionalities

- File transfer: upload inputs and download results in one click
- Share your applications with other users
- Access to a full documentation and tutorials

An API for new usages



A REST API

- The new API is conform to the CARMIN specification (<https://github.com/fli-iam/CARMIN>) backed by France Live Imaging (FLI)
- The API is compliant to the popular REST principles

A functional API

- The API currently gives access to the core features of VIP : it allows to list and describe applications, to launch an execution and to check its progress
- The API will soon enable data transfers, making possible a complete execution scenario without using the VIP portal

New usages

- Through the API, external tools can now access the EGI resources transparently
- Researchers will benefit from it by having a way to compute massively parallel tasks directly from their existing solutions
- The CARMIN specification allows an interoperability between all the platforms that support it and the tools that integrate it

