Workflow handling in the Virtual Imaging Platform

Sorina POP
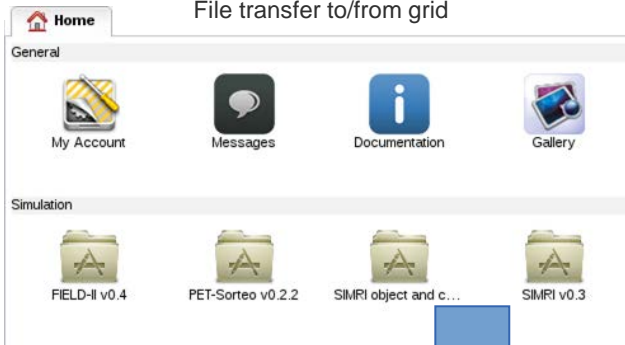
CREATIS

Virtual Imaging Platform (VIP)
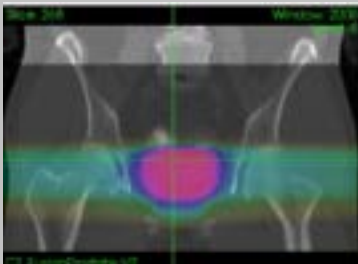
https://vip.creatis.insa-lyon.fr

Web portal

Application as a service
File transfer to/from grid

Home
General
My Account | Messages | Documentation | Gallery
Simulation
FIELD-II v0.4 | PET-Sorteo v0.2.2 | SIMRI object and c... | SIMRI v0.3
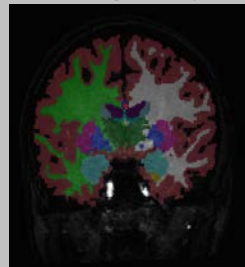
Scientific applications

Cancer therapy simulation

Prostate radiotherapy plan simulated
with GATE(L. Grevillot and D. Sarrut)
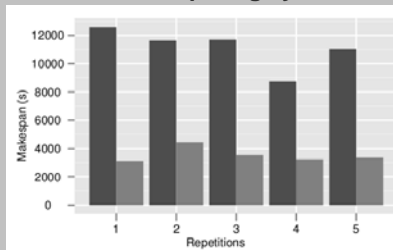
Neuro-image analysis

Brain tissue segmentation
with Freesurfer

Image simulation

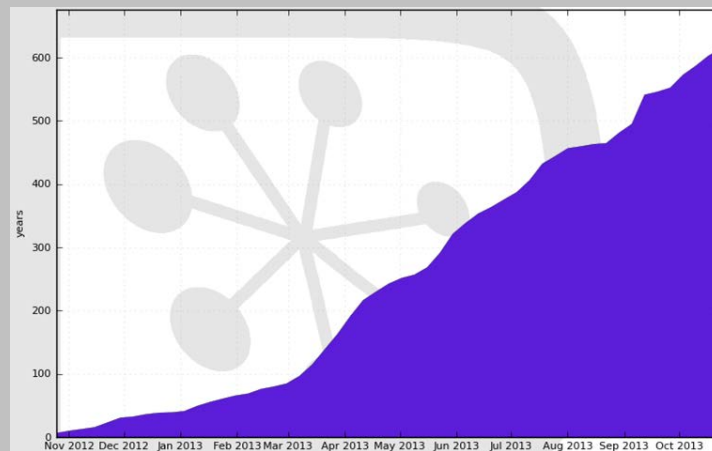Echocardiography simulated with
FIELD-II (O. Bernard *et al*)

**Modeling and optimization of
distributed computing systems**

Acceleration yielded by non-clairvoyant
task replication (R. Ferreira da Silva *et al*)

Infrastructure

Supported by EGI Infrastructure
Uses biomed VO (~65 sites in Europe and beyond)

France-Grilles

DIRAC

Users

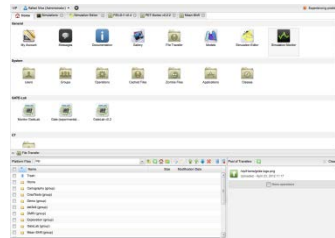**1000+** registered users in January 2018
40 publications since 2011

VIP architecture

User

0. Login
1. Send input data

Web Portal

3. Launch workflow

**Workflow Engine
(Moteur + GASW)**

2. Transfer
input files

4. Generate and
submit task

**Storage
Element**

7. Get files
8. Execute
9. Upload results

6. Get task

5. Submit
pilot jobs

Computing site
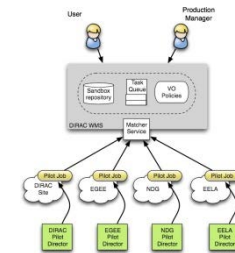
**Pilot Manager
(DIRAC)**

ODIRAC
THE INTERWARE
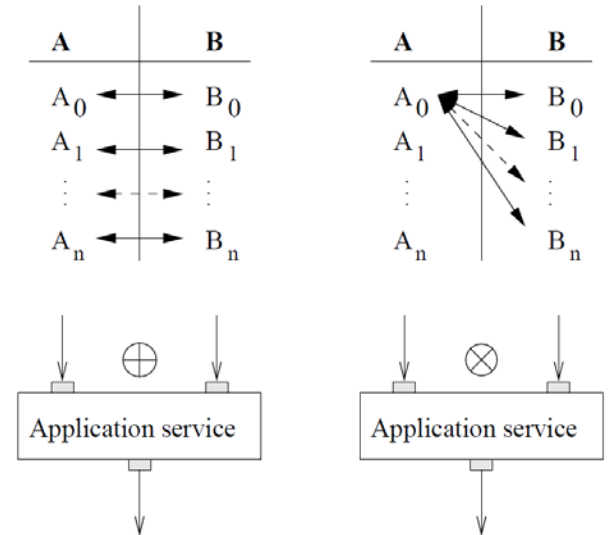
Gwendia Language

- Enables the description of data to be manipulated, processing activities and control structures
- Specificities
  - data-driven approach
  - arrays manipulation
  - control structures
  - maximum asynchronous execution
- Iteration strategies
  - Dot, cross, flat-cross, match (for data items carrying one or more identical user-defined tags)

Exemple of workflow (GATE)

- A graph of activities interconnected through data dependency links
- Each activity corresponds to the execution of some application code
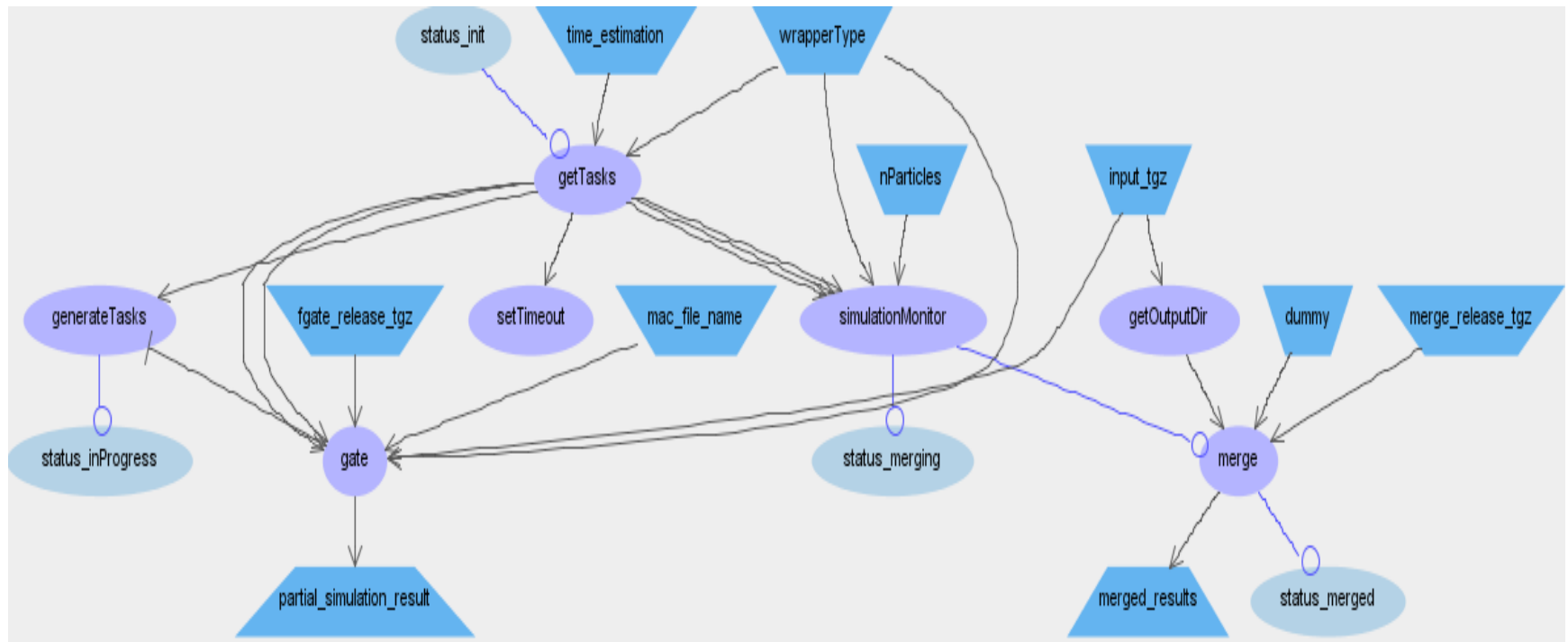
Inputs/Outputs
→ Types
→ Iteration strategies

Processors
→GASW (executables wrapped in a XML descriptor)
→Beanshell (Java)

Perspectives

- Moteur and Gwendia no longer supported
- Looking for another workflow solution
- Dirac Production System is a good candidate