GRIF Future

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Outline

- Efforts towards clouds
- P2IO VirtualData: beyond GRIF in Orsay-Saclay

Toward Clouds…

- Cloud is a fashion, a buzz-word… and an attractive technology to manage a site!
  - Physical resources are hypervisors
  - Services are instantiated on available physical resources as needed (elasticity)
    - Grid WN can be instantiated on demand with an environment controlled by the "users" (VO)
  - Physical resources can be shared with non grid usage
- Users/VO will benefit from clouds as they can use an environment matching their needs
  - Trusted virtual images (HEPiX) to allow a site to run with confidence images it has not built
    - Based on the concept of endorser + digital signature
  - Virtual machines may connect directly to pilot frameworks

… Toward Clouds

- GRIF/LAL has ben involved in StratusLab project for 2 years
  - StratusLab delivered an open-source cloud distribution providing a compute service, a storage service and a marketplace
  - GRIF/LAL has been running a small public cloud for 2 years and will expand it
  - Instantiating grid services in the cloud has been a distinctive work of StratusLab
- No clear roadmap yet but as a first step GRIF/LAL would like to convert its WNs into cloud VMs
  - Grid WNs will remain the main usage of the hardware but will allow other usages
  - Understand what kind of integration with submission systems and batch systems

P2IO VirtualData

- P2IO is a collaboration between 8 labs in Orsay-Saclay-Palaiseau (south of Paris region)
  - P2IO = Physique des Deux Infinis et des Origines
  - 4 labs out of 8 are GRIF members (IPNO, Irfu, LAL, LLR)
  - Collaboration supported/funded by a LABEX
- VirtualData is one of the P2IO WG around technological platforms
  - Build a common computing platform shared by all labs and targeting processing and simulation of large volume of data
  - Develop synergy between all people involved in computing operation (55) or in application development (75)
    - Cover almost all areas of computing expertise

P2IO Resources

- GRIF, a large grid site
  - 4 P2IO laboratories involved in GRIF
  - 80% of GRIF resources located in P2IO
  - A successful experience of 6 years in the common technical and scientific management of the platform
- StratusLab : an IaaS cloud testbed
  - 250 cores, 50 TB of disks
  - Possible doubling this year
- 1 HPC machine for astrophysics simulations
  - 600 cores, 50 TB disks, Infiniband interconnect
  - Doubling planned this year
- IDOC : International Data and Operation Centre
  - Astrophysics

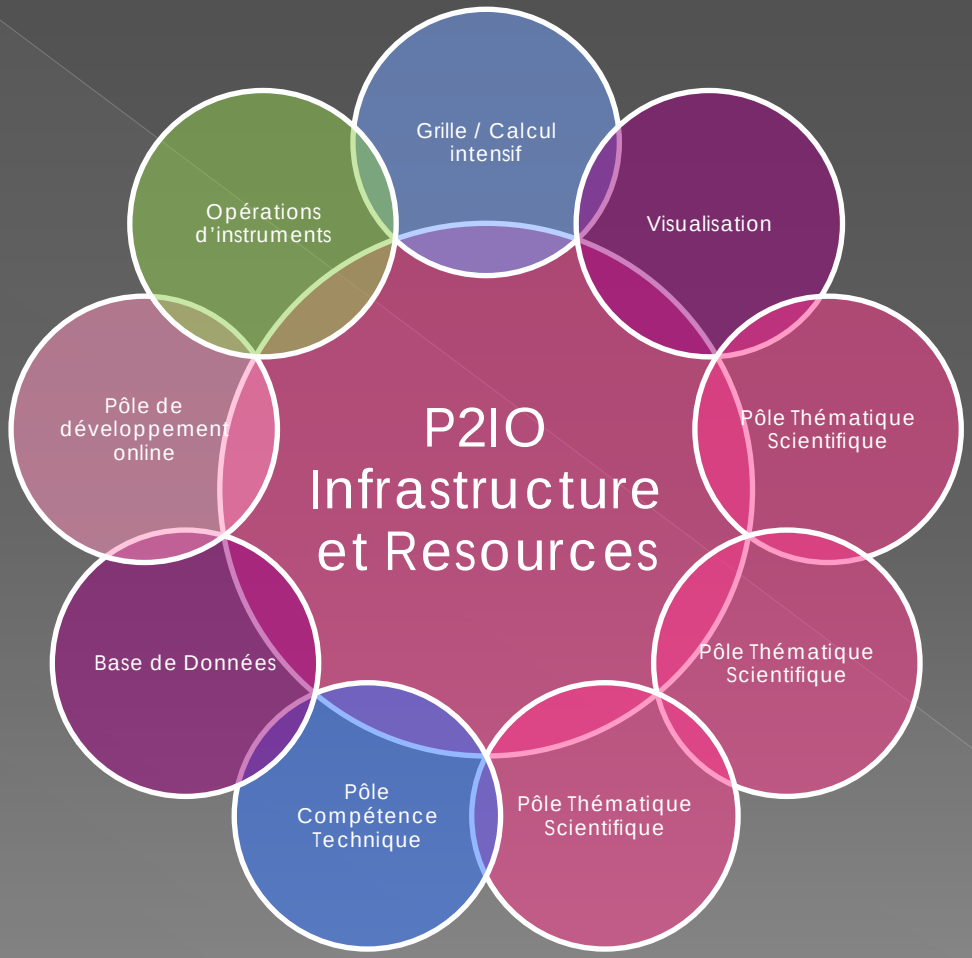
Ambitions

- Build a computing team and resource able to tackle new challenges
  - T0/T1 center for small/medium experiments: intrastructure requirements not affordable by a single lab
  - Leading responsibilities in computing of experiments
  - Participation to remote control of experiments (astrophysics)
- Increase the service availability at the same time we optimize the cost and the environmental impact of the infrastructures
  - Building new computing rooms shared by the P2IO labs
    - 2 in different locations
  - Cloud technology to allow a more flexible allocation of the ressources to the different needs
- Contribute to R&D on future computing architectures
  - Distributed computing, parallelism, processors, software

Les Projets

- Set up a collaboration structure between all people involved in computing in P2IO
  - Build upon the GRIF experience and success
  - Create a network of expertise in all areas covered in P2IO, both in SW development and operations
  - Organize regular meetings: first one planned beginning of July
- New computing room on 2 distinct sites
  - A unique computing infrastructure on 2 sites
    - Orsay (Univ. Paris Sud) and Palaiseau (Ecole Polytechnique)
  - Redundancy for critical services
  - Strong focus on high energy efficiency (PUE target = 1,3)
  - Orsay project in progress. Target for availability: October 2013
    - 100 m2/400 kW IT extensible to 250 m2/1,5 MW

P2IO Computing Vision



Conclusions

- Leverage on GRIF success to offer new services to access resources and address new use cases
- Dynamic provisionning and elasticity of resources are appealing features of cloud technology
  - GRIF, through its participation to StratusLab project, is actively looking at the integration between clouds and grids
  - Also involved in management of VM image lifecycle to make it sustainable
    - Image maintenance with configuration tools, trusted virtual images
- P2IO will have a major impact on Southern Paris subset of GRIF
  - Improved and common infrastructures
  - Challenge: extend our successful collaboration experience and governance to new users/needs