

DIRAC framework evaluation for the Fermi-LAT and CTA experiments

Summary

Current (*Fermi*-LAT, *Fermi*-Large Area Telescope [1]) and planned (CTA, Cherenkov Telescope Array [2]) new generation astrophysical/cosmological experiments, with very large processing and storage needs, are currently investigating the usability of DIRAC to access to grid resources. For each of these use cases, we have deployed a prototype setup based on the DIRAC framework. *Fermi*-LAT setup interfaces DIRAC to its own workflow system, while CTA setup is entirely based on DIRAC for the Monte Carlo production and analysis on the grid.

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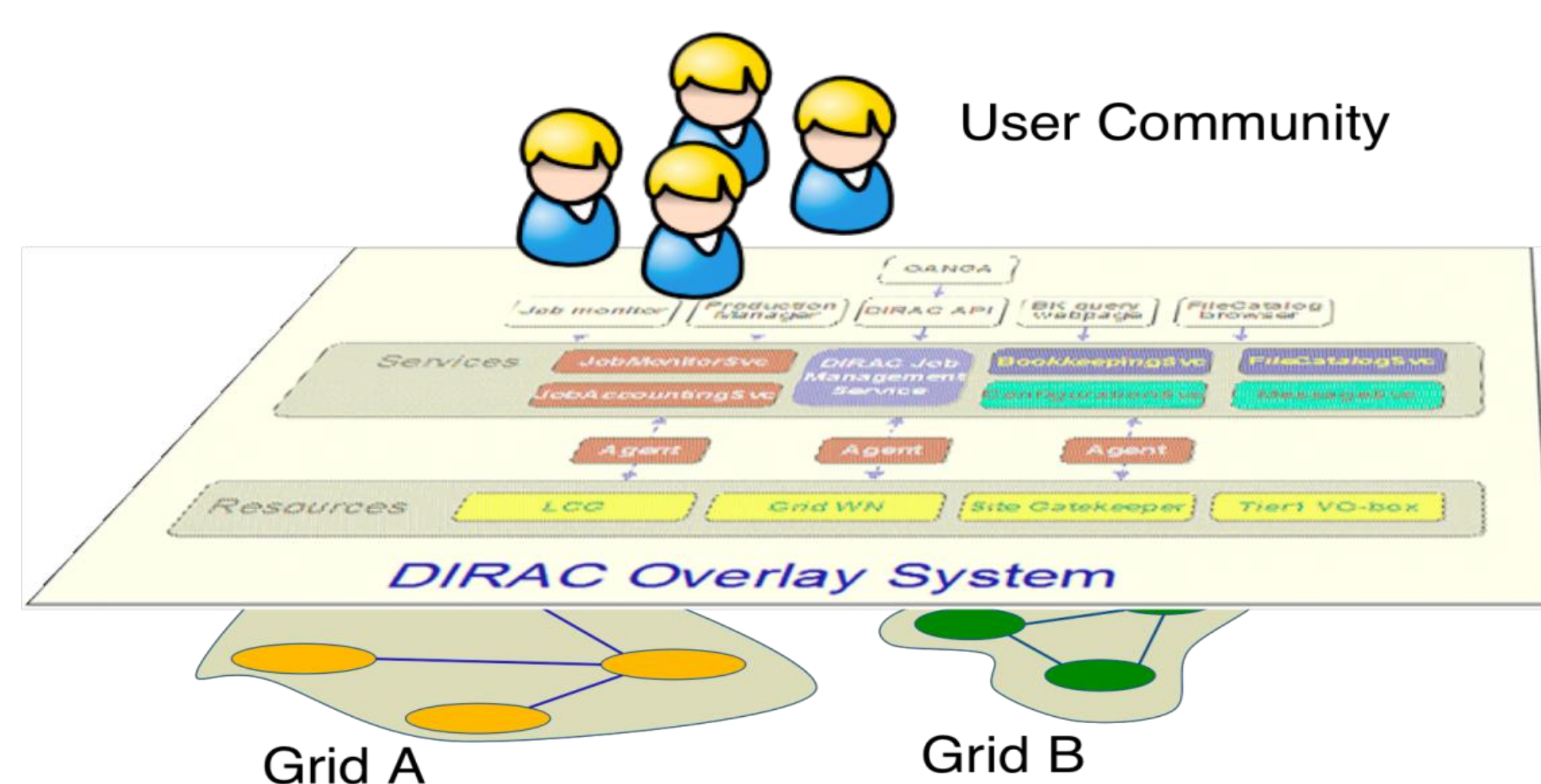
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Why DIRAC for astrophysical experiments?

- High computing and storage needs in astrophysical/cosmological experiments
- Peta-Byte scale MC simulations to derive the 'Instrument Response Functions'



- Management of distributed activities
- Resource usage optimization
- Easy customization
- Central management of the VO activities
- Easy integration of heterogeneous resources
- Advanced user interface

CTA-DIRAC setup

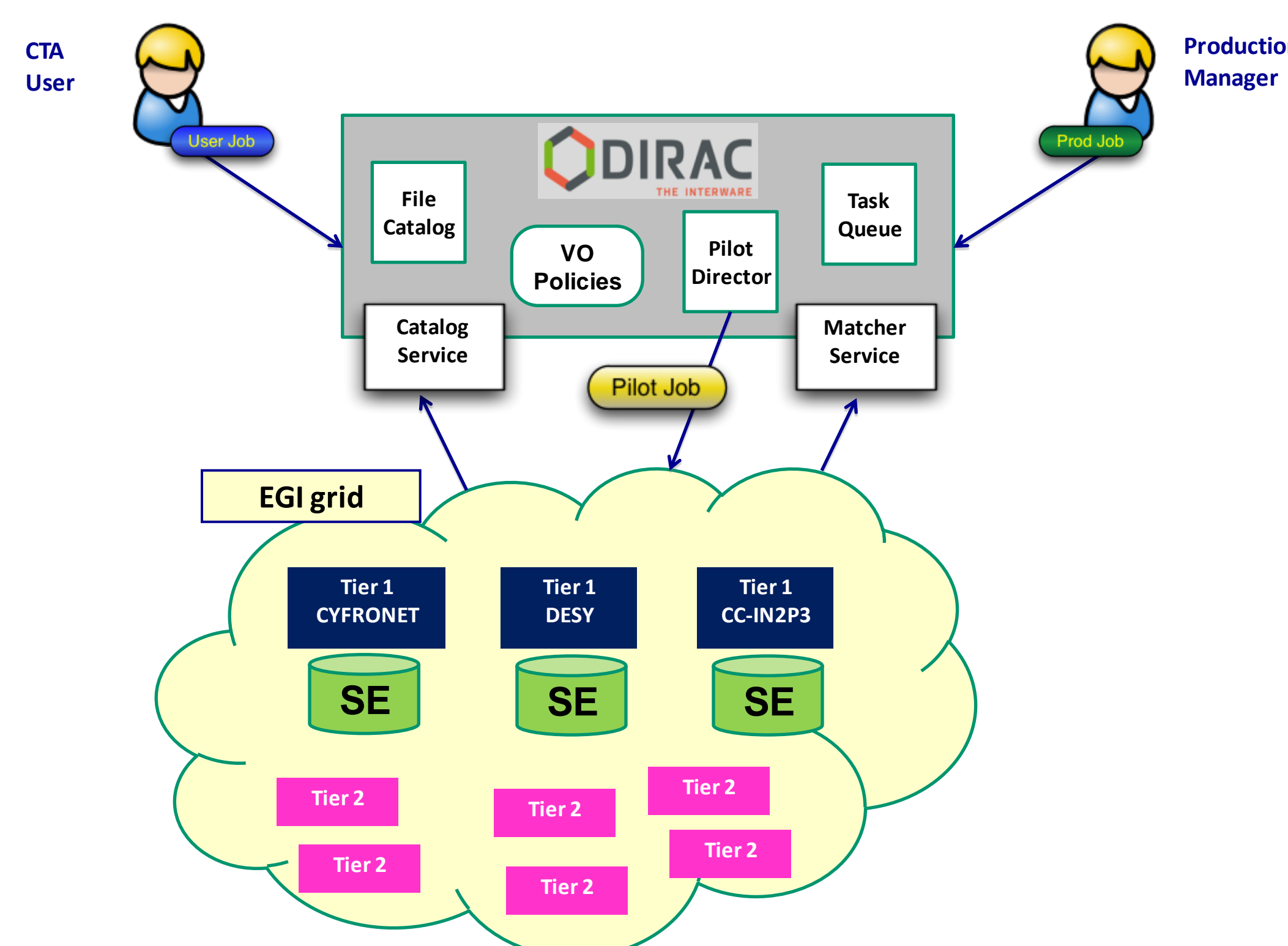


Fig. 2: CTA-DIRAC computing model.

Fermi-DIRAC setup

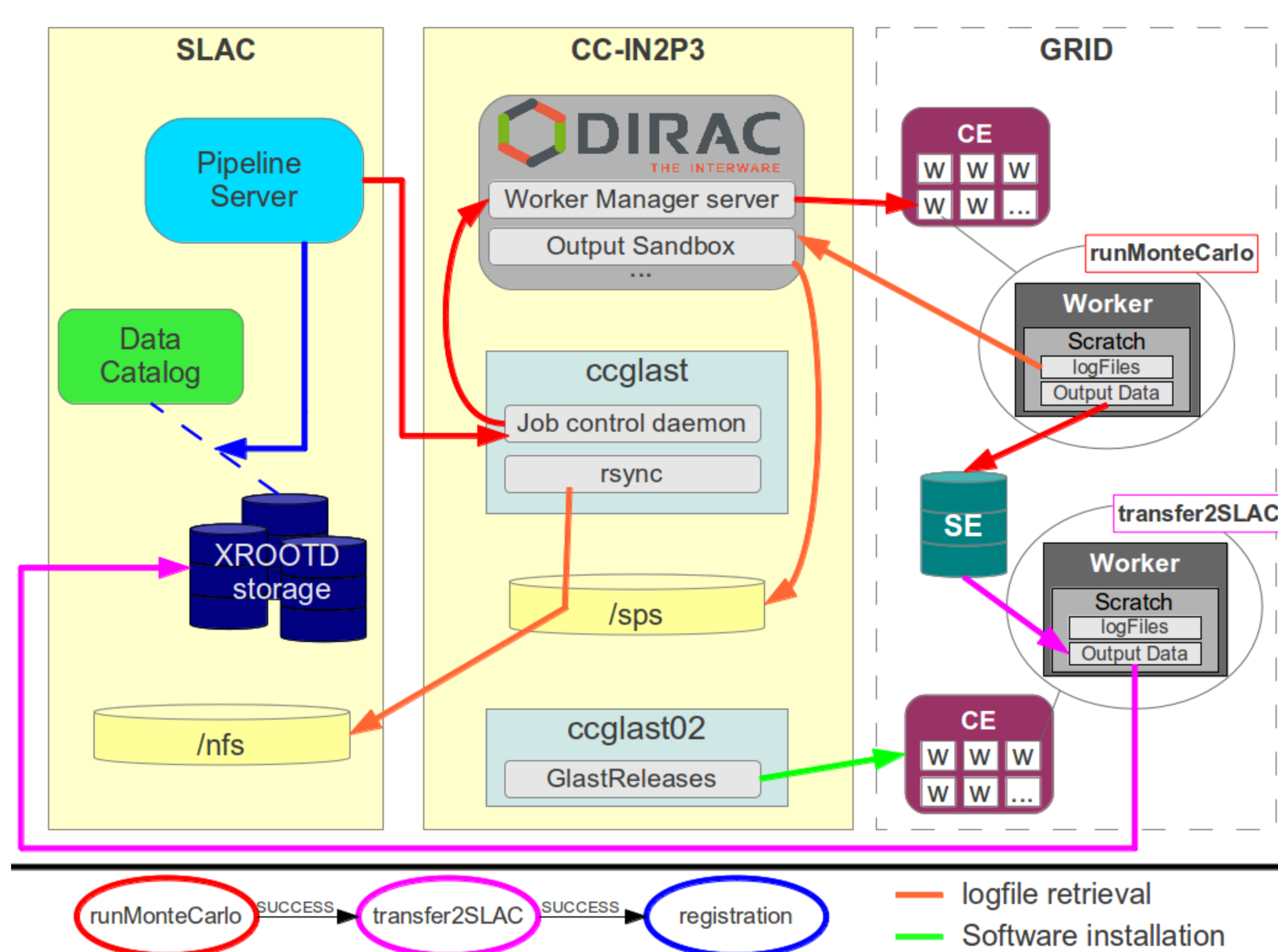
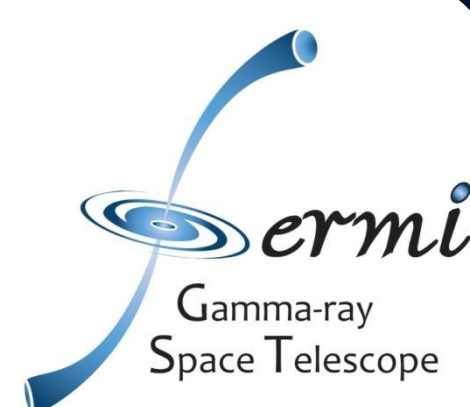


Fig. 1: Schematic view of the *Fermi*-DIRAC setup.

Results

- *Fermi*-DIRAC setup extensively tested
- CTA-DIRAC intensively exploited during the MC campaigns in 2013
- Stable regimes of 4000-5000 jobs
- About 30 M HS06 CPU hours consumed in 2013
- More than 2 M jobs executed
- 3.3 M of replicas registered in the DIRAC File Catalog
- DIRAC solution is well adapted to the computing activities of *Fermi*-LAT and CTA astrophysical experiments

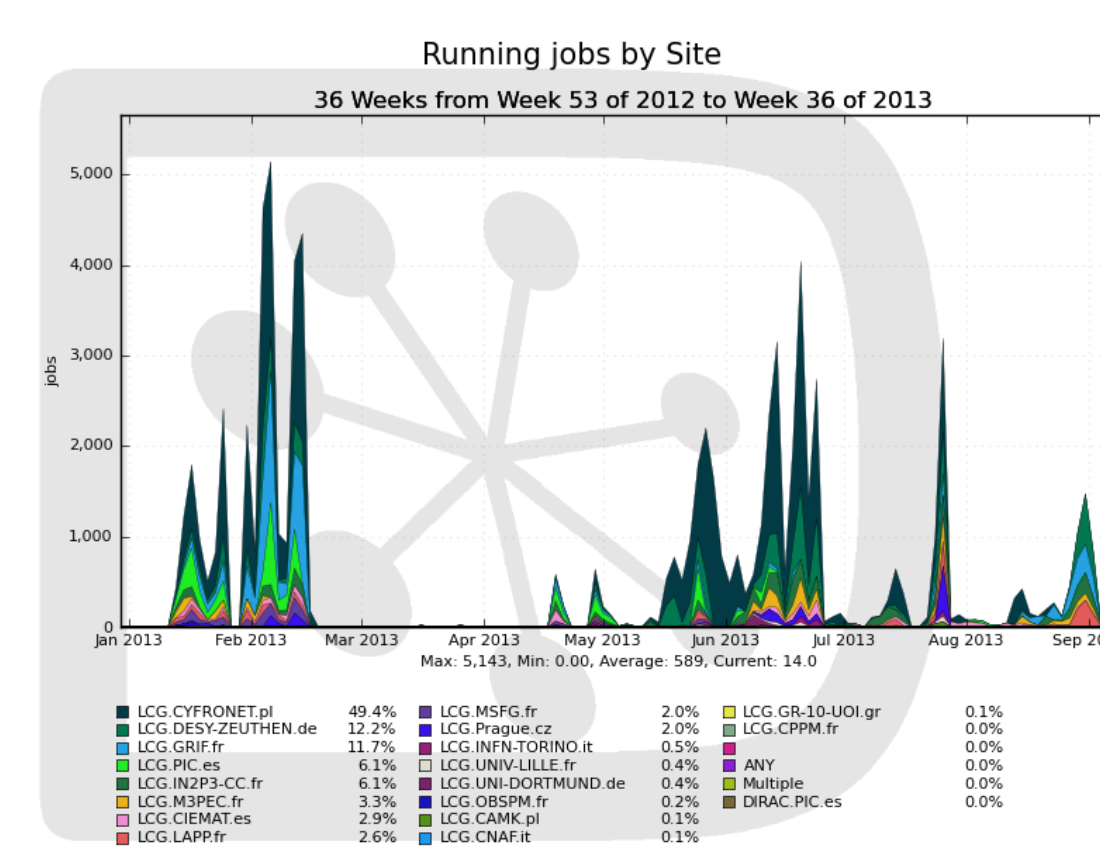


Fig. 3: Concurrent jobs within the CTA-DIRAC setup in 2013.

Perspectives

- Exploit the *Fermi*-DIRAC setup for the next massive MC campaigns
- Further automatize the CTA-DIRAC production system

References

- [1] Atwood W B et al. 2009 The Astrophysical Journal 1071
- [2] M. Actis et al. (CTA Consortium), 2011, Experimental Astronomy, 32, 193

