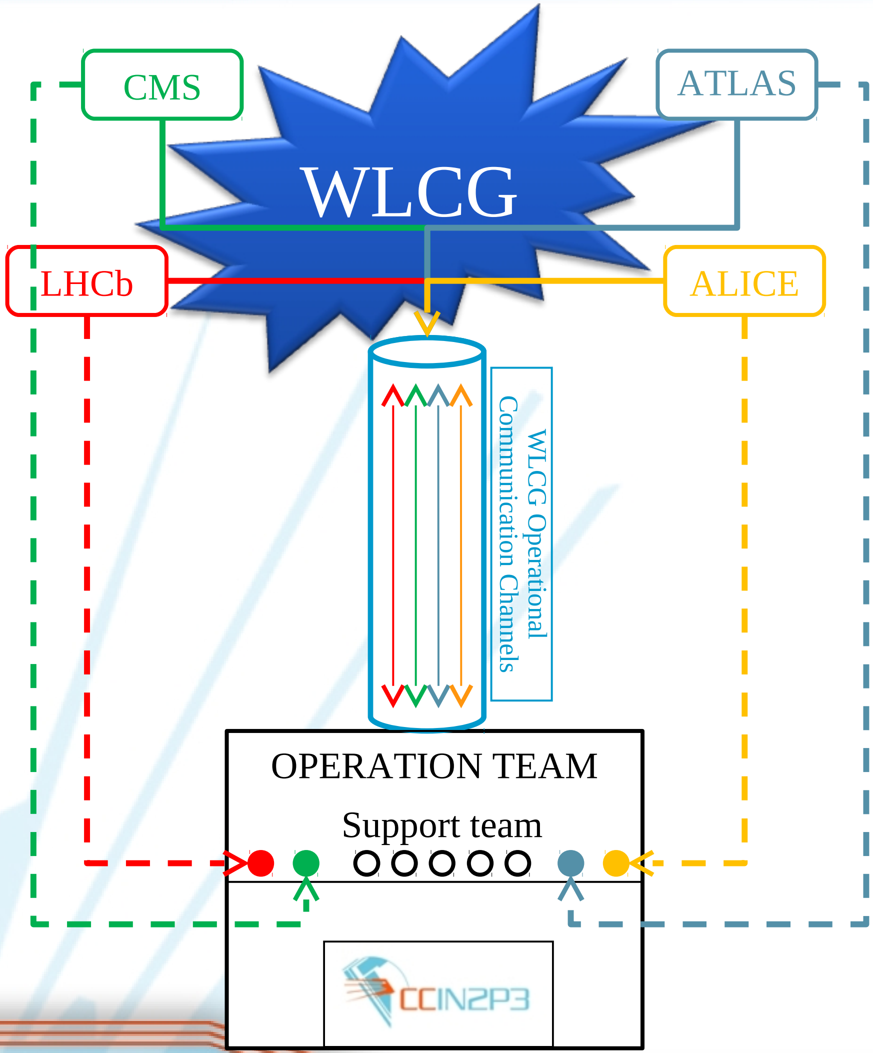
Status of LHC computing activities at CCIN2P3

Renaud Vernet – Jun. 2014

Outline

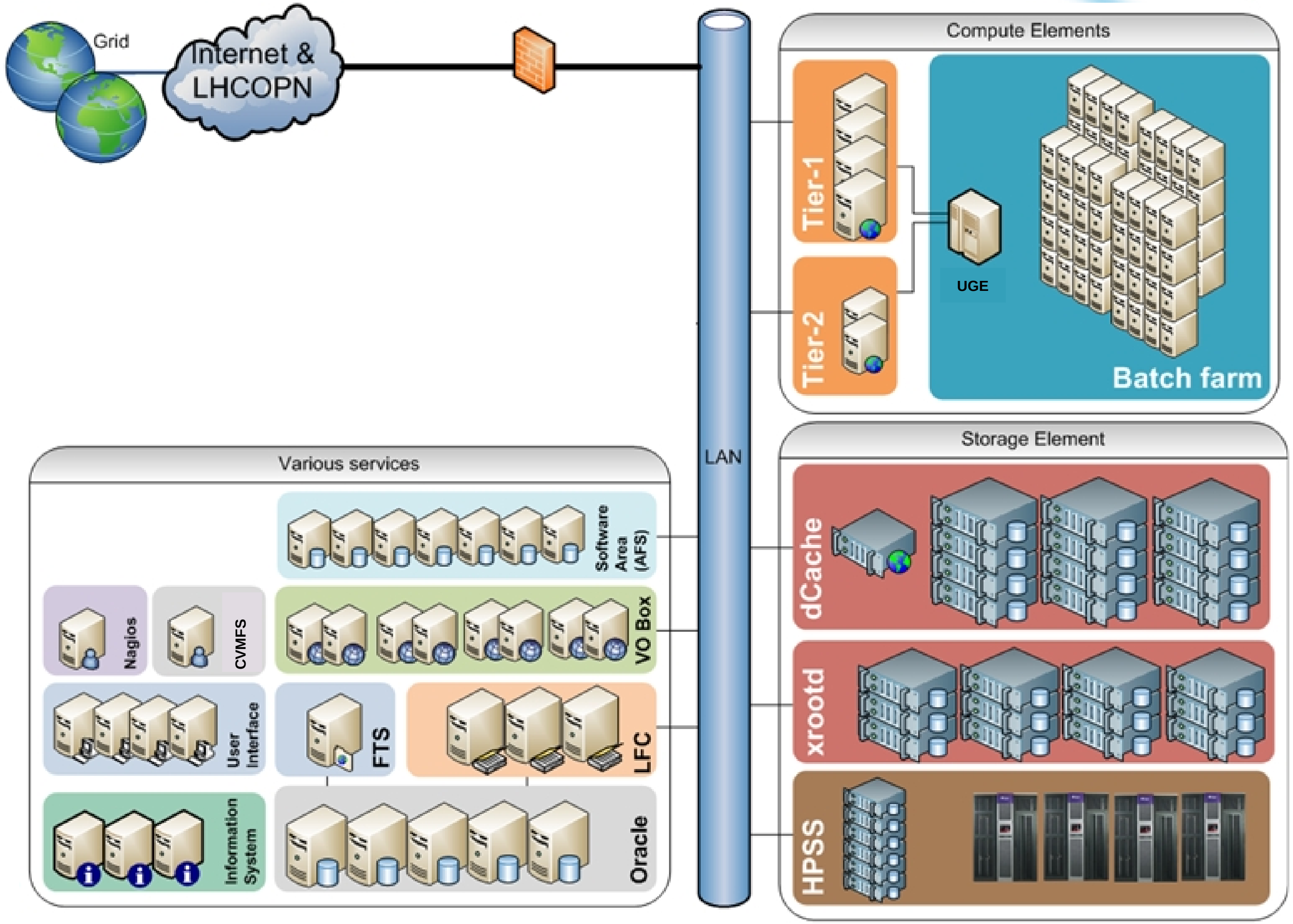
- Organization and setup
- Resource usage
- Performance (view from the outside)
- New concepts
- Conclusion

CCIN2P3 and WLCG



- CCIN2P3 ensures the deployment of services required by WLCG
- GGUS interfaced with our ticketing system
- LCG and NGI representatives at CCIN2P3 attend WLCG meetings
- Direct communication between site and experiments is essential
- LHC support at CCIN2P3 is the front line for LHC computing-related issues

Farm setup

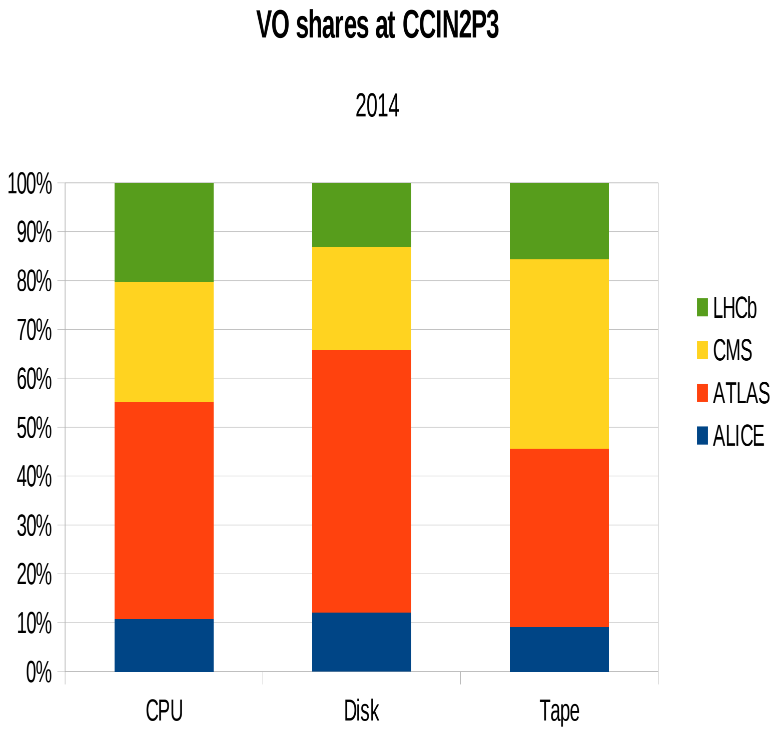


~10000 job slots for LHC

8 PB disk (LHC)

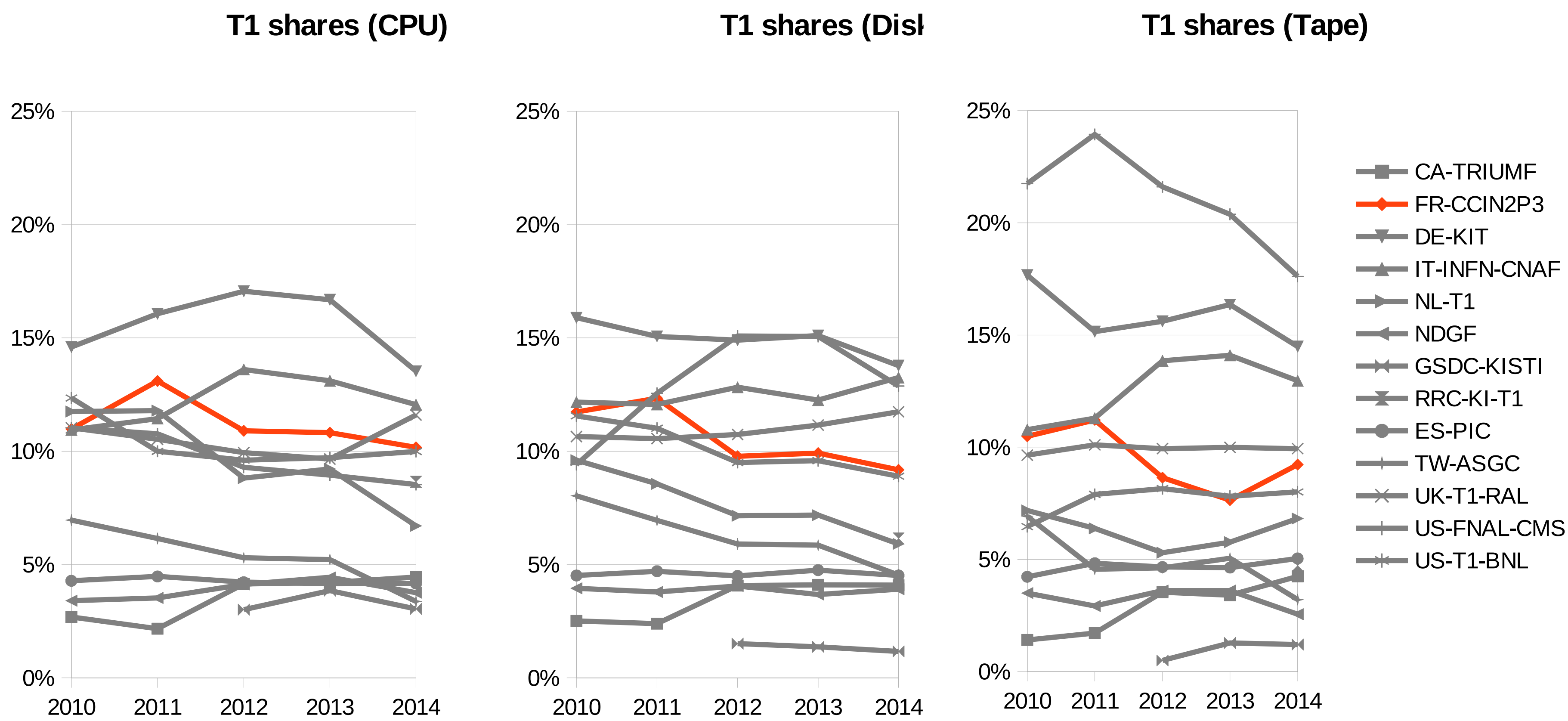
12 PB tape (LHC)

LHC experiments at CCIN2P3

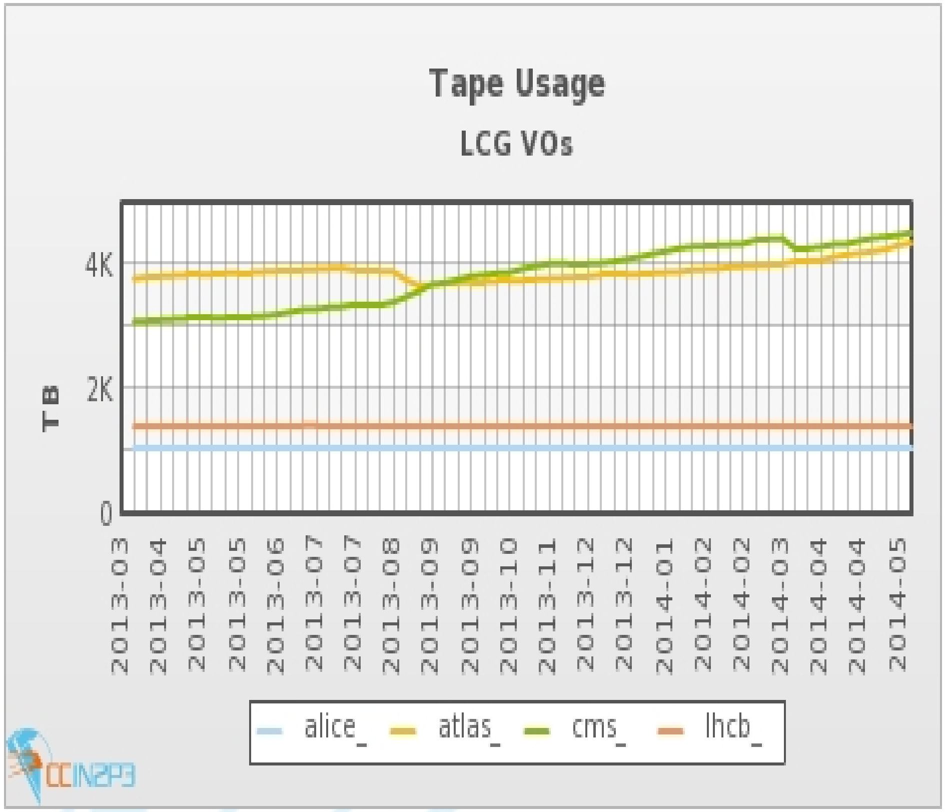


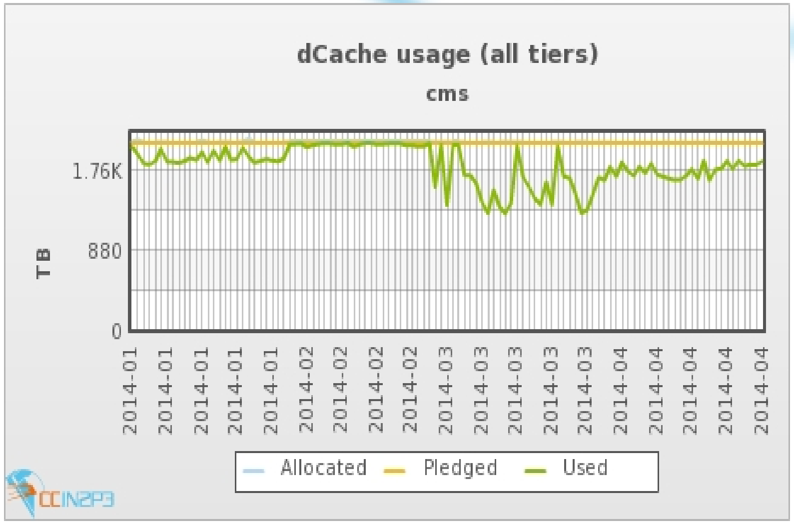
- T1 & T2 resources
  - + T3 resources (ATLAS & CMS)
- Balance in agreement with exp. computing models / requirements

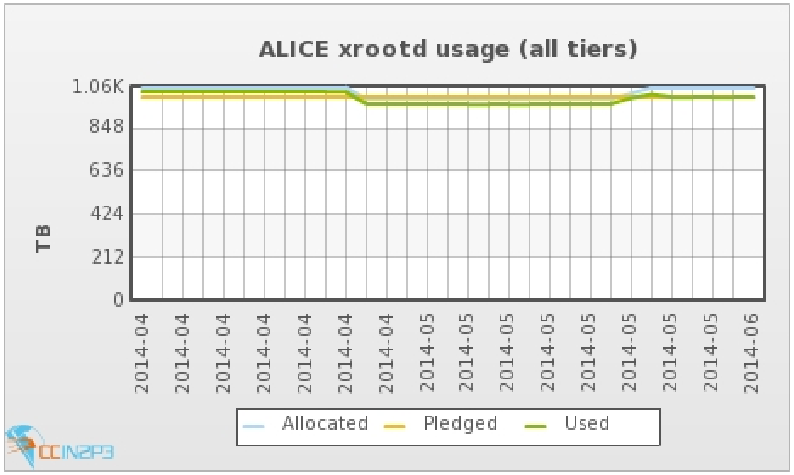
Our weight among the T1's



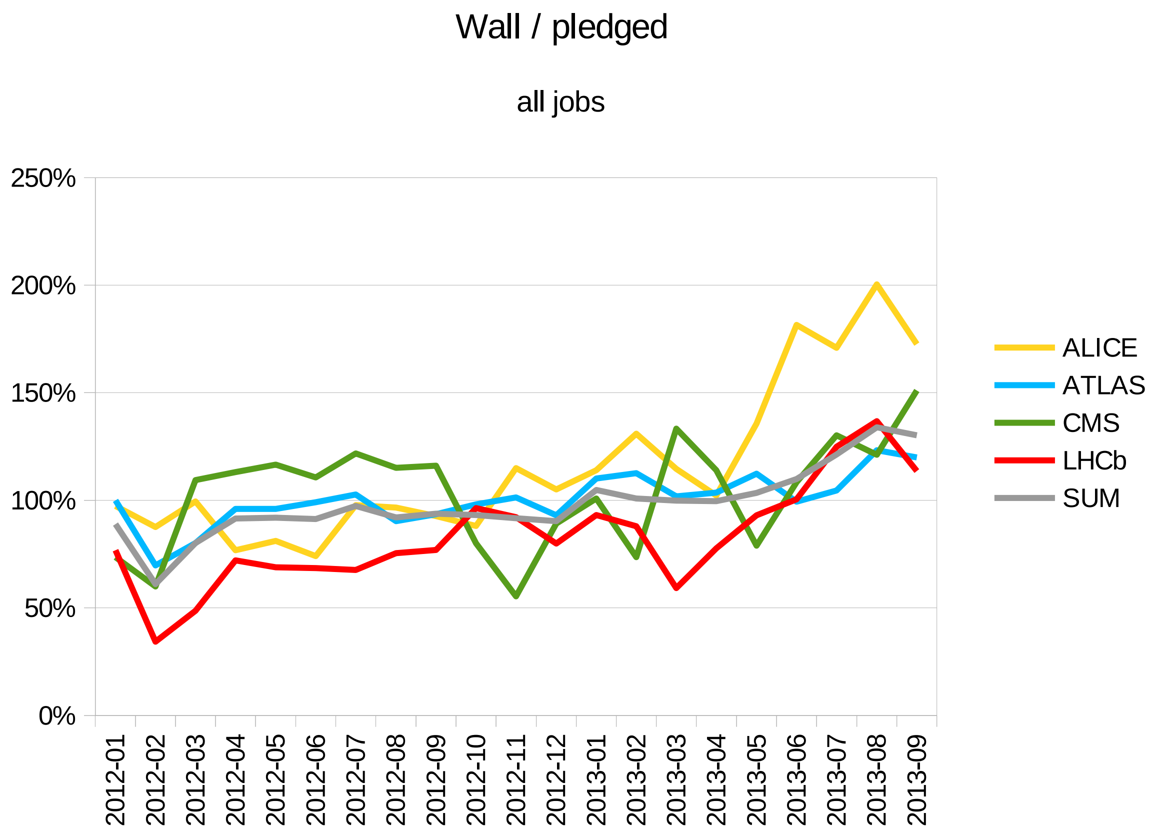
Storage usage







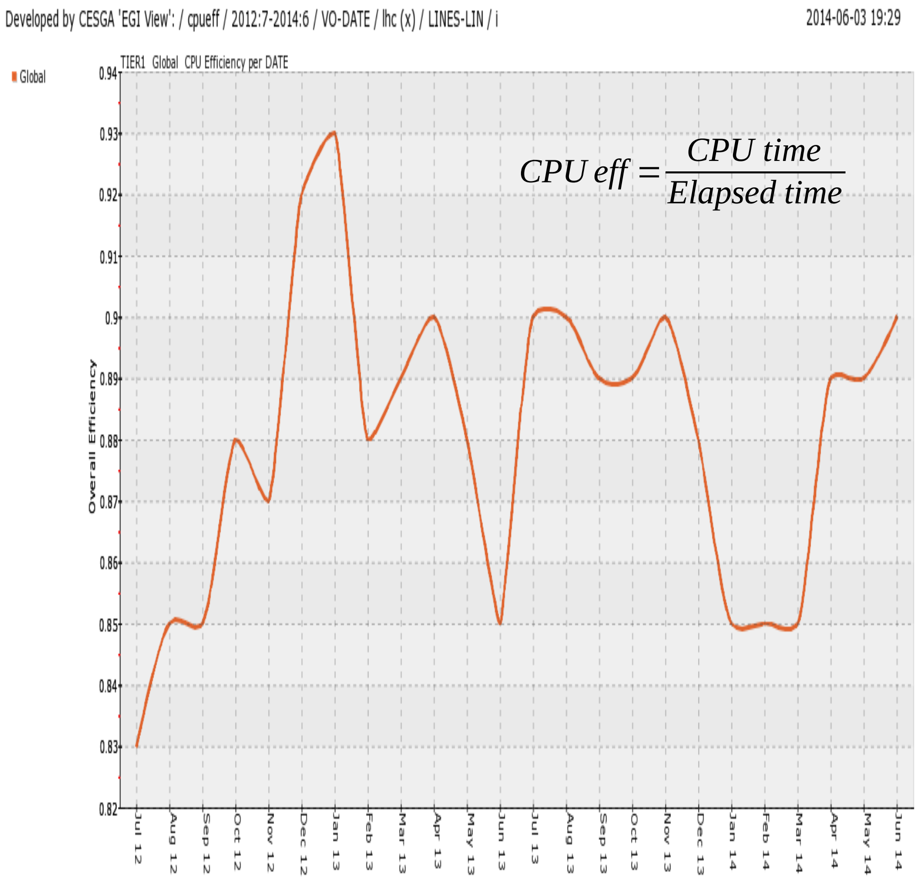
CPU usage



We manage to provide more jobs than we pledge

ALICE	ATLAS	CMS	LHCb	AVG
136 %	107 %	103 %	96 %	107 %

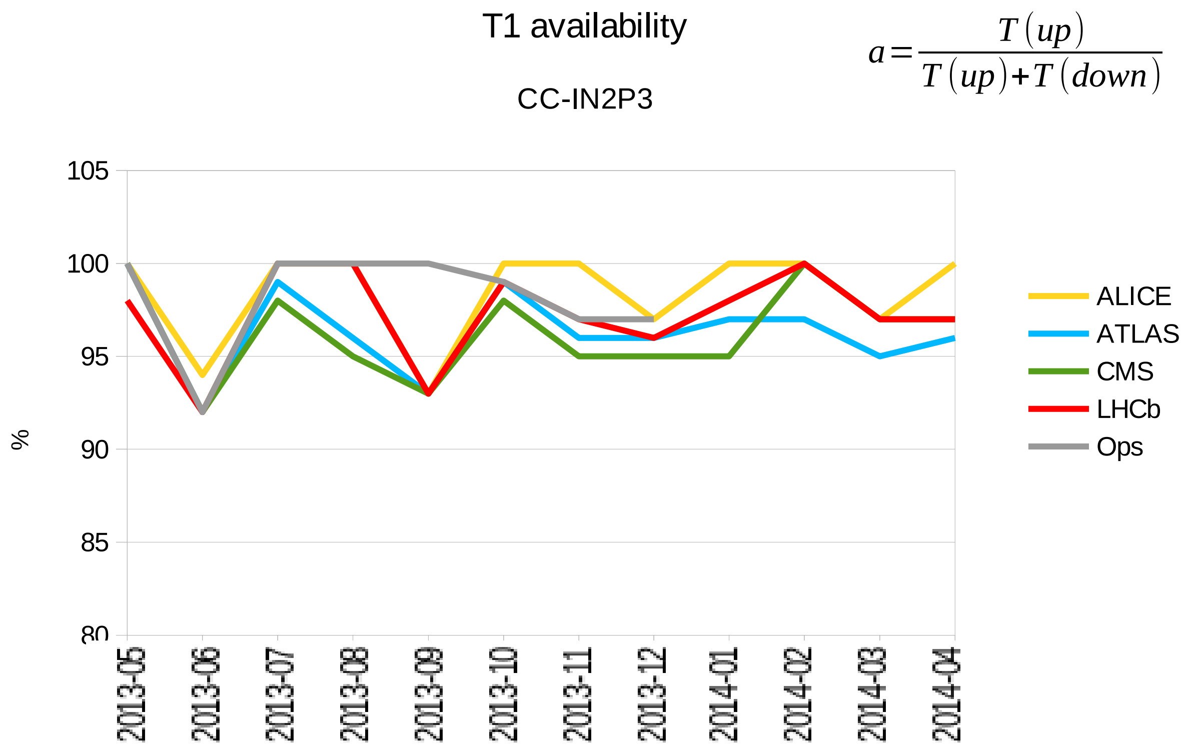
CPU efficiency



- Overall >85 %
  - Including analysis
- → very satisfactory
- Resources are fit to the needs
  - Storage IO speed
  - Network performance

Site availability

$$a = \frac{T(up)}{T(up)+T(down)}$$

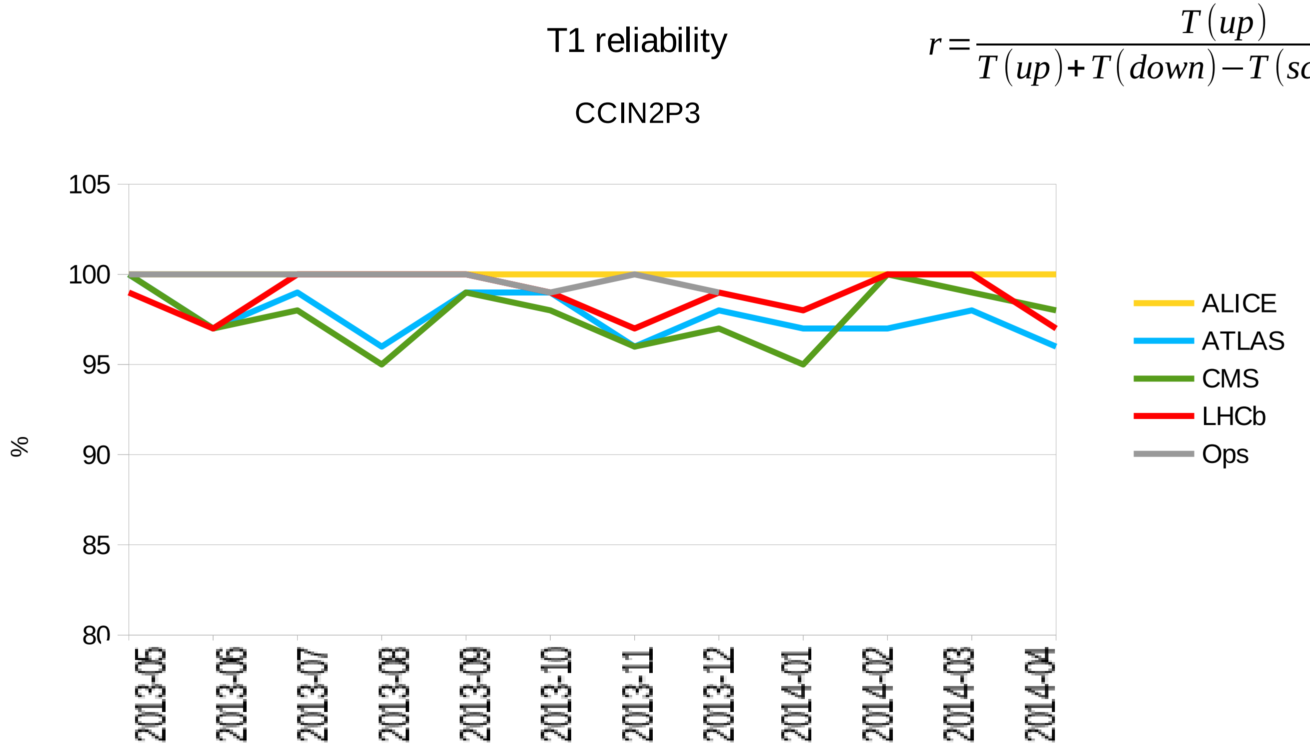


Average % on the last 12 months :

ALICE	ATLAS	CMS	LHCb	Ops
98	96	96	97	98

Site reliability

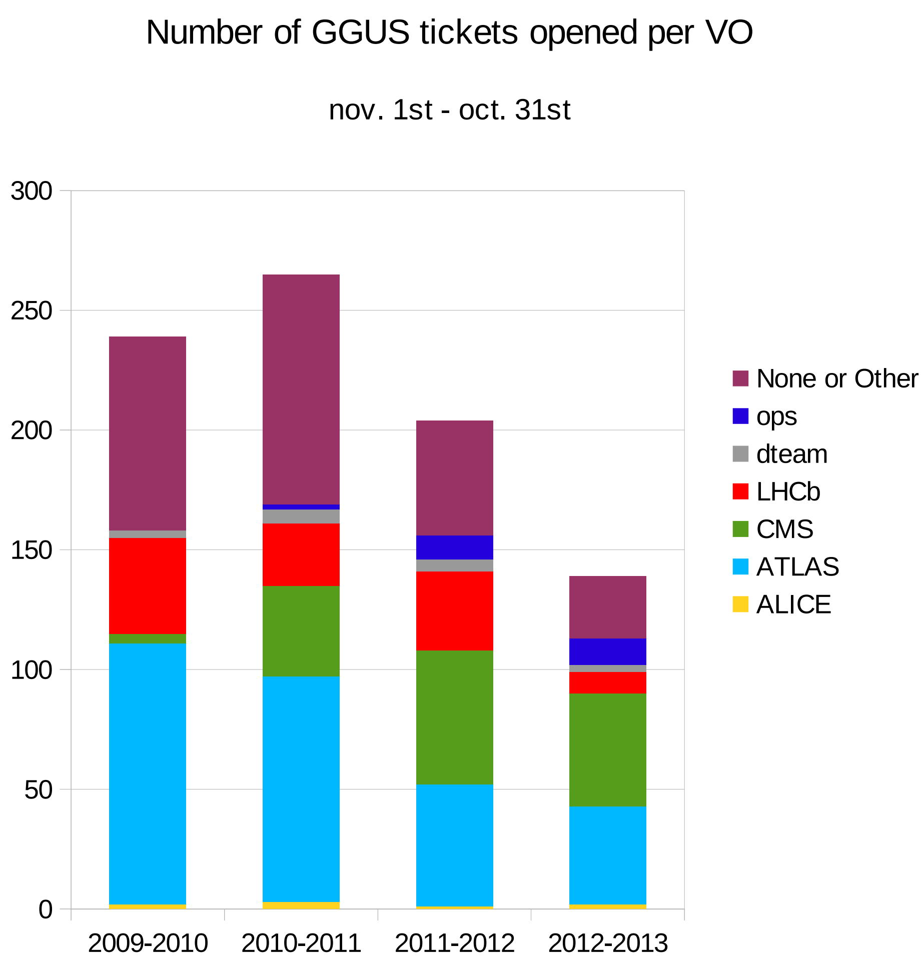
$$r = \frac{T(up)}{T(up) + T(down) - T(sched.\ down)}$$

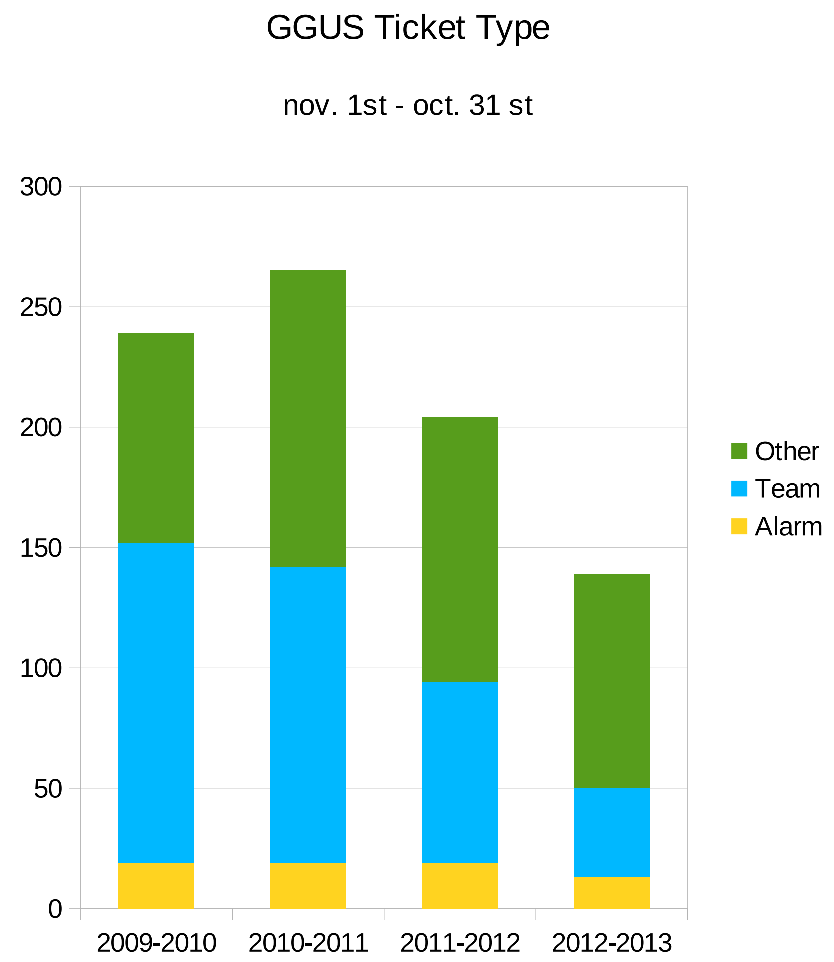


Average on the last 12 months :

ALICE	ATLAS	CMS	LHCb	Ops
100	98	99	99	100

GGUS tickets





« new » concepts

- Federation
  - Xrootd, webdav
  - Failover and remote accesses

- Cloud
  - Optimisation of resources
  - Simplification of computing models
  - Use of opportunistic resources
  - Less hard/software constraints on sites and VOs
  - ATLAS has started using cloud at CCIN2P3

WLCG-dedicated manpower at CCIN2P3

- Many services
  - Load shared between sysadmins, grid admins, batch, and dedicated support
  - Constant interaction between all those people

- Front-line dedicated support
  - ALICE, ATLAS, CMS, LHCb
    - All involved in additional activities as well

- And other activities...

News from the LHC

The Nobel Prize in Physics 2013

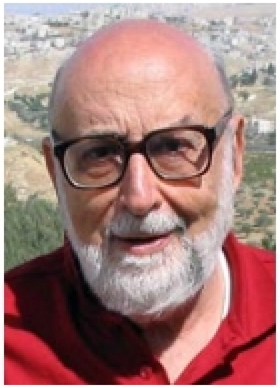
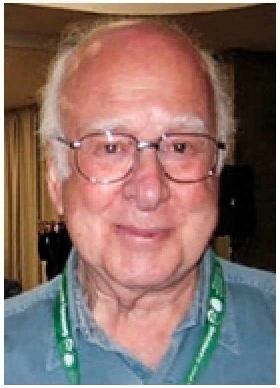


Photo: Pnicolet via Wikimedia Commons

François Englert



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Peter W. Higgs

The Nobel Prize in Physics 2013 was awarded jointly to François Englert and Peter W. Higgs *"for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider"*

CCIN2P3 @ SC'13

CCIN2P3 @ SC'13

CCIN2P3 @ SC'13

Conclusions

- Storage and CPU resources largely used
  - CPU : experiments consume more than we pledge
- Quality of service
  - Continuous decrease of problems (GGUS tickets)
  - No 'Serious Incident' over the last year
  - Focus on availability and reliability improvement
- Manpower is essential
  - Constant interaction with experiments
- In spite of the LHC shutdown, we were kept very busy this year