October 23rd, 2009

Visit of CMS Computing Management at CC-IN2P3

- The "extra" time allowed by LHC delay has been used in order to strengthen the infrastructure and the critical computing services
- Special emphasis has been put on Storage

➔ The price to pay was a temporary degradation of the service quality and stability

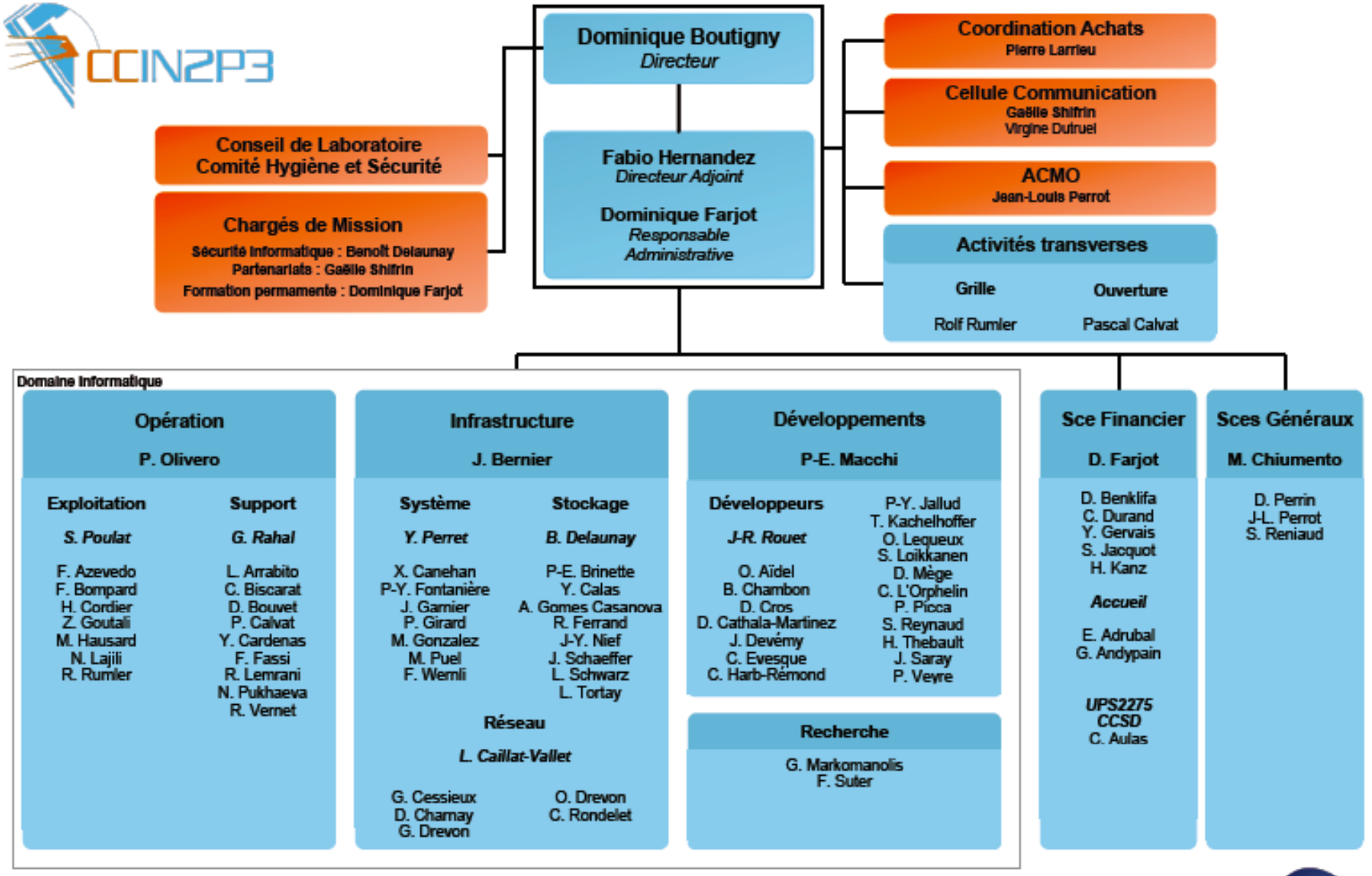
➔ All the necessary stability is being restored now

Main improvement

- HPSS migration
- TReqs development and deployment
- pNFS → Chimera migration
- AFS

- Still to be done:
  - New batch system will be deployed in 2010
  - New product selection phase is currently going on
  - Should be transparent for Grid applications

- We had a big unexpected problem with CMS dedicated support during the summer
  - A lot of efforts from Farida Fassi and David Bouvet to try to overcome the difficulties but the manpower was not enough
- A new CMS support person has been hired but he will start only in December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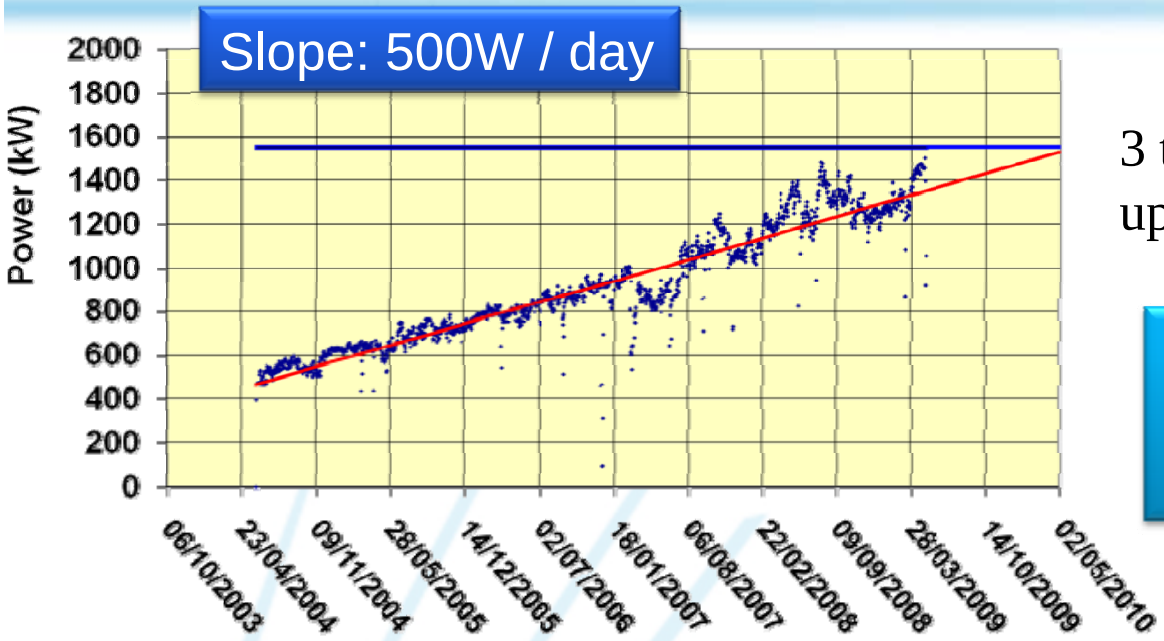
Electrical Power



3 transformers: 1550 kW recently upgraded to 3000 kW

A 800 kW rental transformer has been installed during the summer

Work in 2007 / 2008:

- New main patch panel
- New UPS
- Improvement of the battery system
- 880 kW Diesel generator
- Electricity distribution reshuffling
- New power factor corrector

Cooling System

Infrastructure work in 2008 / 2009 – electricity + cooling : 500 k€

We have a 3rd chiller (600 kW theoretical cooling power)

+ some work on the second chiller to decrease the noise level (currently above the environmental limit)

In a week from now we will have the whole cooling capacity installed

We will be at the maximum allowed cooling capacity ➔ we will have to stay within this cooling budget until we get the new computer room

New building

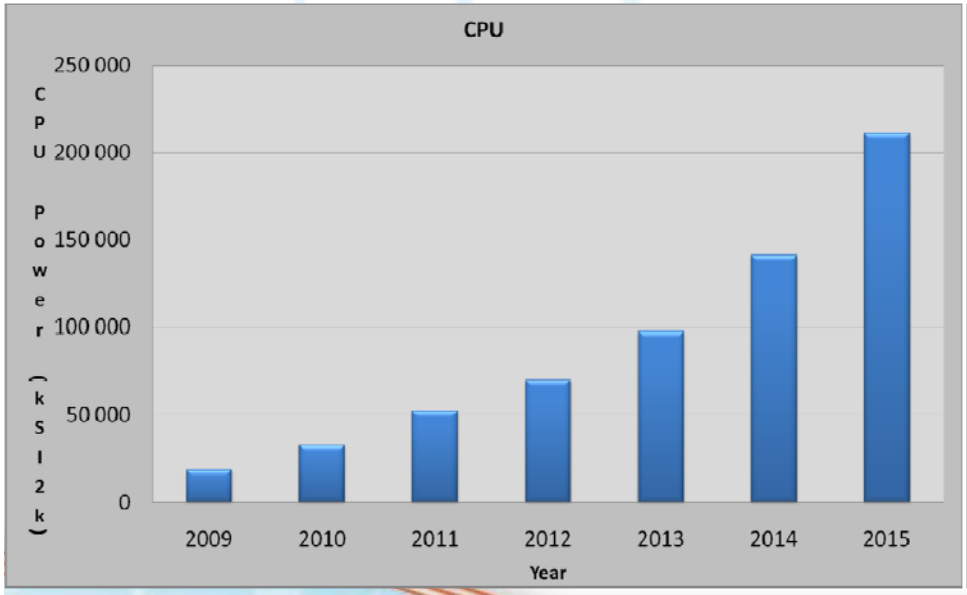
Needs

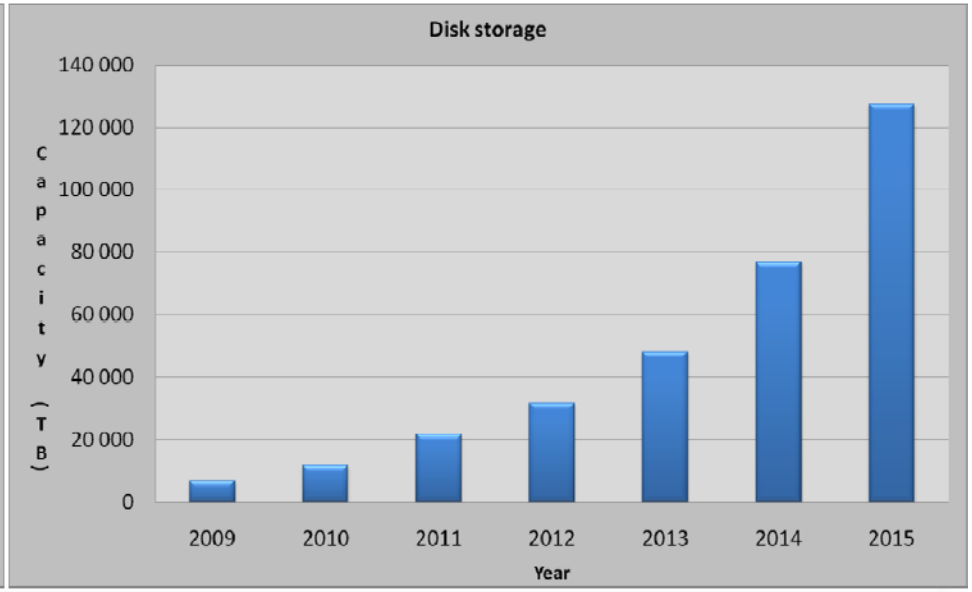
Build a simple computing model with the following ingredients:

- Serve ~40 groups with "standards needs"
- Fulfill LHC computing commitments and provide first class analysis capability
- Expect a very significant growth of the Astroparticle community needs (LSST for instance)

➔ Deduce computing capacity

➔ Add some capacity for network, services, etc.





Needs (2)

- Assume Moore law is still valid
- Extrapolate up to 2019

End up with:

indicated power is for computing only
power for cooling has to be added

2011	2015	2019
50 racks	125 racks	216 racks
600 kW	1.5 MW	3.2 MW

On top of the existing computer room (1 MW)

Due to budget constraints the new computer room will have to start with a limited power
➔ Modular design – Easily scalable

Chilled water and electricity distribution should be designed for the 2019 target value

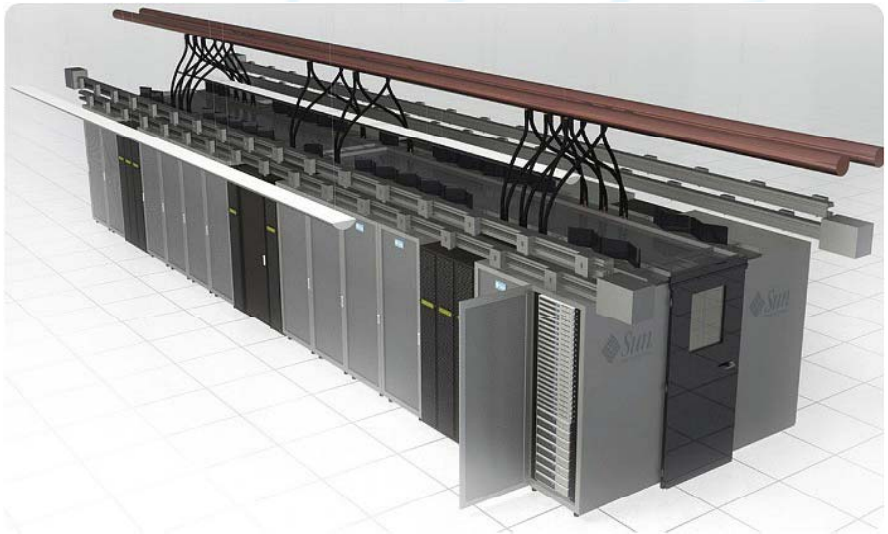
Equipment: transformers, chillers, UPS etc… will be added later

Design consideration

The 2 storey building will be devoted to computing equipment (no offices)

- First storey: Services (UPS, Chillers, etc.) - 900 m^2
- Second Storey: Computer room - 900 m^2

We decided to give up with raised floor
Every fluids will come from the top: Chilled water – Power – Network



Schedule

- 5 out of 15 "design and build" teams have been retained after a first selection phase
- Preliminary design documents received last Monday
- Final choice will be done by Friday October 30
- Hope to begin construction work at spring time
- New building delivery early 2011

- The main risk is related to the French environmental regulation that may delay the project (6 – 12 months)

- If the delay is too large, we may have to host some computing equipment outside CC-IN2P3 ➔ Expensive !