Infrastructure Improvements

2010 – November 4th – Hepix – Ithaca (NY)

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Preamble

- Really involved people could not come to Hepix

  so, this is a general report

- Thanks for explanation and slides to

  Dominique Boutigny (CC-Director)

  Pascal Trouvé (Facility Management Team)

Summary :

- Improvements of the current computing room
- Status of the new computing room
- Second phase of the first project

Last improvements of the computing room

- Second electrical low voltage master distribution panel (Tgbt)
  (one for Operation[racks and water cooling], one for infrastructure)
- New transformers have been installed:
  3 * 1 MVA (No power distribution problem this last summer)
- diesel generator (1.1 MVA)

- Cooling :
  - A third cooling unit (600 kW) has been installed, so 1800 kW now
  - But we have no redundancy (need 1600 kW)
  - Fan system Improvements (aero on the roof)
  - Maximum cooling capacity allowed by the environmental regulation

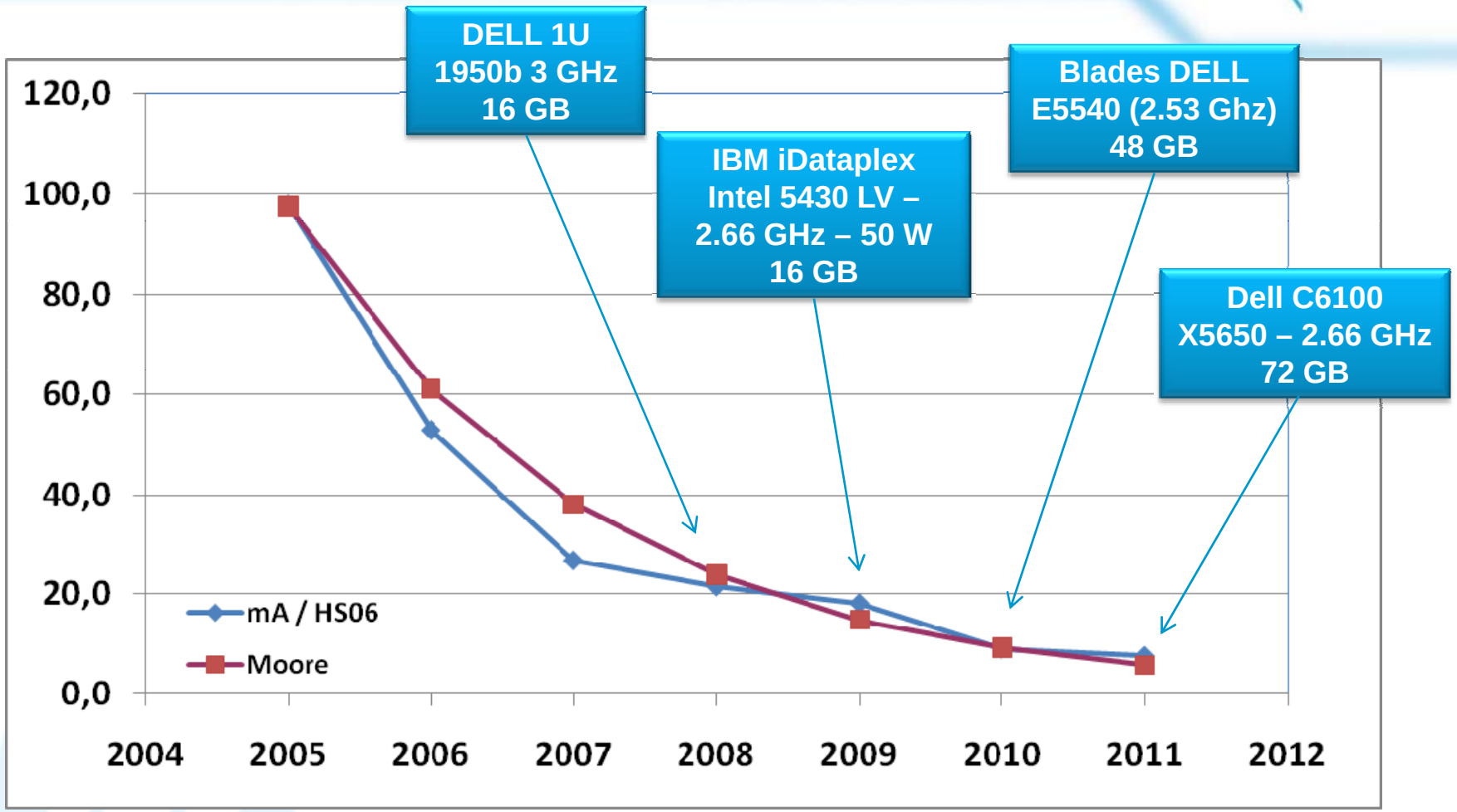
Confinement and Water cooled racks

← confinement

All the new hardware is installed in this kind of confined racks, including disks

Autonomous racks

A careful hardware selection



New computing room

- 2 levels of 850 Sq. Meters levels [machine room and technical rooms below]
- First years , room dedicated to worker nodes only
- We adopted a simplified "Design and build procedure" (single company contracted) allowing to deliver the building in 18 months after the first design
- Due to budget constraints the new computer room will have to start with a limited power, but it has a modular design , so it is easily scalable
- Chilled water and electricity distribution is designed for the 2019 target value but equipment (transformers, chillers, UPS etc…) will be added when required, to meet our future needs

As simple as possible : A computing room. Not an office space !

Evolution plan

End up with:

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

As an extend of the existing computer room (3 MW)

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

Design consideration

After several visits to existing computer room we decided to give up with the raised floor

All the pipes and services are routed from the ceiling

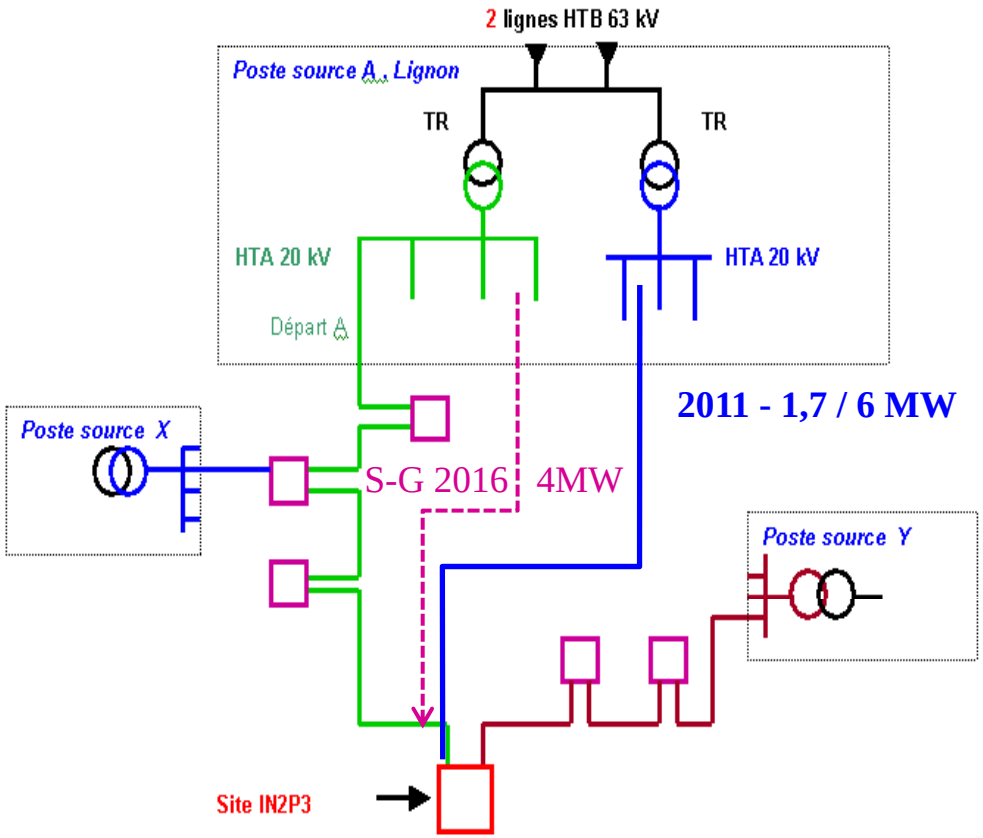
Electrical redundancy

In the first phase the electrical redundancy will be minimal

We explore the possibility to introduce redundancy at the level of the electricity provider

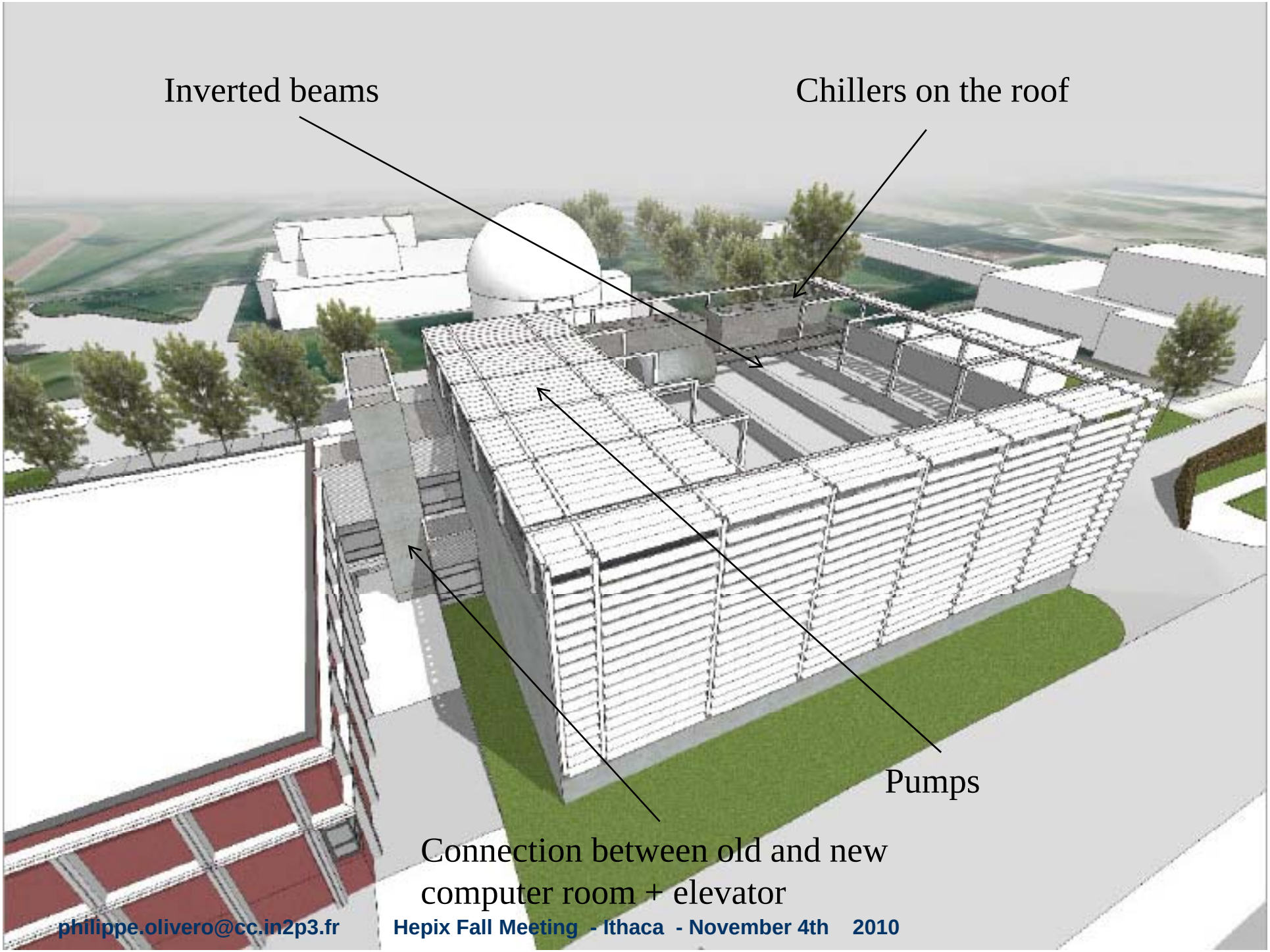
Would allow us to get rid of the diesel generator

It requires a higher investment in order to get a double dedicated connection to the power supplier source (EDF) No more full outage



Final decision to be taken soon

The selected project


Inverted beams
Chillers on the roof
Pumps
Connection between old and new
computer room + elevator

Ceiling, without any visible beam

Status

- Building work started on end of April 2010
- Now : construction of the building is done
  starting equipment installation
- Delivery date planned February 1st 2011
- First use in production ~ March 15th

Second phase of the project

An office space was part of the original extension project but dropped due to budget limitation

Re-launch this project with new functionalities added

Very well perceived by the Region and the city community (Grand Lyon)