ICES
Geneva
4 October 2024

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Where do I speak from?

- ➤ The French Alternative Energies and Atomic Energy Commission (CEA) is a **major research and technology organization** (RTO), since more than **75 years**
  - ➤ 21000 staff
  - ➤ **strong roots in fundamental research**, key player in research, development and innovation in four main areas:
    - ○ **Low-carbon energy** (nuclear and renewable)
    - ○ **Digital technologies**
    - ○ Technology for **medicine of the future**
    - ○ **Defense and national security**

- ○ Member of HPC division (DSSI)
  - ○ from hw/sw R&D and co-design to large infrastructures operations
  - ○ supercomputing complex: research, industry, defence
    - ○ TGCC facility + TERA-EXA facility
    - ○ Quantum computing coming in 2024, then EuroHPC Exascale 2026 (EuroHPC/Alice Recoque)

- ○ A Board Member of ETP4PC association
  - ○ www.etp4hpc.eu
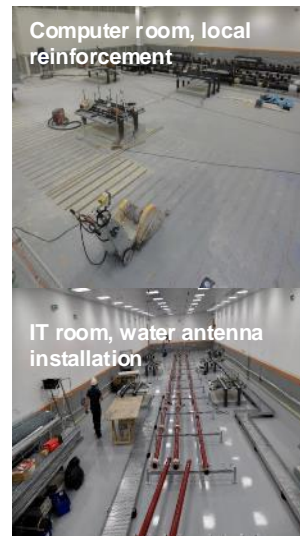 - ○ Strategic Research Agendas

CEA supercomputing complex
@ Bruyères-le-Châtel
Incl. TGCC supercomputing centre

Joliot Curie

Topaze

AtoS Quantum Learning Machine

EuroHPC Joint Undertaking

GENCI

SURF

cea
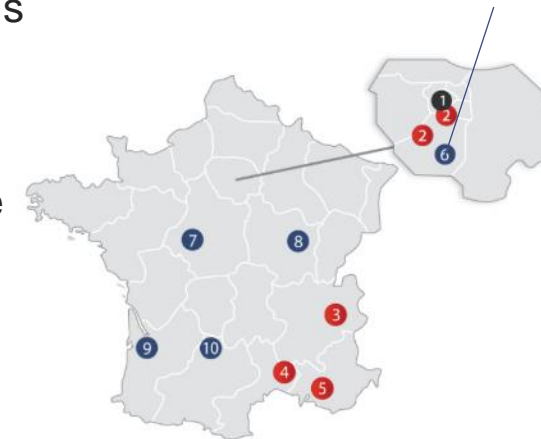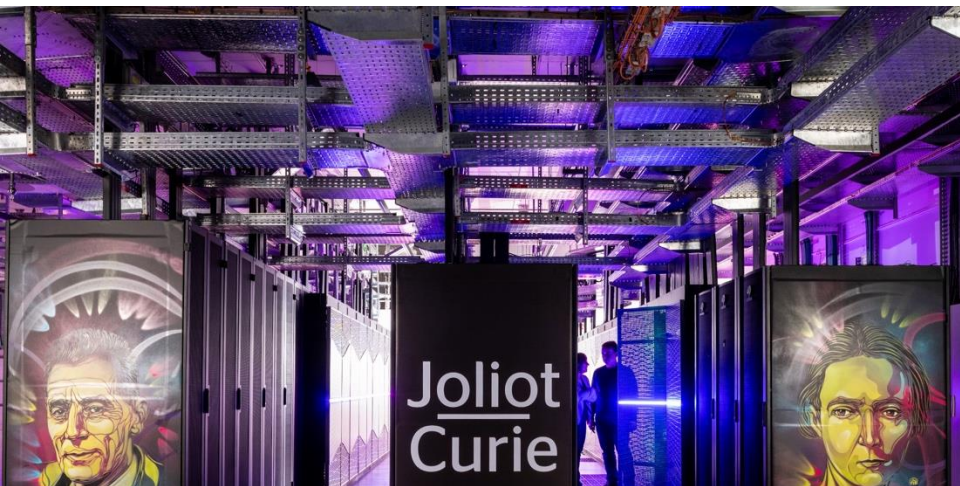
Computer room, local reinforcement

Slab for the cooling towers

Basement, micropiles

IT room, water antenna installation

Noise damping barrier
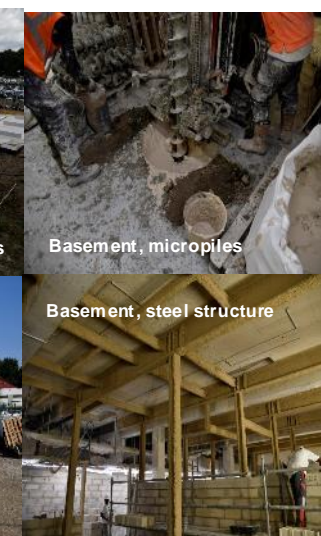
Basement, steel structure

Alice Recoque

Teaser

Addressing energy and power costs and requirements	
Availability of adequate computing technology and of competent brainware	
Competition with Magnificent 7	Mighty AI clusters from the private sector
	Who can afford this in Europe?
	How will traditional supercomputing centres compete and raise billion dollar budgets to build comparable systems?

Teaser

Addressing energy and power costs and requirements		French electricity Heat Reuse Burn up all these MWs ! But be efficient…
Availability of adequate computing technology and of competent brainware		HPC not in the driver seat since a long time and now AI shift We can keep the role of pushing to the limits/large scale integration But now hyperscalers and AI companies are starting doing this as well Emphasise competences, service, support
Competition with Magnificent 7	Mighty AI clusters from the private sector	Currently observed trend is not sustainable…. More efficient/data-sober training (and inference!) needed Public research can help
	Who can afford this in Europe?	There is a pricing issue with the harware…(components) Public sector reaction needed (pooling efforts, nationally, EU level) EuroHPC offering fairly good and intensive resources already AI fine but not everything, let us not forget numerical simulation
	How will traditional supercomputing centres compete and raise billion dollar budgets to build comparable systems?	Public sector billions not so likely (or only globally) – no straightforward approach! Value of public computing centres : resource AND COMPETENCE centres AI for Science

Merci

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