Summary of the EU Meeting

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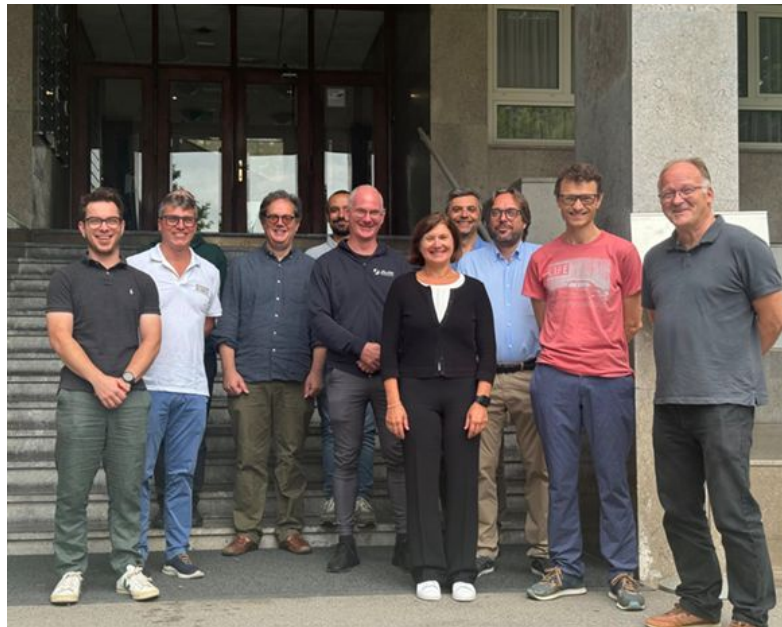
Present: 18 participants

- CMS, ALICE, ATLAS, LHCb, WLCG, CERN
- VEGA, LUMI, CSCS, GENCI/SURJF, Juelich, Deucalion, Karolina, Flatiron for US, JENA HPC working group

Agenda only included

- "know each other" - my center, my experiment
- Open technical discussion on "items"

Wrap up of the 1st day discussion written during the night, and further elaborated on the second day

Report here

Items Discussed

- Allocation policies and opportunities
- Edge nodes and AAI
- Type of workflows
- Networking
- SW
- Storage handling
- Strategy

Report focuses on

- The computing needs from the LHC experiments and WLCG;
- The current status of HPC centers and their expected short-mid term evolution;
- The possible models for access to HPC resources;
- The peculiarities of HEP workflows, and the possible technical solutions for their adaptation to HPC systems;
- Past experiences of collaboration, either resulting in successes or failures.

Reports from 4 LHC Experiments

Processing workflows:

- In some cases, experiments work in totally transparent ways with some centers;
- In other cases, a partial integration has been possible (for example, limiting the type of workflows on HPCs);
- In other cases, the integration has been very painful, which questions the cost / benefit ratio.

Experiments are using the central system for job submission, integration of HPCs is far from trivial

Projected evolution of EU HPC Centres

- JSC: JUPITER Exascale starting this year, JEDI test system encouraged to use by WLCG
- CSC: LUMI, AMD GPUs, many stakeholder countries, encourage access through them
- Deucalion: interested in HEP on ARM
- CSCS: ALPS (national only), access via CHIPP
- GENCI+SURF: Alice Recoque HPC, 2nd Exascale, Rhea-2 ARM, starting 2026, interested in early users
- IZUM: Vega, all workflows for ATLAS mostly, also interTwin, CMS, Vera Rubin, PAO, till Q1 2027, new machine planned

  Others: Karolina (IT4I), MareNostrum5 (BSC),…

Opportunities

- Deucalion: via EuroHPC or national, cvmfs
- LUMI - testing ATLAS
- CSCS: x86 through Tier2, Alps for GPU only
- Vega: welcomes everybody (production on national only for ATLAS), expert help
- JEDI JSC: already testing with CERN
- Cineca: open to all, Tier-1 pledge, opportunistic CMS demonstrated
- BSC: national level strategic project
- Meluxina: through EuroHPC only, national is dedicated to industry

Some topics

Edge nodes and AAI

Topics:

- Edge nodes as means to join WLCG (DMS, WMS)
  - How to deploy them?
- Interoperable AAI can come from free

Networking

Topics:

- WAN networking not a technical problem, only political
- If an open networking is not possible, intermediate solutions: VPNs, proxies, opening specific subnets, …
- Keep an eye on EuroHyperCon

Storage handling

Topics:

- Integrate existing HPC datamovers with FTS
- Edge services to expose POSIX as Rucio-Dirac managed ares

Type of workflows

Topics:

- (some) HPCs nervous about supporting random code from 1000s random collaborators; much happier with "production only" WFs
- Difficult to allocate CPU only jobs; but HPCs "currently tolerant" on how well GPUs are used

Software

Topics:

- Most of the centers are experimenting CVMFS (due to other sciences "pushing")
- No preferred high-level framework; they consider SYCL/Alpaka/Kokkos/OneAPI as "application problems"

Allocation policies and opportunities

- **Review of EuroHPC allocation policies**

  - Nearly all systems (but CSCS) are 50% owned by EuroHPC, 50% by the hosting state: hence two paths to obtain grants

  - In both cases, at least 3 types of calls

    - **R&D**: show that your code can be executed on the machine (possibly after some negotiations / changes with local admins)

      - Only technical evaluation

    - **Benchmarking**: show that your code can scale 1 □ N nodes

      - Only technical evaluation

    - **Regular Access**: production level, after having shown the readiness of the codes (via the previous two); tens-hundred millions CoreH

      - Technical + scientific evaluation

    - (**Strategic access**: top-down, decided by EC or the EuroHPC governing board; up to 10% of the full EuroHPC capacity)

      - Political evaluation (+ do we want it?)

> We can go one by one, or try to have an umbrella request handled for example by CERN; suggestion is to go the "national path" if there are links.
> Fast proposals, 100% success rate if "reasonable"

> Previously via proposals, now handled completely within EuroHPC. Needs a full proposal and positive scientific evaluation. Success rate well below 100%

> Less known; up to now "strategic access status" granted only to Destination Earth (climate) and Human Brain Project (brain simulation)

Tommaso, Maria at OB

Summary of EuroHPC access modes ([S. Girona, ET Computing Workshop 2024](#))

Access Mode	Extreme Scale Access	Regular Access	Access for AI	Benchmark Access	Development Access	Strategic Access	Emergency Access
Allocation Duration	1 year	1 year	1 year	3 months	6 months to 1 year	Defined by the GB	Medium to long term or permanent. Defined by the ED
Recurrence	Continuous call, cut-offs every six months (2 cut-offs per year).	Continuous call, cut-offs every six months (2 cut-offs per year).	Continuous call, bi-monthly cut-offs (6 cut-offs per year)	Continuous call, monthly cut-offs (12 cut-offs per year)	Continuous call, monthly cut-offs (12-cut offs per year)	Upon request of the Union or based on GB decision	Upon request of the ED
Possibility for project extension	Yes, max 3 months and up to 10% of initial allocation, subject to progress report approval.	Yes, max 3 months and up to 10% of initial allocation, subject to progress report approval.	Yes, max 3 months and up to 10% of initial allocation, subject to progress report approval.	No	No	Extension conditions defined in the GB decision	Upon decision of the ED
Share of resources (indicative)	Up to 50 % of participating systems High-end systems (pre-exascale and exascale)	Up to 70 % of participating systems All systems	up to 20% of participating systems All system partitions with AI capabilities	up to 5% of participating systems All systems	up to 5% of participating systems All systems	Up to 10% of participating systems, aggregated for all selected initiatives All systems	As necessary and upon decision of the ED
Data storage needs	Large storage for the duration of the allocation	Large storage for the duration of the allocation	Large storage for the duration of the allocation	Limited	Limited	Large storage for medium to long term	Large storage for medium to long term
Accessible to industry	Yes Specific track and evaluation criteria	Yes Specific track and evaluation criteria	Primarily for Industry AI applications — Special conditions for SMEs and startups	Yes	Yes	Specific conditions to be defined by the respective GB decision	Upon decision of the ED
Scientific Peer-review	Yes	Yes	Yes (specific to ethical AI aspects)	No	No	No	No
Technical assessment	Yes	Yes	Yes	Yes	Yes	Yes	No
Data Management Plan	Yes	Yes	Yes	No	No	Yes	No
Application type	Full application	Full application	Full application	Technical application	Technical application	Official request submitted to the GB	Official request submitted to the ED
Prerequisite	Benchmark	Benchmark	None	None	None	None	None
Duration of evaluation process	6 months	4 months	1 month	2 weeks	2 weeks	No evaluation. Acceptance process subject to GB discussions	Immediate access upon ED decision

How to approach

- Start many R&D / Benchmarking access projects - individual initiatives or CERN centrally managed
- Encourage experiments to submit Project Access proposals for proven workflows.
- Handshaking with EC and EuroHPC JU about the importance to have HEP as a first line stakeholder
    a. HEP taken into proper account when planning future HPCs
    b. on the longer time scale - Strategic Access
- Approaching the EuroHPC JU and the EC via:
    a. national EuroHPC JU GB members
    b. regular Institutional level meetings with EC
    c. direct contact with EC higher level functionaries
    d. user groups / fora (PRACE, the EuroHPC user group)
    e. specific initiatives, like the SPECTRUM EU project (https://www.spectrumproject.eu/)
    f. the submission of individual / institutional inputs to the Update of the European Strategy for Particle Physics (ESPP)
    g. the proposal for a Center of Excellence (CoE) for Particle Physics,

Conclusions

- Most EU HPC wellcome collaboration, providing (limited) support as well
- In most cases, adjusting HPC infrastructure/services is difficult, but not impossible
- Pressure from all communities for easier usage (including WAN, cvmfs...)
- Billions are invested in (Euro)HPC, trend not slowing down
- Synergy with EuroHPC JU is crucial for Run-4