The European High Performance Computing Joint Undertaking

… and its opportunities

Vangelis FLOROS | CERN HEP/HPC Strategy Meeting | 30/1/2025

ABOUT THE EUROHPC JOINT UNDERTAKING

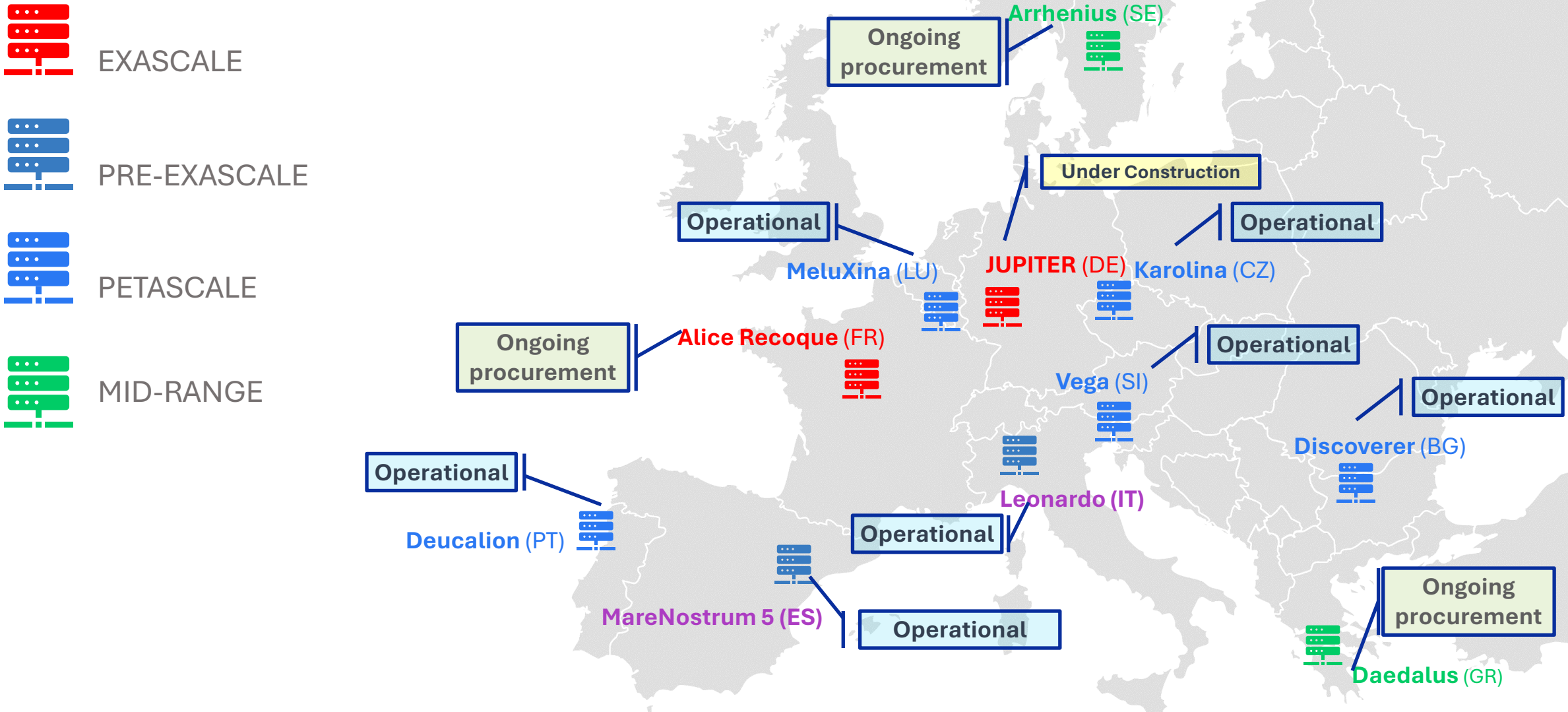
WE ARE:

- An EU body and funding entity
- Existing since 2018 and autonomous since 2020
- Based in Luxembourg
- Governed by a Board composed of the European Commission, 35 Participating States and 3 Private Members

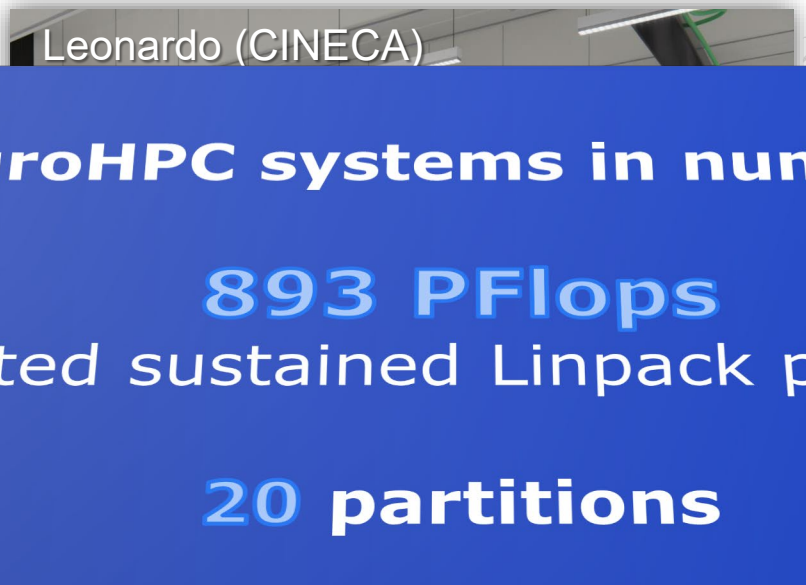
WITH A MISSION TO:

- ✓ Buy, build and maintain HPC, AI and quantum infrastructure in Europe
- ✓ Fund innovative R&I projects, to develop European skills, applications, software and hardware and foster a European supply chain
- ✓ Provide access to HPC, AI and Quantum Users across Europe and support the development of skills

THE EUROHPC ECOSYSTEM 2019 - 2026



Available EuroHPC supercomputers



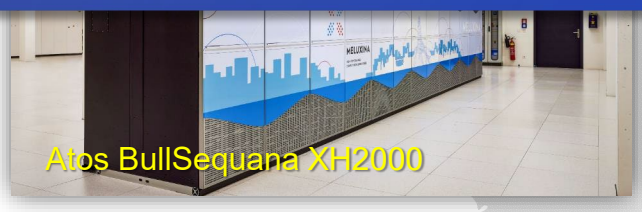
EuroHPC systems in numbers

893 PFlops
Aggregated sustained Linpack performance

20 partitions

15597 *CPU Nodes (AMD/Intel x86 and Fujitsu ARM)*
7869 *GPU Nodes*
43476 *GPUs (NVidia A100/H100, AMD MI250X)*

Other: FPGA, Visualisation and Cloud capabilities



EUROHPC SUPERCOMPUTERS

PROCURED

5 PETASCALE

- Vega in Slovenia
- Karolina in Czechia
- Discoverer in Bulgaria
- Meluxina in Luxembourg
- Deucalion in Portugal

3 PRE-EXASCALE

- Lumi in Finland
- Leonardo in Italy
- MareNostrum 5 in Spain

ONGOING

2 EXASCALE

- JUPITER in Germany
- Alice Recoque in France

2 MID-RANGE

- Arrhenius in Sweden
- Daedalus in Greece

COMING NEXT

UPGRADES

- Discoverer+
- Lisa/Leonardo

AN INDUSTRIAL SYSTEM

- Co-owned and for use by the industrial sector
- For AI and other applications

Hyperconnectivity

- Upgrading HPC network to terabit connectivity

Federation Platform

- A platform for the federation of EuroHPC HPC and quantum infrastructure
- A one-stop shop access point for users

EuroHPC
Joint Undertaking

EUROHPC QUANTUM INITIATIVES

QUANTUM COMPUTERS

6 Selected Hosting Entities

- **EuroQCS-Poland,** in Poland
- **Euro-Q-Exa**, in Germany
- **EuroQCS-France**, in France
- **LUMI-Q,** in Czechia
- **EuroQCS-SPAIN**, in Spain
- **EuroQCS-ITALY**, in Italy

2 more to come:

- **MeluXina-Q**, in Luxembourg
- **EuroSSQ-HPC**, in The Netherlands

*(Consortia of +**30 European countries**)*

QUANTUM SIMULATORS

⟨HPC|QOS⟩

2 quantum simulators deployed, to be integrated in:

- **Joliot-Curie**, in France
- **JURECA DC**, in Germany

EuroHPC Joint Undertaking

⏭ COMING NEXT

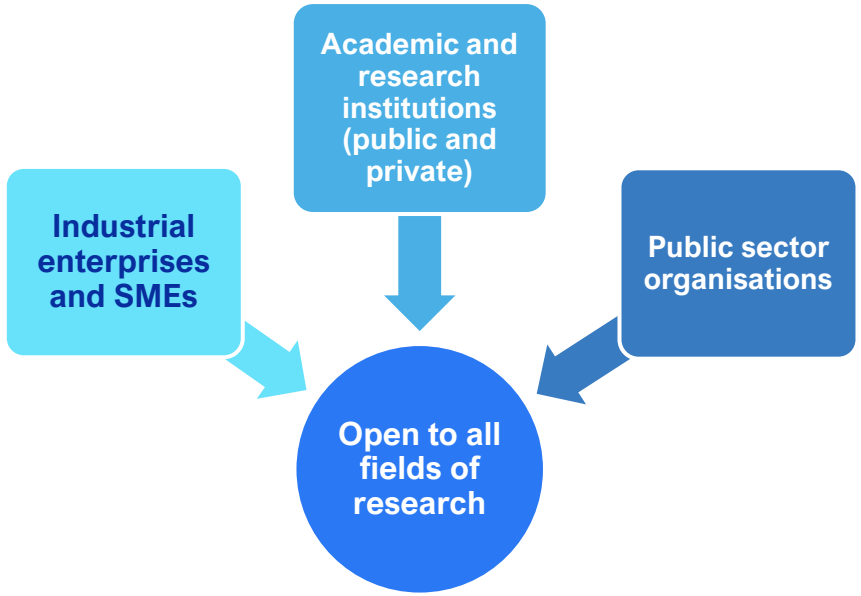
- Finalising the ongoing procurements of the quantum computers
- Development of HPC-Quantum Computing middleware technologies
- Establishment of Quantum Excellence Centres
- Scientific collaboration on quantum with 3rd countries
- First system expected to be operational in Q2/Q3 2025

ACCESS CALLS OVERVIEW

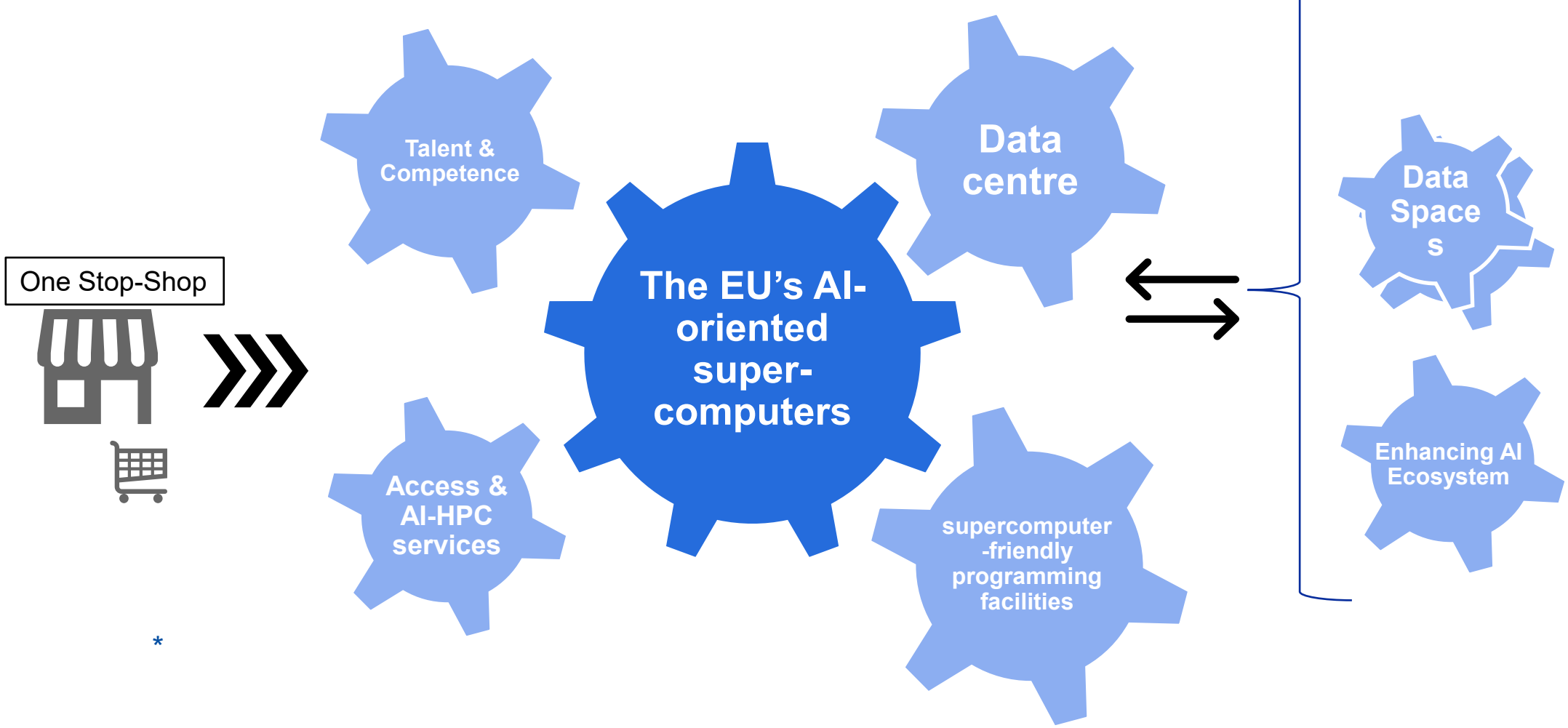
AVAILABLE ACCESS MODES

WHO IS ELIGIBLE?

Principal Investigators and Team Members affiliated with organisations in countries associated to Horizon 2020



AI Factories: Empowering the AI Ecosystem



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THE AI FACTORIES

EuroHPC JU selected 7 EU sites that will host the first AI Factories – which will drive Europe's leadership in AI

Brand new AI-optimized supercomputers in:

- Finland
- Germany
- Italy
- Luxembourg
- Sweden

AI-upgrades/access to existing supercomputers

- Spain (MareNostrum 5 - deployed)
- Greece (Daedalus - under deployment)

*AI Factories pull together EU and national resources, in a collaborative effort of **17 European countries***

THANK YOU

For more information, feel free to visit our website and social media:

/eurohpc-ju.europa.eu /EuroHPC_JU /eurohpc-ju /eurohpc-ju

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