ISC24

EuroHPC Infrastructure and AI Access Opportunities

16 May 2024

WHO ARE WE?

- *An EU body & a legal and funding entity*
- *Created in 2018 and autonomous since September 2020*
- *Based in Luxembourg*
- *A team of ~40 employees, still in the process of recruiting additional staff*

OUR MISSION

The EuroHPC JU pools together the resources of its members to:

- Develop, deploy, extend & maintain a world-leading supercomputing, quantum computing, service & data infrastructure ecosystem in Europe

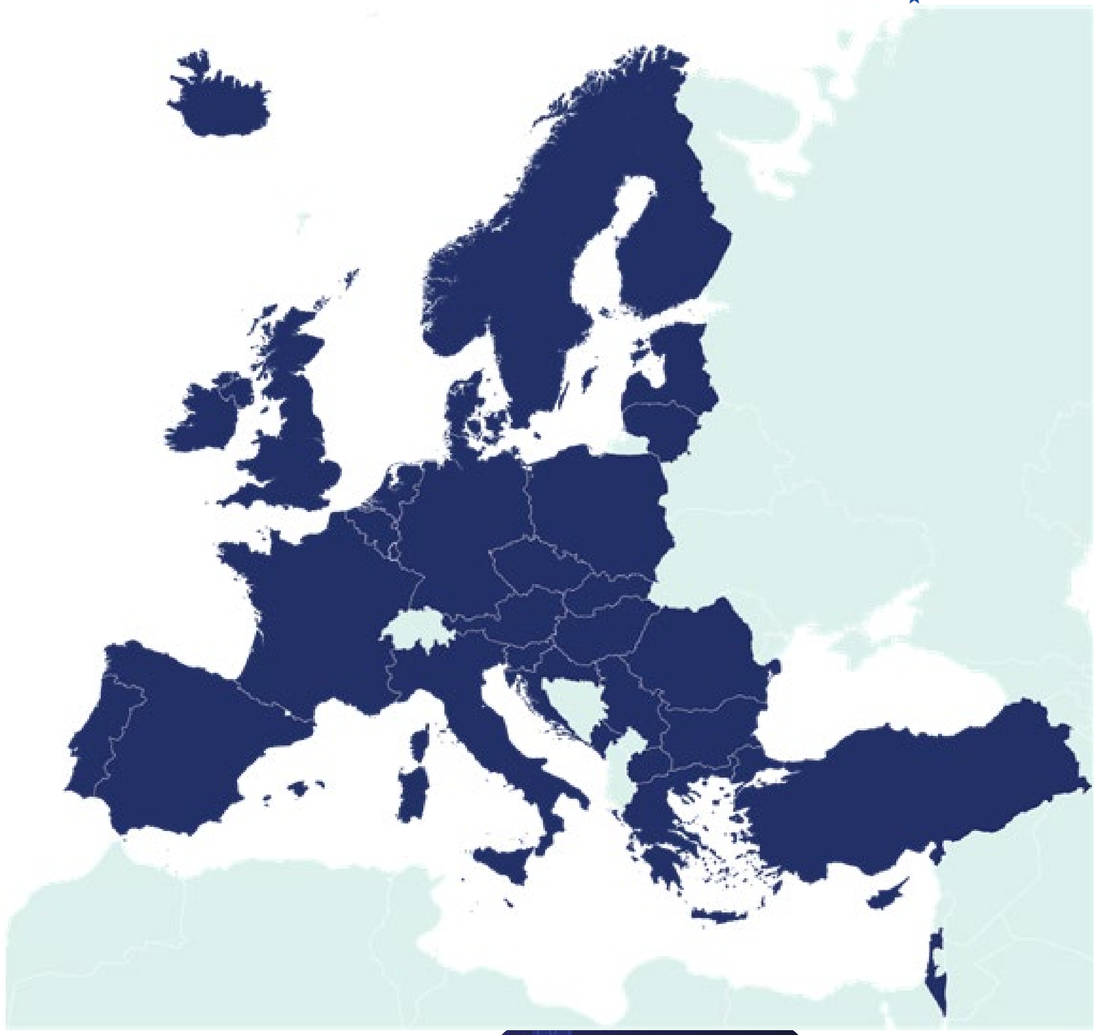
- Support the development of innovative supercomputing components, technologies, knowledge & applications to underpin a competitive European supply chain

- Widen the use of HPC & quantum infrastructures to a large number of public & private users wherever they are located in Europe and supporting the development of key HPC skills for European science and industry

OUR MEMBERS

EuroHPC Joint Undertaking

- 35 participating countries
- The European Union (represented by the European Commission)
- 3 private partners



Each of our members is represented in the EuroHPC JU's Governing Board

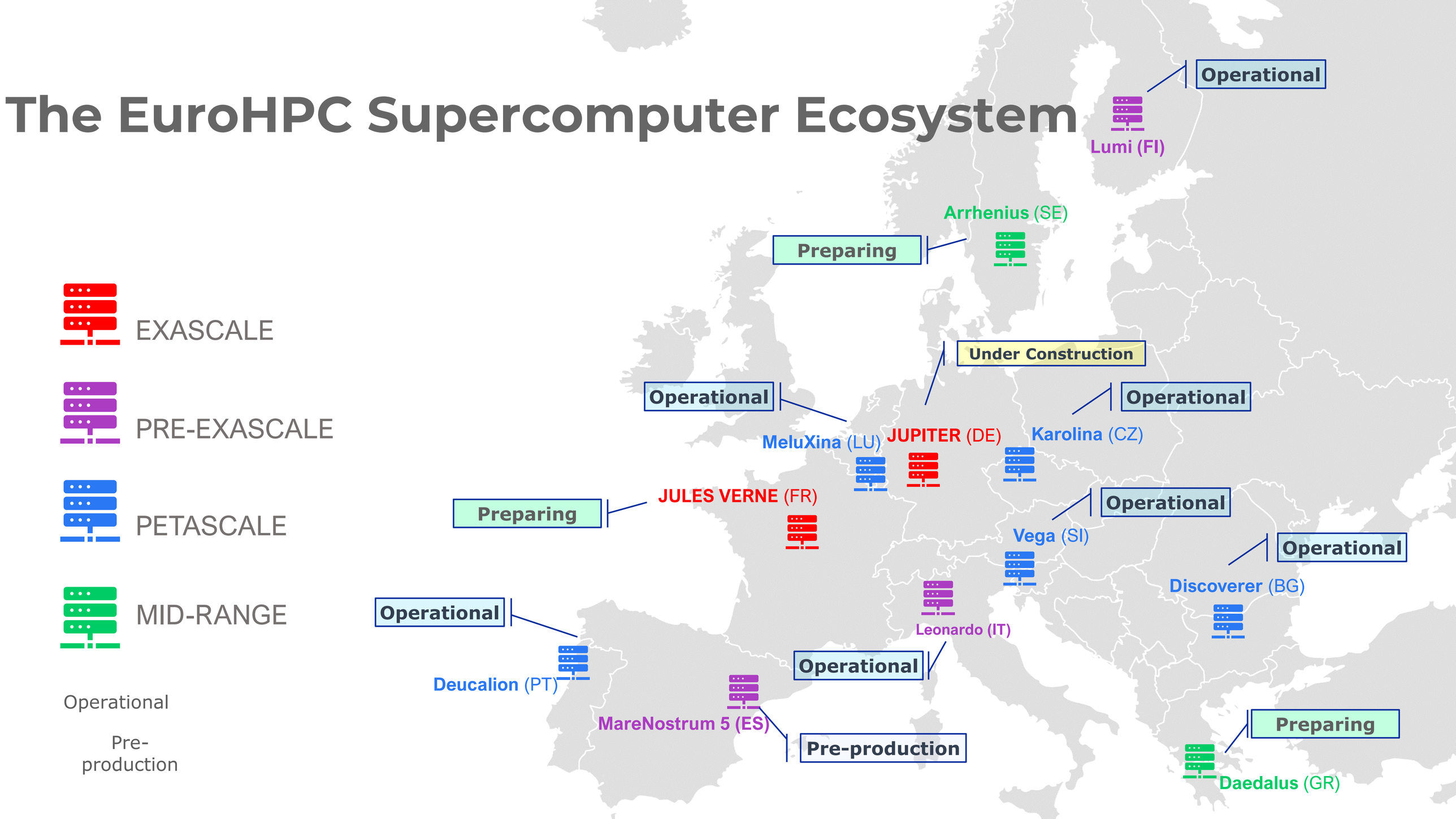
The Governing Board also takes advice from the EuroHPC Industrial and Scientific Advisory Board (INFRAG & RIAG)

BDV BIG DATA VALUE ASSOCIATION

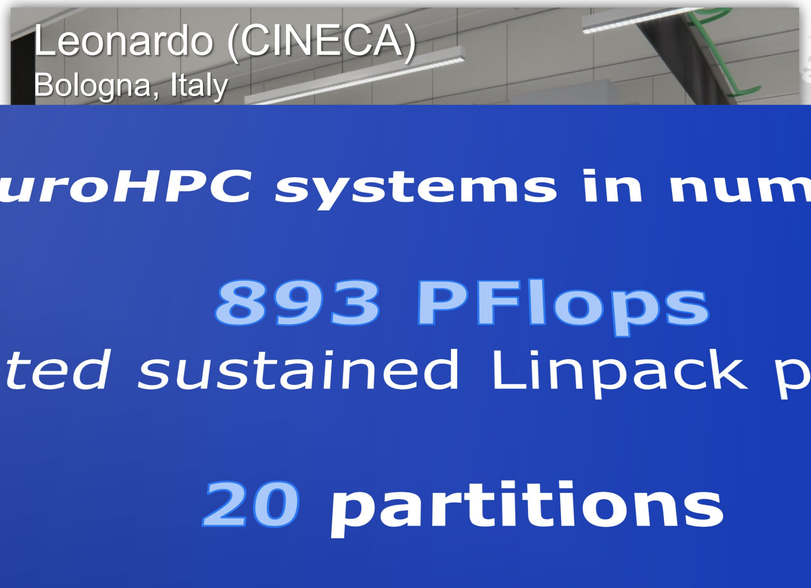
QUIC European Quantum Industry Consortium

ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

The EuroHPC Supercomputer Ecosystem



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 Access opportunities

Calls for preparatory activities

BENCHMARK ACCESS CALL

- For scaling tests & benchmarks

- Fixed amount of allocation for 2 or 3 months

- Continuously open with monthly cut-offs

- Results and access to system: 2 weeks from cut-off date

DEVELOPMENT ACCESS CALL

- For code and algorithm development

- Fixed amount of allocation for 6 or 12 months

- Continuously open with monthly cut-offs

- Results and access to system: 2 weeks from cut-off date

Calls for production activities

REGULAR ACCESS CALL

- For projects that require large-scale HPC resources

- Allocation duration: for 12 months

- Continuously open with 2 cut-offs per year

- Peer-review process duration: 4 months

EXTREME SCALE ACCESS CALL

- For high-impact, high-gain projects that require extremely large-scale HPC resources

- Allocation duration: for 12 months

- Continuously open with 2 cut-offs per year

- Peer review process duration: 6 months

AI AND DATA INTENSIVE APPLICATIONS ACCESS CALL

- For projects intending to perform artificial intelligence and data-intensive activities

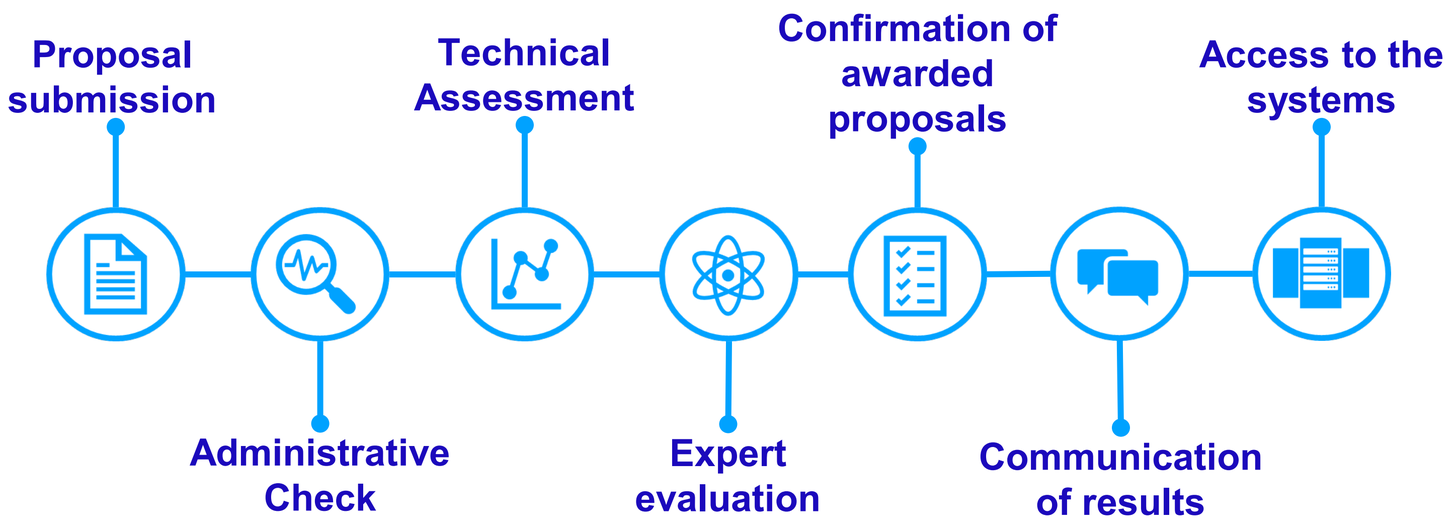
- Fixed allocation for 12 months on first-arrived-first basis

- Bimonthly cut-offs

- Peer-review process duration: 1 month

AI and Data-Intensive Applications Access call

Peer-Review process

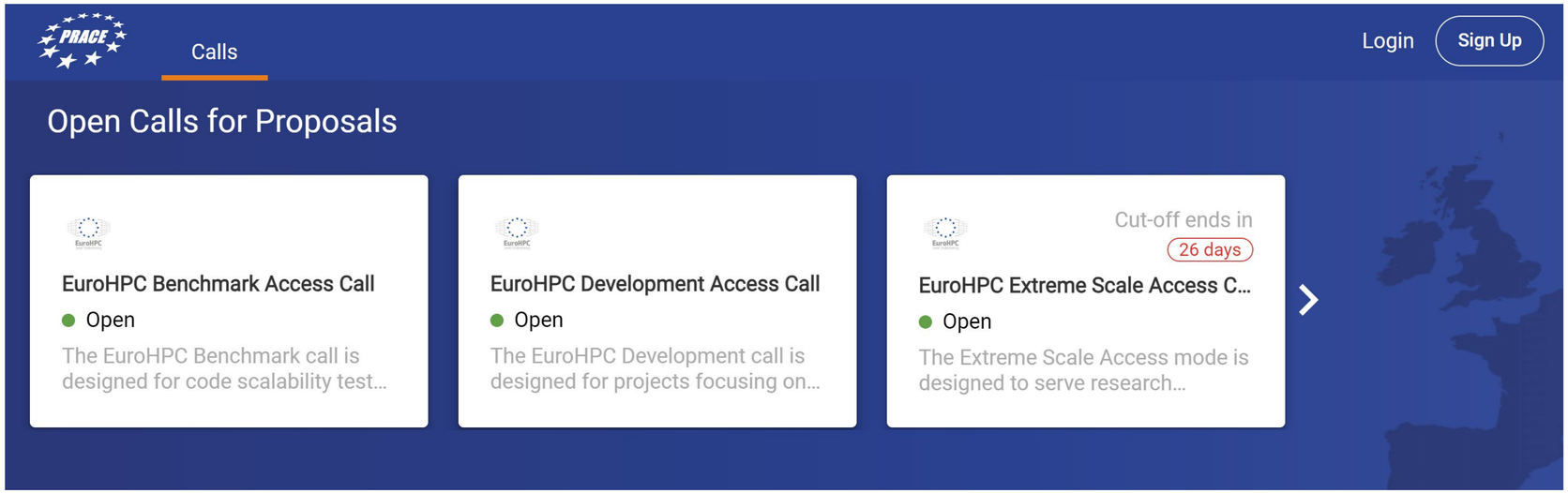


1 month from submission to response

AI and Data-Intensive Applications Access call

How to apply?

Proposal submission via the Peer-Review Platform available at https://pracecalls.eu



Login at: https://pracecalls.eu/auth/login

Register at: https://pracecalls.eu/auth/register

LARGE AI GRAND CHALLENGE

Expanding European AI frontiers by harnessing the potential of Large-Scale AI models in collaboration with EuroHPC-JU

What do we have to offer?

The available budget for monetary prizes of the Large AI Grand Challenge is 1.000.000€ [illegible] warded by the panel of the Large AI Grand Challenge to up to four proposals, as follows:

- **LUMI Winner:** Up to two prizes of 250,000€ and an allocati[illegible]rs on the LUMI facility per project. This allocation will be used to develop the large-scale AI model described in th[illegible]nths following the prize awards.
- **Leonardo Winner:** Up to two prizes of 250[illegible]n of 2 million GPU hours on the Leonardo facility per project. This allocation will be used to develop the large-scal[illegible] the proposals in the 12 months following the prize awards.

You will also get:

- The char[illegible] a network that collaborates with European Commission DG Connect – CNECT AI and Robotics and EuroHPC-JU;
- The oppo[illegible] make use of EuroHPC-JU facilities and target supercomputers.

Call closed. Currently under evaluation

- AI Grand Challenge awarded as Strategic Project by EuroHPC JU Governing Board.
- Eligible for up to 5% of JU access time

AI Application Considerations (for now at least :-))

EuroHPC Supercomputers provide the perfect platform to AI applications

- **AI codes may need to be tested/ported on EuroHPC systems before allocations – Consider Benchmark/Development calls**

EuroHPC allocations are project based – fixed period of time – predefined usage schedule

- **Not for production usage**
- **Appropriate for research and for demanding model training but not for (production) inference runs**

EuroHPC Supercomputers are multitenancy environments

- **Applications run as jobs, submitted through a shared queuing system (SLURM) - Large allocations my take time to start running**
- **Jobs typically run for max 48hrs – Large runs require implementation of snapshotting functionality**

EuroHPC Supercomputers provide high-speed connectivity to the external world (x100 Gbit links to GEANT), **however**:

- **Large data transfers need to be coordinated with the hosting site**

EuroHPC Supercomputers provide large storage capabilities, **however**:

- **No archiving / long-term storage**
- **Extremely large storage requirements need to be agreed with the hosting site**

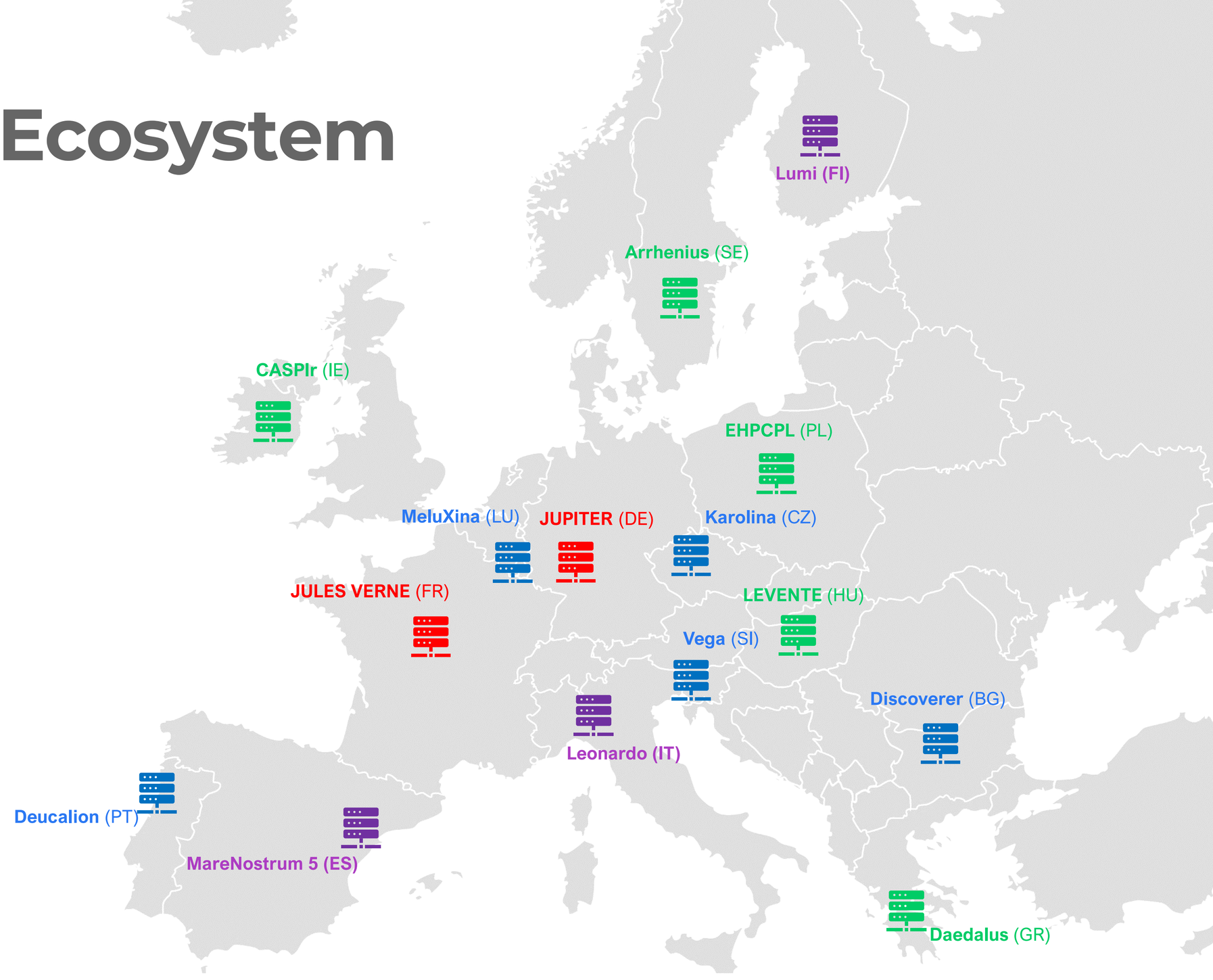
The EuroHPC Ecosystem

EXASCALE

PRE-EXASCALE

PETASCALE

MID-RANGE



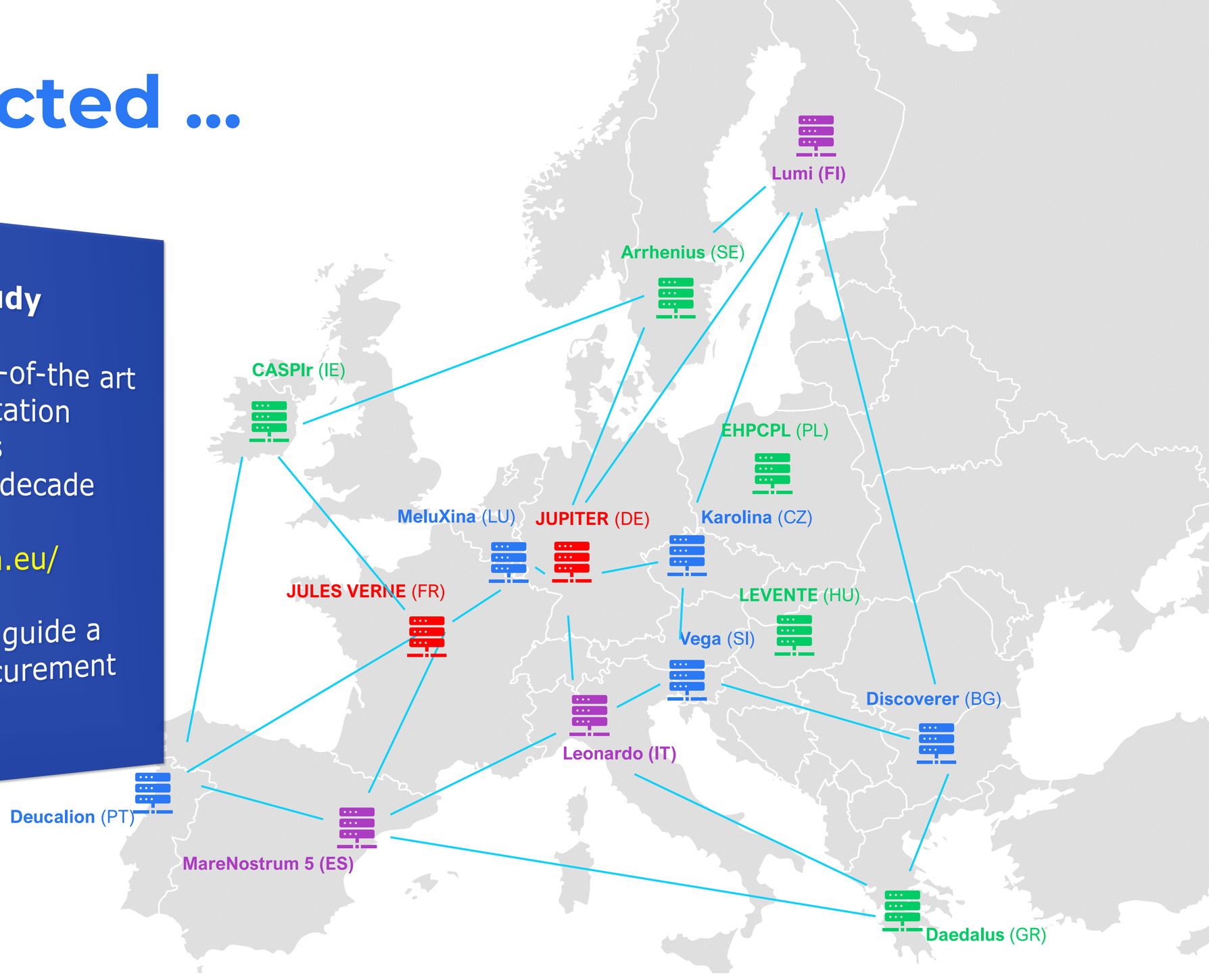
Hyperconnected …

EuroHyPerCon study

- Analysis of current state-of-the art
- Stakeholder consultation
- Needs analysis
- Blueprint of the next decade connectivity

https://eurohypercon.eu/

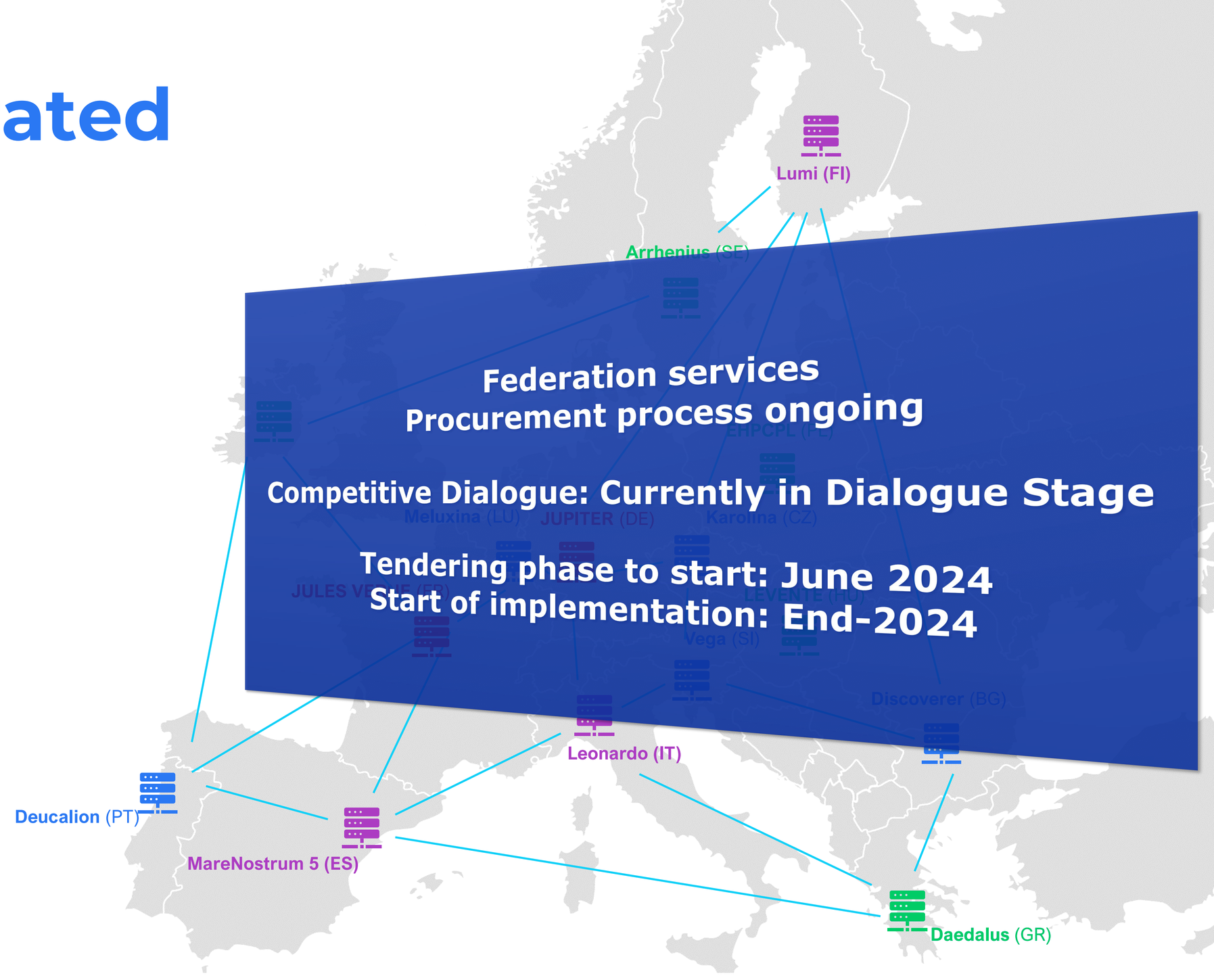
Results of the study will guide a connectivity services procurement



… and Federated

Resource Federation one of the key pillars of EuroHPC activities

- **Authentication, Authorization and Identification services (AAI)**
- **Computing services**
  - Interactive Computing
  - Cloud access – Virtual Machines - Containers
- **Data services**
  - Archival Services and Data repositories
  - Data mover / transport services
- **User and Resource management**



JUPITER | The Arrival of Exascale in Europe

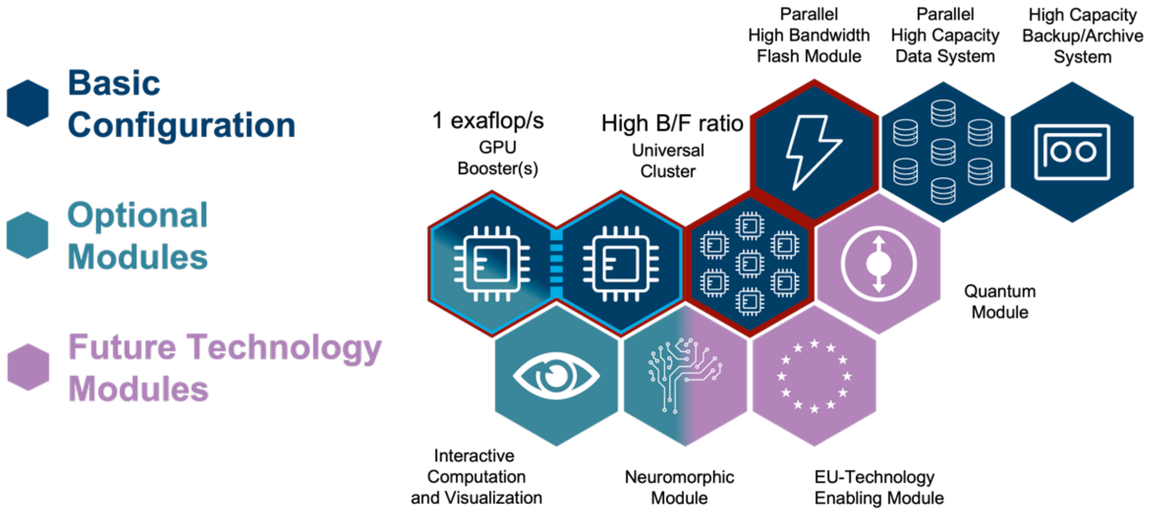
JÜLICH Forschungszentrum

A Unique system

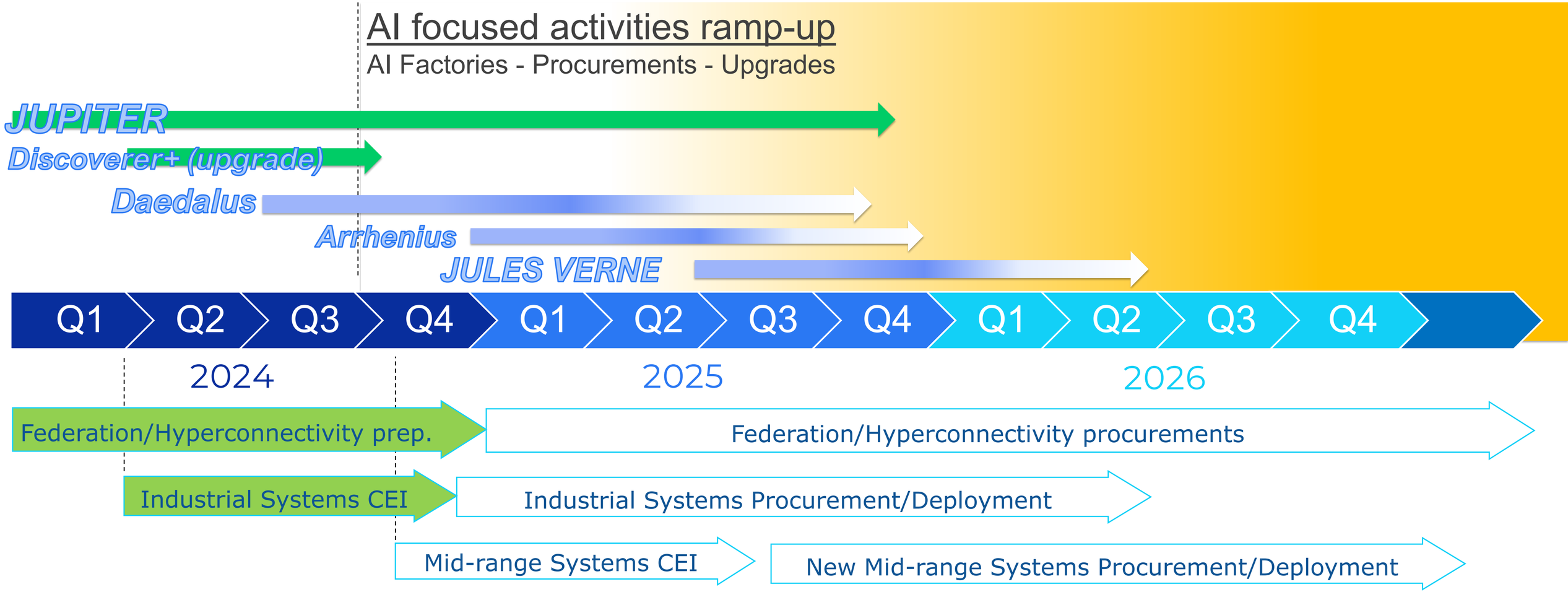
- **1st Exascale system in Europe**
- **ARM** system based on **NVidia GH200 and SiPearl Rhea1**
- **1st system with European CPU!**
- Modular Architecture
  - Booster partition: **24,000 GH200**
  - Cluster partition: **Rhea1**
- Modular (containerized) DataCenter at Jülich Supercomputing Center (DE)

Project status

- Booster nodes in factory build – first blades delivered as part of JUPITER Experimental Development Infrastructure (JEDI)
- **JEDI** installed #1 Green500
  Will support **JUPITER Early Access Program (JUREP)**. https://events.hifis.net/e/jureap



Infrastructure activities timeline



Thank you!

Keep up with EuroHPC news:

https://eurohpc-ju.europa.eu

@EuroHPC_JU

EuroHPC Joint Undertaking