Opportunities on EuroHPC JU systems for SMEs

Vangelis Floros, Head of Sector Infrastructure

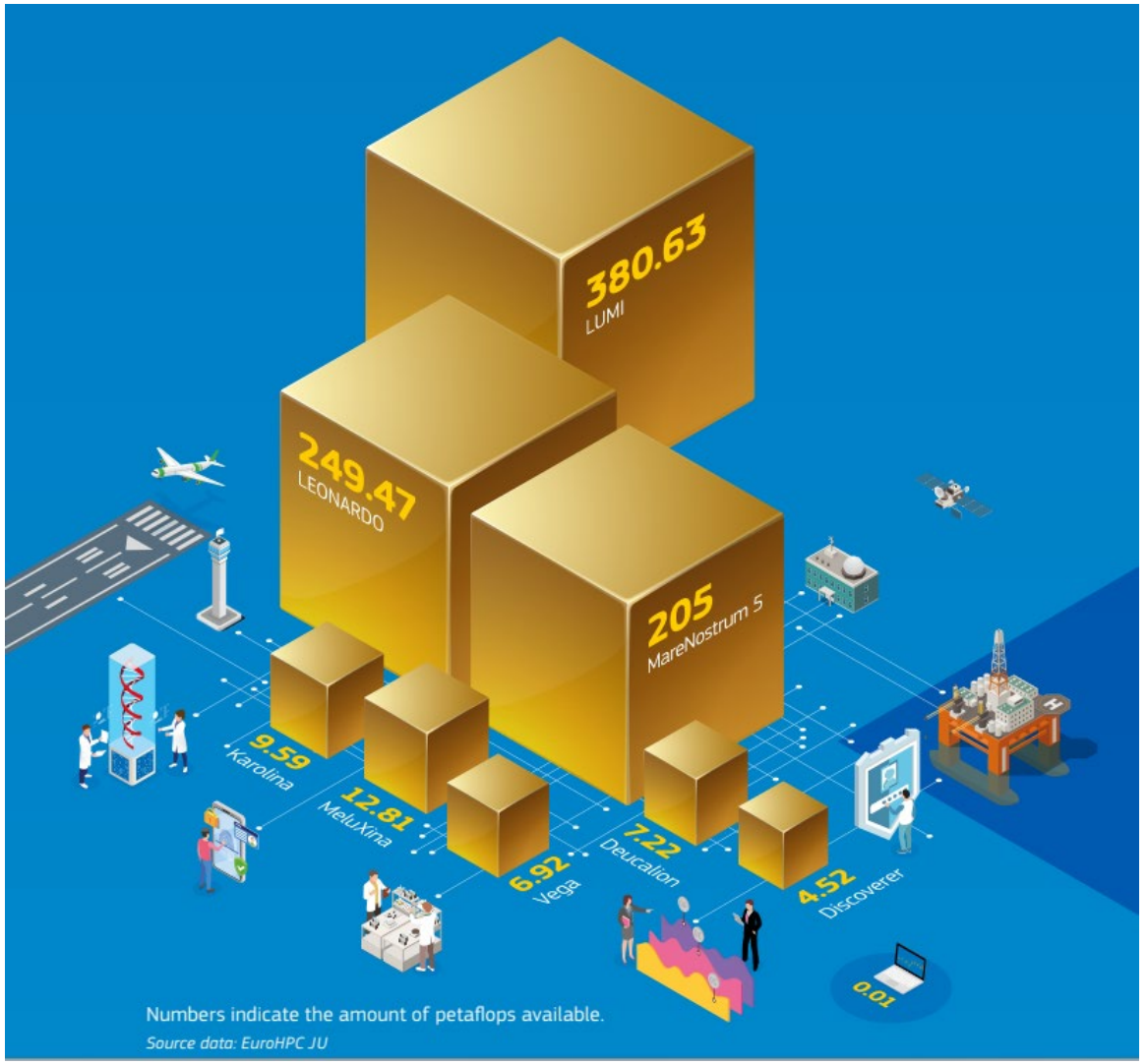
18 April 2023

EuroHPC Supercomputers

- *Empowering European Scientific Research, Academia, Industry & SMEs*
- *Providing the necessary computing power to accelerate discovery and innovation in Europe*

EuroHPC Infrastructure activities

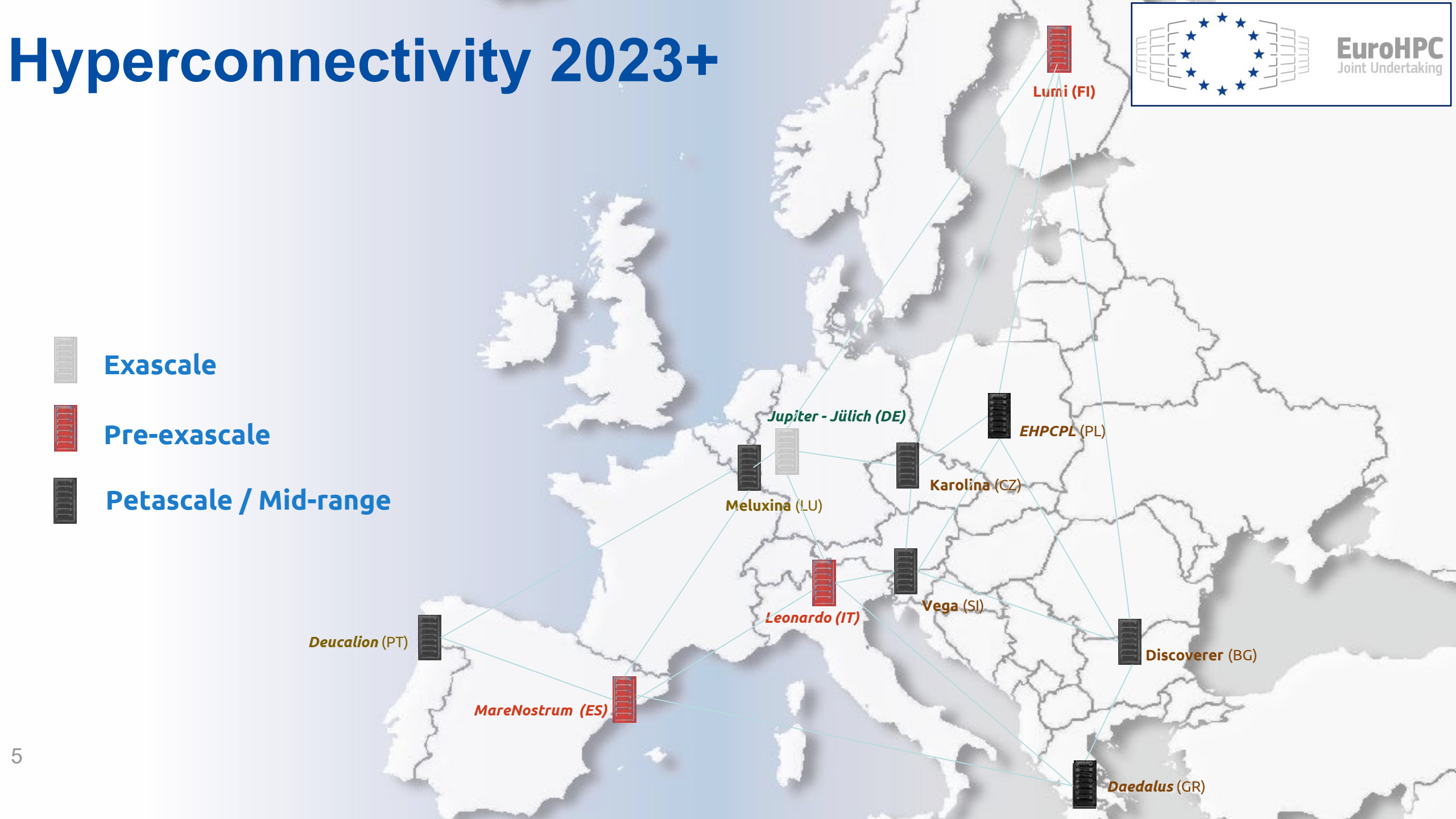
- Hosting Entity Selection
- System Procurements
- Operation & Monitoring
- Access Time allocation
- Hyperconnectivity
- Federation
- High-Level Application Support



EuroHPC systems 2019-2023

EuroHPC systems 2023-2025

Hyperconnectivity 2023+



Federation 2023+

Federate HPC resources accross all EuroHPC systems

- **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**

Available systems | Pre-exascale

LUMI Consortium (Coordinator CSC)
Kayaani, Finland

Cray EX, Hewlett Packard Enterprise
#3 Top500 (Nov 2022): **309.1** PFlops (LUMI-G)

AMD platform
- CPU: 64-core next-generation AMD EPYC™
- GPU: AMD Instinct™ (MI250X),

Leonardo Consortium (Coordinator CINECA)
Bologna, Italy

Atos BullSequana XH2000
#4 Top500 (Nov 2022): **174.7** PFlops (BOOSTER)

Intel/NVidia platform
- CPU: Intel Sapphire Rapids
- GPU: Nvidia custom Ambere (A100)

Available systems | Petascale

EuroHPC Joint Undertaking

Vega

Sustained performance:	**6,9 petaflops**
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
TOP500 ranking:	#32 in EU; #106 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	IZUM, Maribor, Slovenia

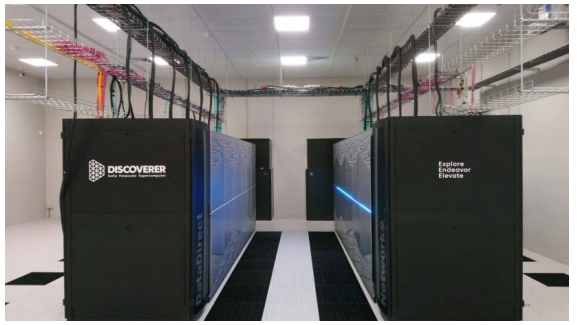
MeluXina

Sustained performance:	**12,8 petaflops**
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
TOP500 ranking:	#10 in EU; #36 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	LuxProvide, Bissen, Luxemburg

Karolina

Sustained performance:	**9,13 petaflops**
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
TOP500 ranking:	#20 in EU; #69 globally (June 2021)
Vendor/model	HPE Apollo 2000Gen10 Plus and Apollo 6500
Operated by	IT4I, Ostrava, Czech Republic

Discoverer



Sustained performance:	**4,45 petaflops**
CPU:	AMD Epyc Rome
GPU:	-
TOP500 ranking:	#27 in EU; #91 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	PSB consortium, Sofia, Bulgaria

Petascale systems in numbers

33.83 Petaflops sustained (47.19 Petaflops Rpeak)

- **11** partitions
- **3401** CPU Nodes
- **332** GPU Nodes
- FPGA, Visualisation and Cloud capabilities
- **24PB** Lustre Storage
- **6802** AMD EPYC Rome CPUs
- **1616** Nvidia A100 GPUs

ACCESS TO EUROHPC SUPERCOMPUTERS

EuroHPC Joint Undertaking

WHO IS ELIGIBLE?

- Academic and research institutions (public and private)
- Public sector organisations
- Industrial enterprises and SMEs
- Established in the EU or H2020 affiliated country

→ Open to all fields of research

WHICH TYPES OF ACCESS EXIST?

- Regular access
- Extreme scale access
- Benchmark access
- Special access

…

WHAT ARE THE CONDITIONS FOR ACCESS?

Access is free of charge. Participation conditions depend on the specific access call that a research group has applied to.

In general users of EuroHPC systems commit to:

- use computing resources primarily for research and innovation
- acknowledge the use of the resources in their related publications
- contribute to dissemination events
- produce and submit a report after completion of a resource allocation

More information on EuroHPC access calls available at: https://eurohpc-ju.europa.eu/participate/calls_en

Access Policy

Access Policy v1.1 as adopted by the EuroHPC GB

- **6 Access Modes offering resources on a continuously open call basis with periodic cut-off dates.**
  - **Extreme scale:** Large applications, 2xYear. Peer-reviewed. Separate track for industry.
  - **Regular:** Medium to large applications, 3xYear. Peer-reviewed. Separate track for industry.
  - **Development.** All systems. Up to 1 year access. Monthly cut-offs
  - **Benchmark.** All systems. Up to 3 months access. Monthly cut-offs
  - **Fast track for Industry & Academia.** Quick access to previously completed applications

Commercial Access (*)

- **Pay-per-use model**
- **No restrictions for open research – applications for civilian purpose**

- **PRACE supports EuroHPC** in the implementation of the Access Policy!

Visit https://pracecalls.eu/ and https://prace-ri.eu/hpc-access/eurohpc-access/

Current and upcoming offering of resources

By end 2023: ***64.5 Million*** *node hours across* ***8 systems*** *(****15 partitions, 22.596 nodes****).*

- **CPU, GPU, FPGA resources**
- **Variety of platforms: AMD (x86, Instinct), Intel (x86), Nvidia (A100, H100), Fujitsu ARM (A64FX)**
- **~870 PFlops aggregated performance**

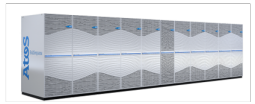
To reach ***91.3 Million*** *node hours by end of 2024 (full systems capacity)*

Industry/SMEs

- *Up to 20% of total resources available for Commercial Access (*)*
- *2023-2024: EuroHPC to procure Industry specific supercomputer in collaboration with industrial partner*

Next systems Timeline

LUMI



Leonardo

MN5

Deucalion

Daedalus EHPCPL

JUPITER

Exascale 2

Mid-range 2

Post-Exascale

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

2023 2024 2025 2026-2027

Upgrades

Upgrades

Federation / Hyperconnectivity

Industrial systems

Quantum systems

Quantum systems

Thank you!

Keep up with EuroHPC news:

https://eurohpc-ju.europa.eu @EuroHPC_JU EuroHPC Joint Undertaking