



EuroHPC
Summit Week 2022



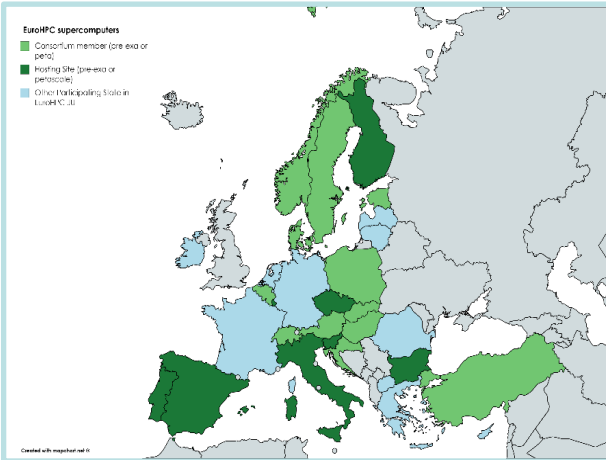
Available HPC resources

Evangelos Floros, EuroHPC

From **22 to 24 March 2022** | Paris, France

#EHPCSW **#PRACEdays**

HPC systems



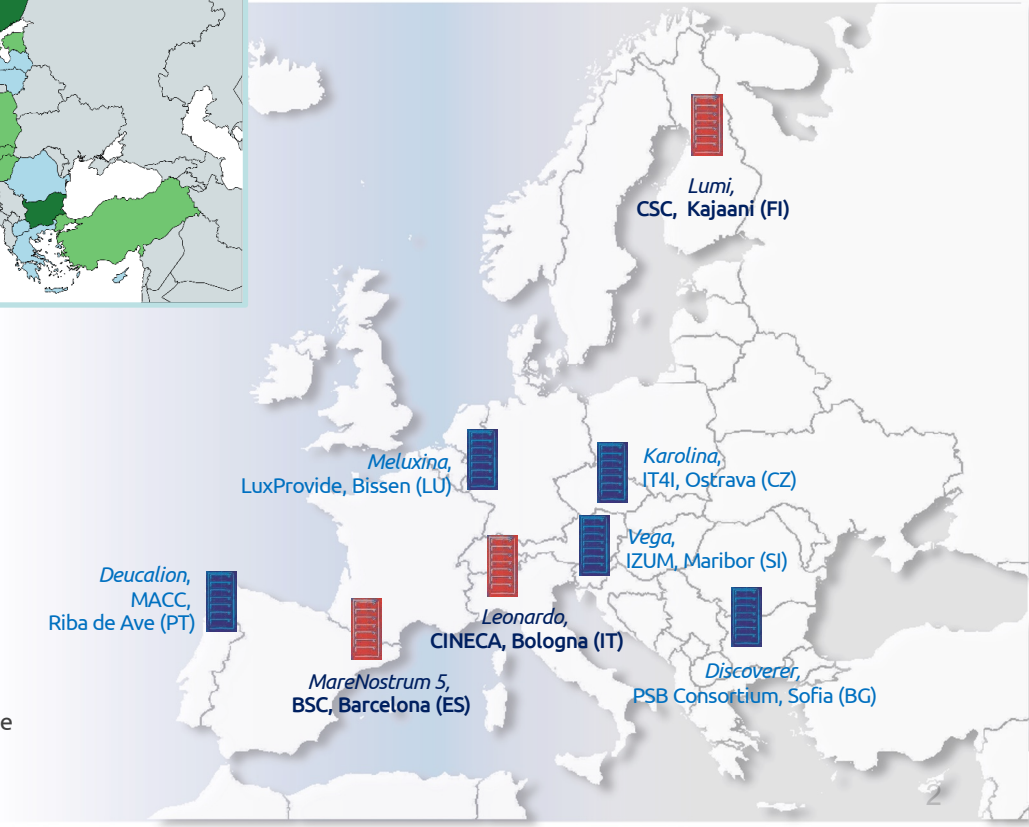
8 Hosting Entities

- **3 Pre-exascale (150+ PFlops).**
Owned by the JU (50/50 CAPEX/OPEX cost and time share with the HE)
- **5 Petascale (4-12 PFlops).**
• **Co-owned** by the JU (65/35 CAPEX cost and time share with the HE)

7 Contracts signed and completed or under implementation

1 Procurement ongoing (MN5)

Total contracts value: ~360 MEuro (163.3 EU)



EuroHPC Systems: Petascale (operational)



Vega



MeluXina



Karolina



Discoverer



Sustained performance:	6,9 petaflops
Compute partitions:	CPU (768+192 nodes), GPU (60 nodes)
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
Interconnect	Infiniband HDR
Storage capacity:	Lustre (1PB) Ceph (19 PB)
TOP500 ranking:	#32 in EU; #106 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	IZUM, Maribor, Slovenia

Sustained performance:	12,8 petaflops
Compute partitions:	CPU (573+20 nodes), GPU (200 nodes), FPGA (20 nodes), Cloud (20 nodes)
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
Interconnect	Infiniband HDR
Storage capacity:	Lustre (20PB multi-tiered), Ceph (96TB)
TOP500 ranking:	#10 in EU; #36 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	LuxProvide, Bissen, Luxembourg

Sustained performance:	9,13 petaflops
Compute partitions:	CPU (720 nodes) GPU (72 nodes) Cloud (36 nodes) Data analytics (1 node)
CPU:	AMD Epyc Rome
GPU:	Nvidia A100
Interconnect	Infiniband HDR
Storage capacity:	Lustre (1PB) + NFS
TOP500 ranking:	#20 in EU; #69 globally (June 2021)
Vendor/model	HPE Apollo 2000Gen10 Plus and Apollo 6500
Operated by	IT4I, Ostrava, Czech Republic

Sustained performance:	4,45 petaflops
Compute partitions:	CPU (1128 nodes)
CPU:	AMD Epyc Rome
GPU:	-
Interconnect	Infiniband HDR
Storage capacity:	Lustre (2PB)
TOP500 ranking:	#27 in EU; #91 globally (June 2021)
Vendor/model	Atos BullSequana XH2000
Operated by	PSB consortium, Sofia, Bulgaria

EuroHPC Systems: Pre-exascale (operational)



EuroHPC
Joint Undertaking



CSC – IT Center for Science,
Kajaani, Finland

Cray EX, Hewlett Packard Enterprise

Sustained performance: 375 petaflops,
Peak performance: 552 petaflops

Compute partitions: GPU partition (LUMI-G),
x86 CPU-partition (LUMI-C),
data analytics partition (LUMI-D), container
cloud partition (LUMI-K),

CPU: 64-core next-generation AMD EPYC™
CPUs,

GPU: Future generation AMD Instinct™ GPU
(MI250X),

Storage capacity: 117 PB multi-tiered 2 Tbit/sec

Applications: AI, especially deep learning, and
traditional large-scale simulations
combined with massive scale data
analytics



LUMI-C (Operational)

Sustained performance (whole system / aggregated)	6.3 petaflops
Peak performance: (whole system / aggregated)	7.6 petaflops
Compute partitions	1536 nodes in total, each node with 2xAMD Epyc 7763 and the following memory capacities: 1376 x 256GB 128 x 512GB 32 x 1TB
Central Processing Unit (CPU)	AMD Epyc 7763 (64C, 2.45GHz)

EuroHPC Systems Rollout Schedule



EuroHPC
Joint Undertaking

2021

2022

2023

VEGA

IZUM, Maribor, SI
6.9 PF, Atos BullSequana
Top500: #106 & #134
Operational

Karolina

IT4I, Ostrava, CZ
9.4 PF, HPE Apollo
Top500: #69 & #149
Operational

LUMI

CSC, Kajaani, FI
375 PF, HPE Cray EX

LUMI-C

Operational
6.3 PF, Top500: #76

LUMI-G

Deucalion

FCT/MACC, PT
7.2 PF, Fujitsu FX700



MeluXina
LuxProvide, Bissen, LU
12.8 PF, Atos BullSequana
Top500: #36 & #231
Operational

Discoverer
PSB, Sofia, BG
4.5 PF, Atos BullSequana
Top500: #91
Operational

Leonardo
CINECA, Bologna, IT
249.5 PF, Atos BullSequana

MN5
BSC, Barcelona, ES
205 PF (min. est.)



Access Policy v1.1 adopted by the EuroHPC GB

- **Free access** to **Open R&D** for **Science, Industry** and **Public Sector**
- **6 Access Modes** offering resources on a continuously open call basis with periodic cut-off dates.
 - **Extreme scale:** Large applications, Pre-exascale systems. Peer-reviewed
 - **Regular:** Medium to large applications, Petascale systems. Peer-reviewed
 - **Development.** All systems. Up to 1 year access. Limited resources.
 - **Benchmark.** All systems. Up to 3 months access. Limited resources.
 - **Fast track for Industry & Academia.** Quick access to previously completed applications
- Calls for **Urgent/Emergency** Computing & Access to **Strategic Initiatives/Projects** – Decided by the Governing Board.
- **PRACE supports EuroHPC** in the implementation of the Access Policy!

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

Regular Access Calls



- EuroHPC JU Regular Access call is open to all fields of **science, industry,** and the **public sector,** targeting applications that will enable progress and innovation in the domains covered (3 distinctive tracks).
- **Continuously open** with **pre-defined cut-off dates (3 per year)** that trigger the evaluation of the proposals submitted up to this date.
- Intended for **large-scale projects** demonstrating excellence in their domain with significant European added-value.
- Allocations granted for **one (1) year** with the option for projects to apply for a continuation of their allocation.

- **Excellence (score 0-5)**
 - **Innovation and Impact (score 0-5)**
 - **Quality and Efficiency of the Implementation (score 0-5)**
- For applications submitted in the **Scientific track**, in case of a score tie, proposals are ranked based on the individual criteria scoring applying the following priority: a. Excellence, b. Innovation and Impact and c. Quality and efficiency of implementation.
 - For applications submitted in **Industry and Public sector tracks** respectively the following priority applies in case of a tie: a. Innovation and Impact, b. Excellence and c. Quality and efficiency of implementation

Results of 1st Regular Access Cut-off



System	Architecture	Site (Country)	Total Core Hours	Minimum request core hours
Vega CPU Standard	BullSequana XH2000	IZUM Maribor (SI)	95 million	6 million
Vega CPU Large Memory	BullSequana XH2000	IZUM Maribor (SI)	42 million	4.2 million
Vega GPU	BullSequana XH2000	IZUM Maribor (SI)	4 million	1 million
MeluXina CPU	BullSequana XH2000	LuxProvide (LU)	95 million	6 million
MeluXina CPU Large memory	BullSequana XH2000	LuxProvide (LU)	3.3 million	1 million
MeluXina GPU	BullSequana XH2000	LuxProvide (LU)	16.5 million	1.6 million
MeluXina FPGA	BullSequana XH2000	LuxProvide (LU)	1.6 million	160 thousand
Karolina CPU	HPE Apollo 2000Gen10 Plus and HPE Apollo 6500	VSB-TUO, IT4Innovations, (CZ)	60 million	6 million
Karolina GPU	HPE Apollo 2000Gen10 Plus and HPE Apollo 6500	VSB-TUO, IT4Innovations, (CZ)	6 million	1 million
Discoverer CPU	BullSequana XH2000	Sofiatech, (BG)	104 million	6 million
LUMI- C	HPE Cray EX	CSC (FI)	240 million	12 million

- 1st cut-off closed on 03 Dec 2021
- **19 Applications** received & Evaluated
- Total of **350 Million** Core-hours awarded

* Resources made available for the 1st cut-off

EuroHPC Calls Schedule



EuroHPC
Joint Undertaking

2022

2023

Regular Access
2nd cut-off
(closed)

Regular Access
3rd cut-off

Regular Access
4th cut-off

Regular Access
5th cut-off



Extreme Scale
1st cut-off
(tentative)

Extreme Scale
2nd cut-off
(tentative)