EuroHPC
Joint Undertaking

Update on EuroHPC activities and MASP

EUROHPC

EC + 35 member States + 3 private partners

#EuroHPC
Joint Undertaking

The European High Performance Computing Joint Undertaking (EuroHPC JU) will pool European resources to develop top-of-the range exascale supercomputers for processing big data, based on competitive European technology.

Member countries are Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Türkiye and United Kingdom.

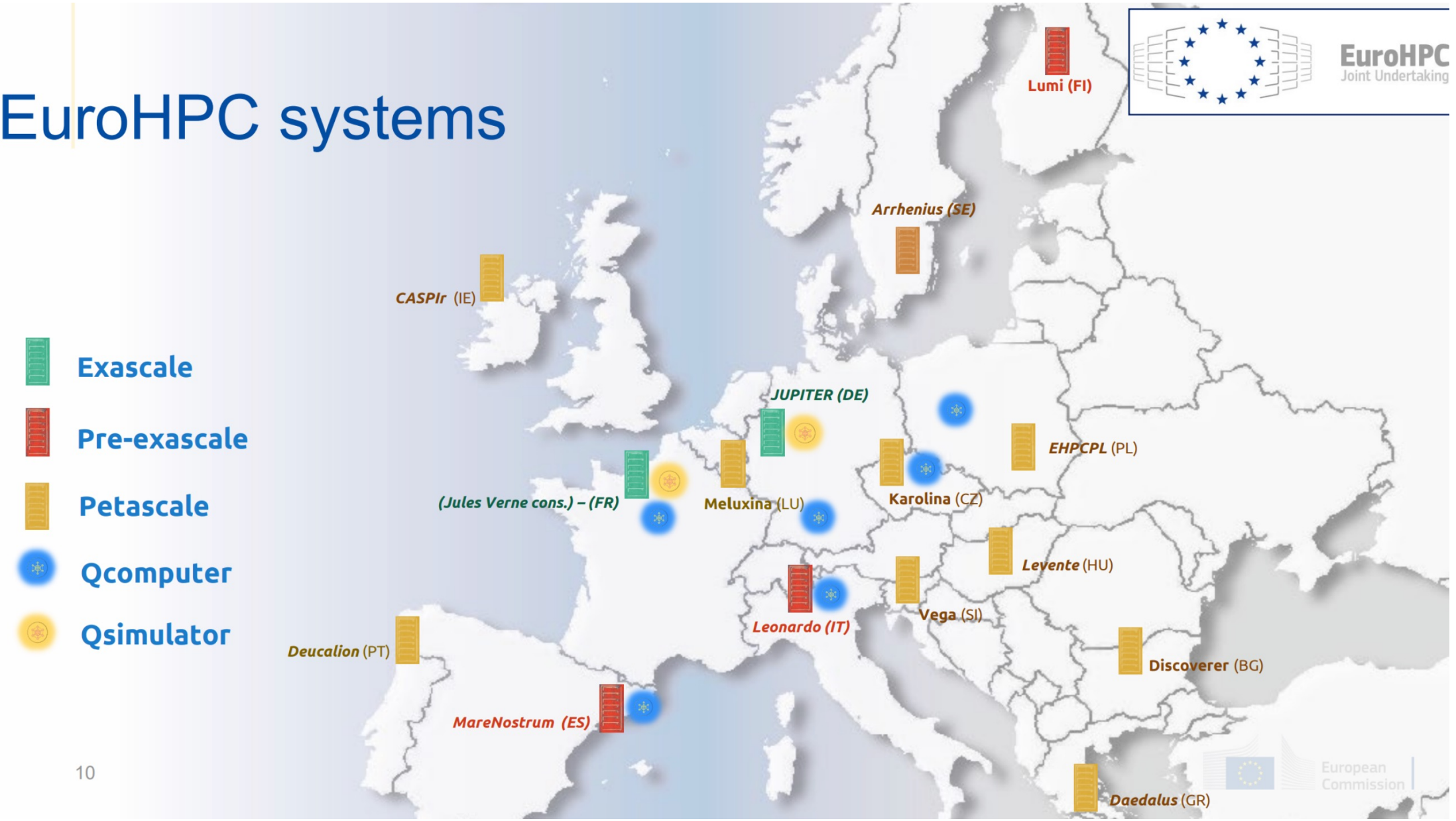
EuroHPC Joint Undertaking

ETP 4 HPC — EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

BDV BIG DATA VALUE ASSOCIATION

QUIC European Quantum Industry Consortium

EuroHPC systems



Top500 – Nov 2024

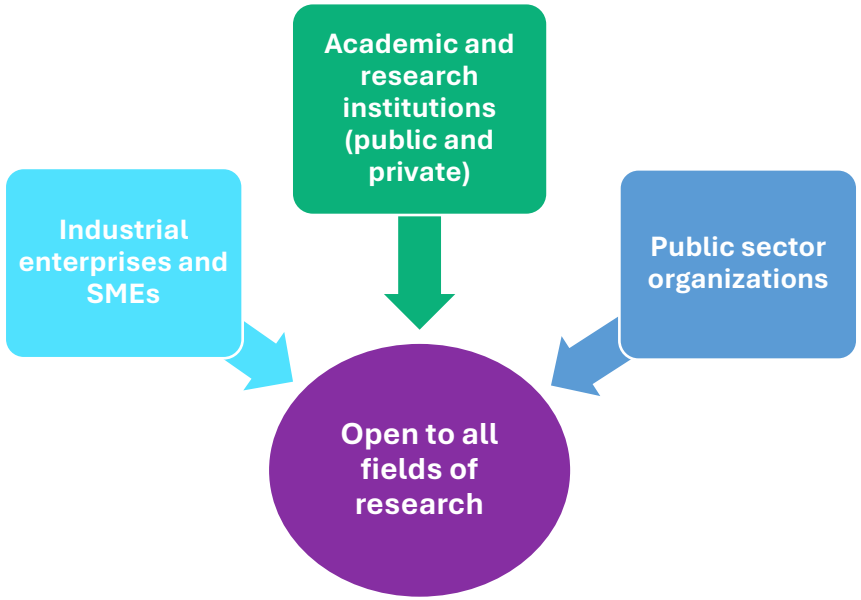
NOV 2024	TOP500	Green500
LUMI	#8	#25
LEONARDO	#9	#52
MARENOSTRUM 5	#11	#30
MELUXINA	#112	#60
KAROLINA	#165	#57
DISCOVERER	#223	#307
DEUCALION	#259	#99
VEGA	#266	#332
JEDI (Jupiter's first module)	#224	#1
JETI (Jupiter's second module)	#18	#6

ALL ACCESS CALLS OVERVIEW

AVAILABLE ACCESS MODES

WHO IS ELIGIBLE?

Principal Investigators and Team Members affiliated with organizations in countries associated to Horizon 2020, Horizon Europe or DEP

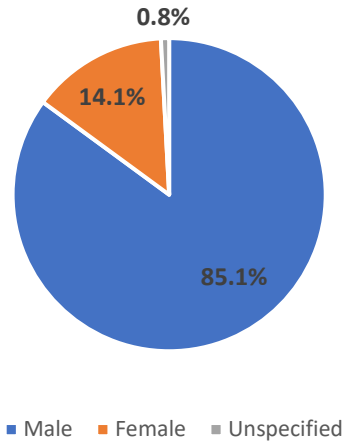


ACCESS CALLS FOR PRODUCTION ACTIVITIES

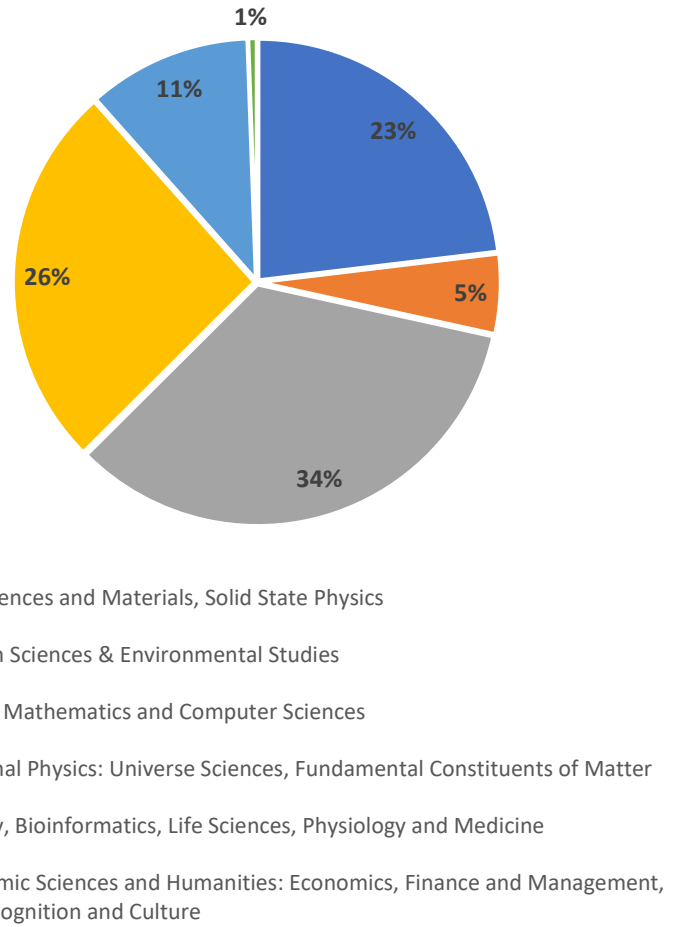
CONSOLIDATED STATISTICS

AWARDED RESOURCES PER ACCESS MODE		
ACCESS CALL	**PROPOSALS AWARDED**	**NODE HOURS AWARDED**
EXTREME SCALE ACCESS (Dec 2022-Apr 2024)	75	63,113,698
REGULAR ACCESS (Dec 2021-Mar 2024)	226	29,762,872
AI AND DATA INTENSIVE APPLICATIONS ACCESS (Apr 2024-October 2024)	54	2,205,600
TOTAL	**355**	**95,081,870**

All calls for production activities - PI gender distribution - awarded projects

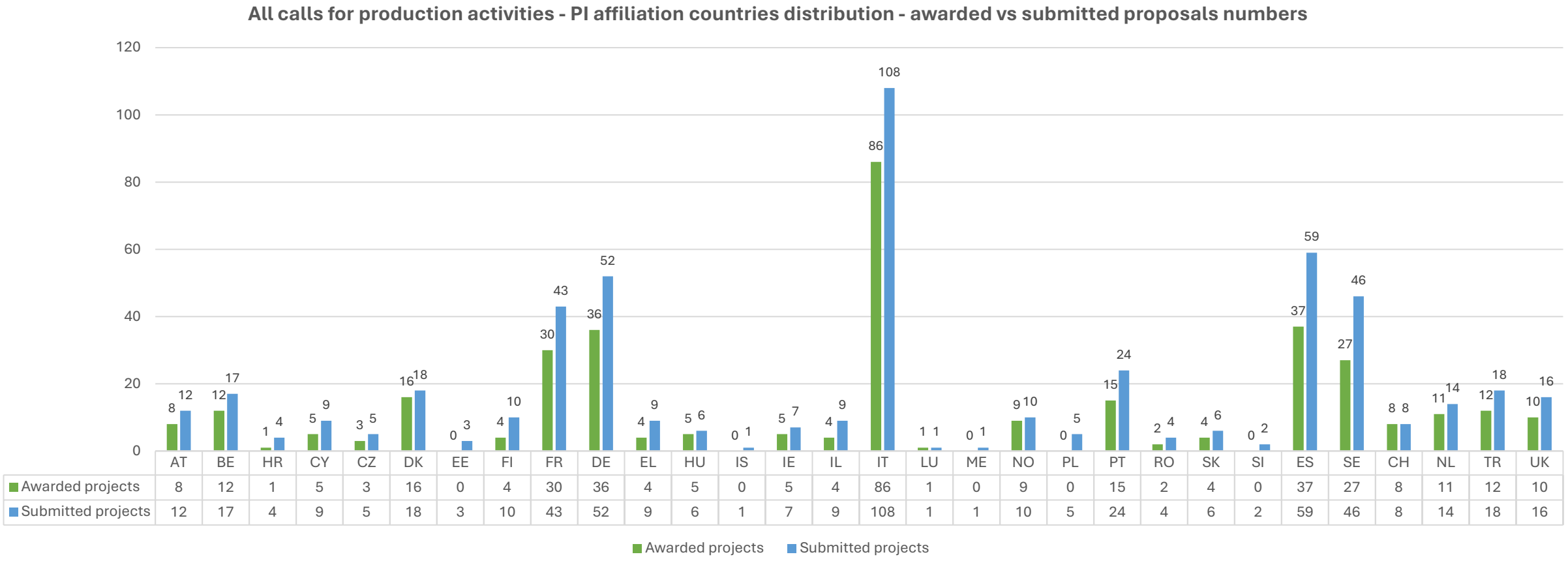


All calls for production activities - research domains distribution - awarded projects



ACCESS CALLS FOR PRODUCTION ACTIVITIES

CONSOLIDATED STATISTICS



	AT	BE	HR	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LU	ME	NO	PL	PT	RO	SK	SI	ES	SE	CH	NL	TR	UK
Awarded projects	8	12	1	5	3	16	0	4	30	36	4	5	0	5	4	86	1	0	9	0	15	2	4	0	37	27	8	11	12	10
Submitted projects	12	17	4	9	5	18	3	10	43	52	9	6	1	7	9	108	1	1	10	5	24	4	6	2	59	46	8	14	18	16

THE EUROHPC QUANTUM COMPUTING INITIATIVE

Two pilot systems acquired for the HPCQS project

2 **100+-qubit quantum simulators** acquired in the context of

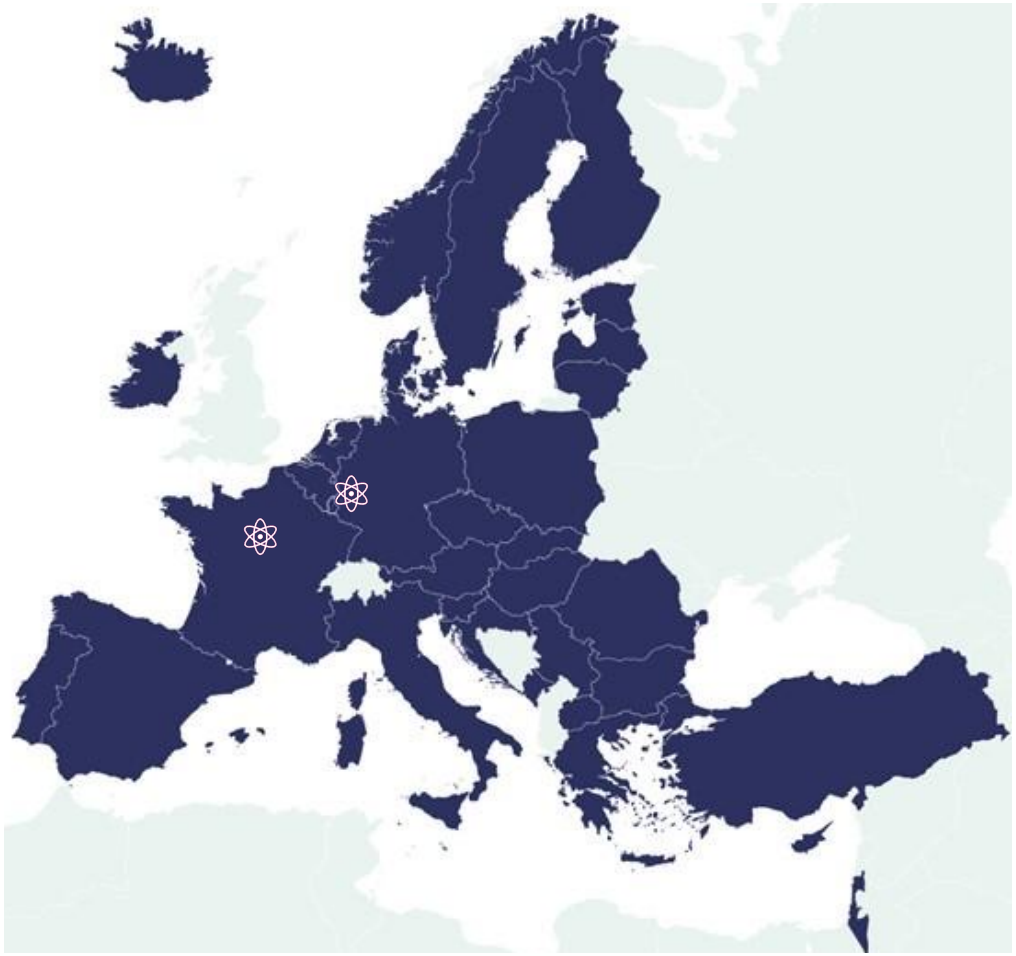
HPC|QS

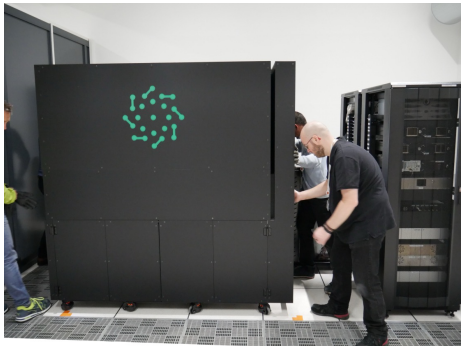
GENCI/CEA

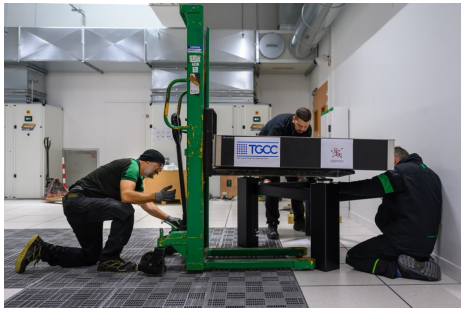
FZJ

15 **partners** in total

6 **countries** involved







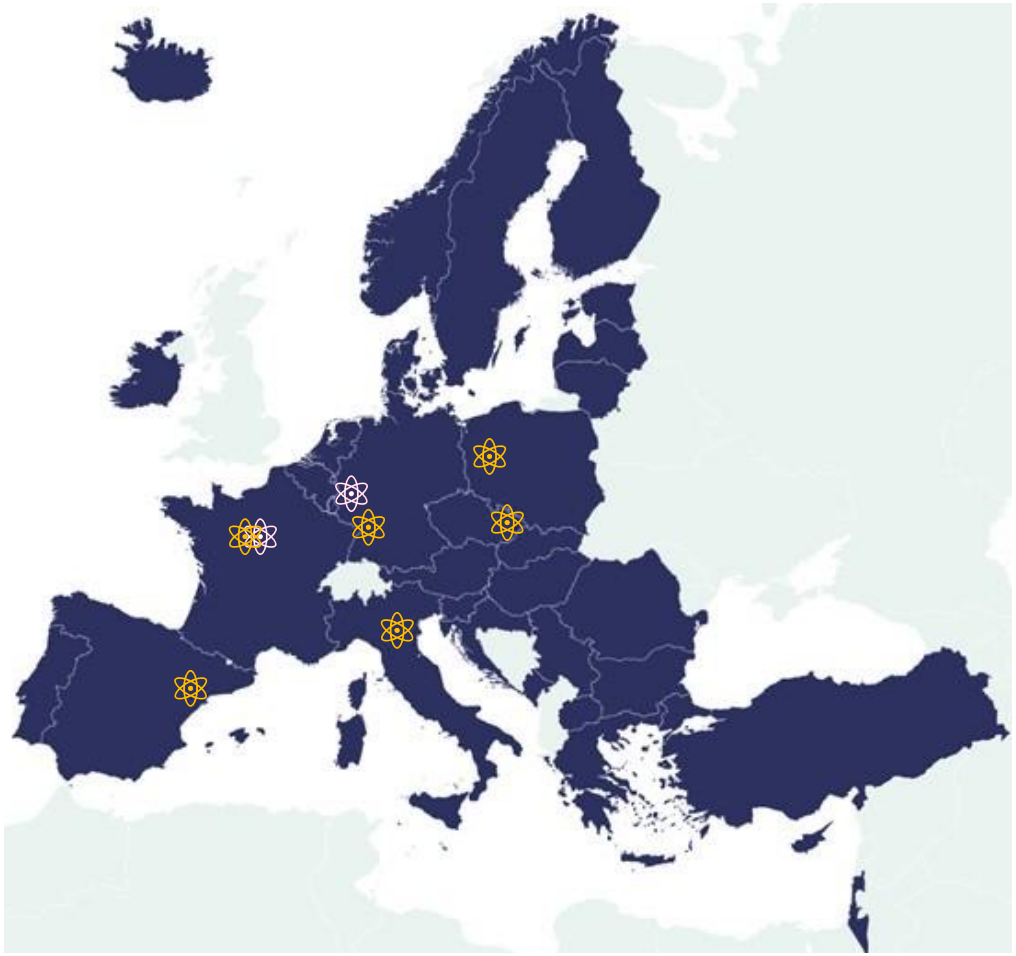
THE EUROHPC QUANTUM COMPUTING INITIATIVE

Six additional quantum computers acquired

6 **10+-qubit quantum computers** acquired through a call for expression of interest (CEI)

30 **partners** in total

17 **countries** involved



EuroQCS-France
GENCI/CEA

Euro-Q-Exa
LRZ

EuroQCS-Italy
CINECA

Lumi-Q
IT4I @ VSB

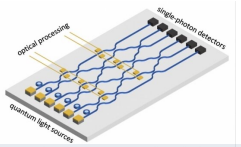
EuroQCS-Poland
PSNC

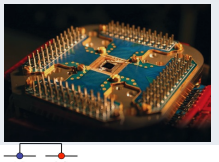
EuroQCS-Spain
BSC-CNS

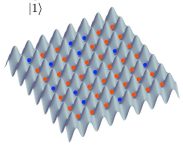
THE EUROHPC QUANTUM COMPUTING INITIATIVE

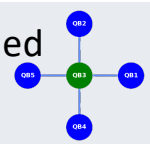
Seven different flavors of HPC-QC infrastructures

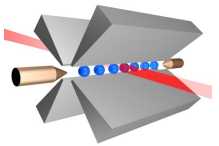
	**EuroQCS-France** GENCI/CEA	Photonic quantum computer
	**Euro-Q-Exa** LRZ	Superconducting qubits
	**EuroQCS-Italy** CINECA	Neutral atoms
	**Lumi-Q** IT4I @ VSB	Superconducting qubits with a star-shaped topology
	**EuroQCS-Poland** PSNC	Trapped ions
	**EuroQCS-Spain** BSC-CNS	Quantum annealer

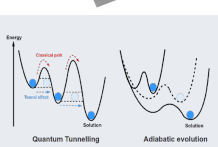


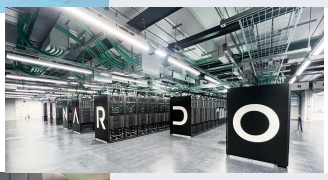




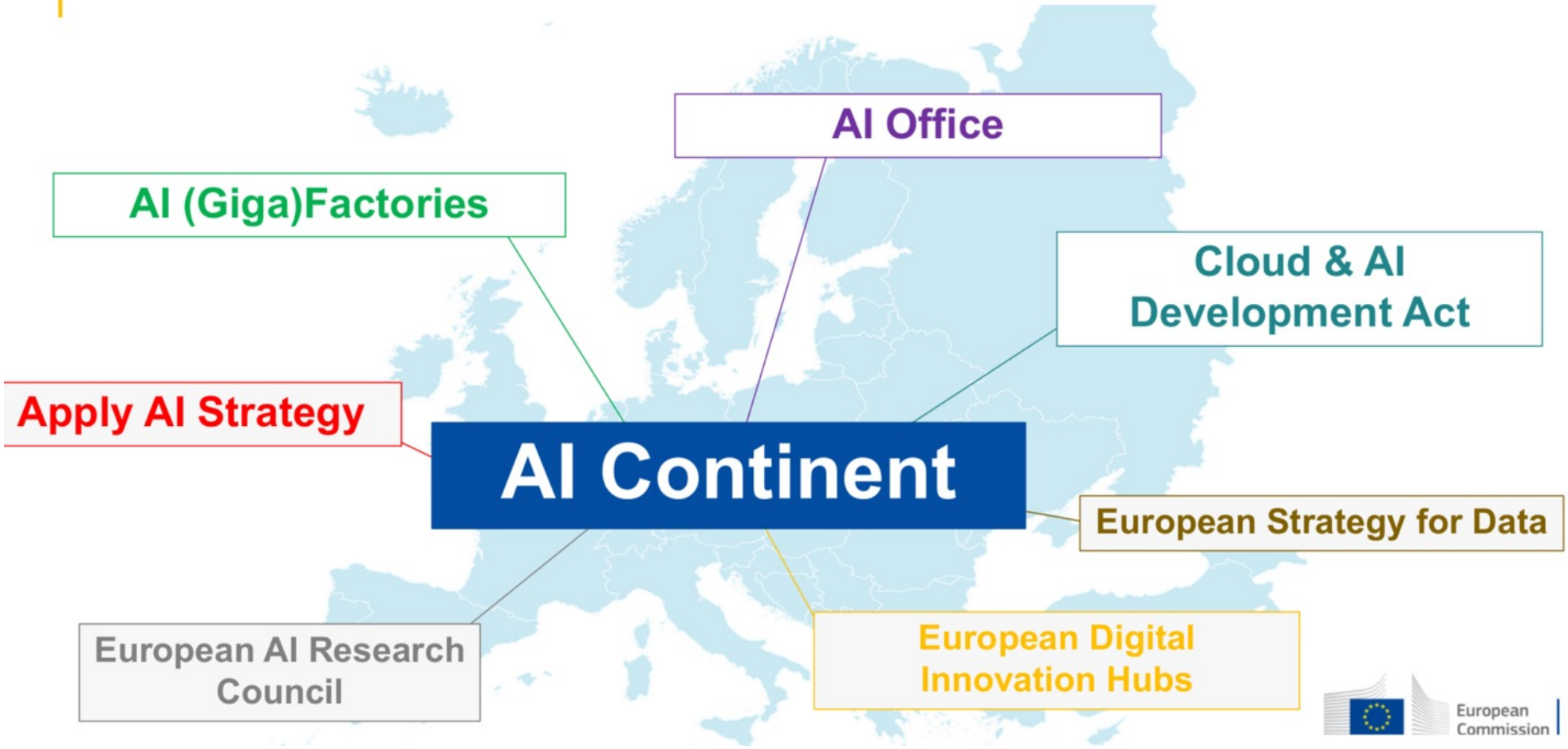




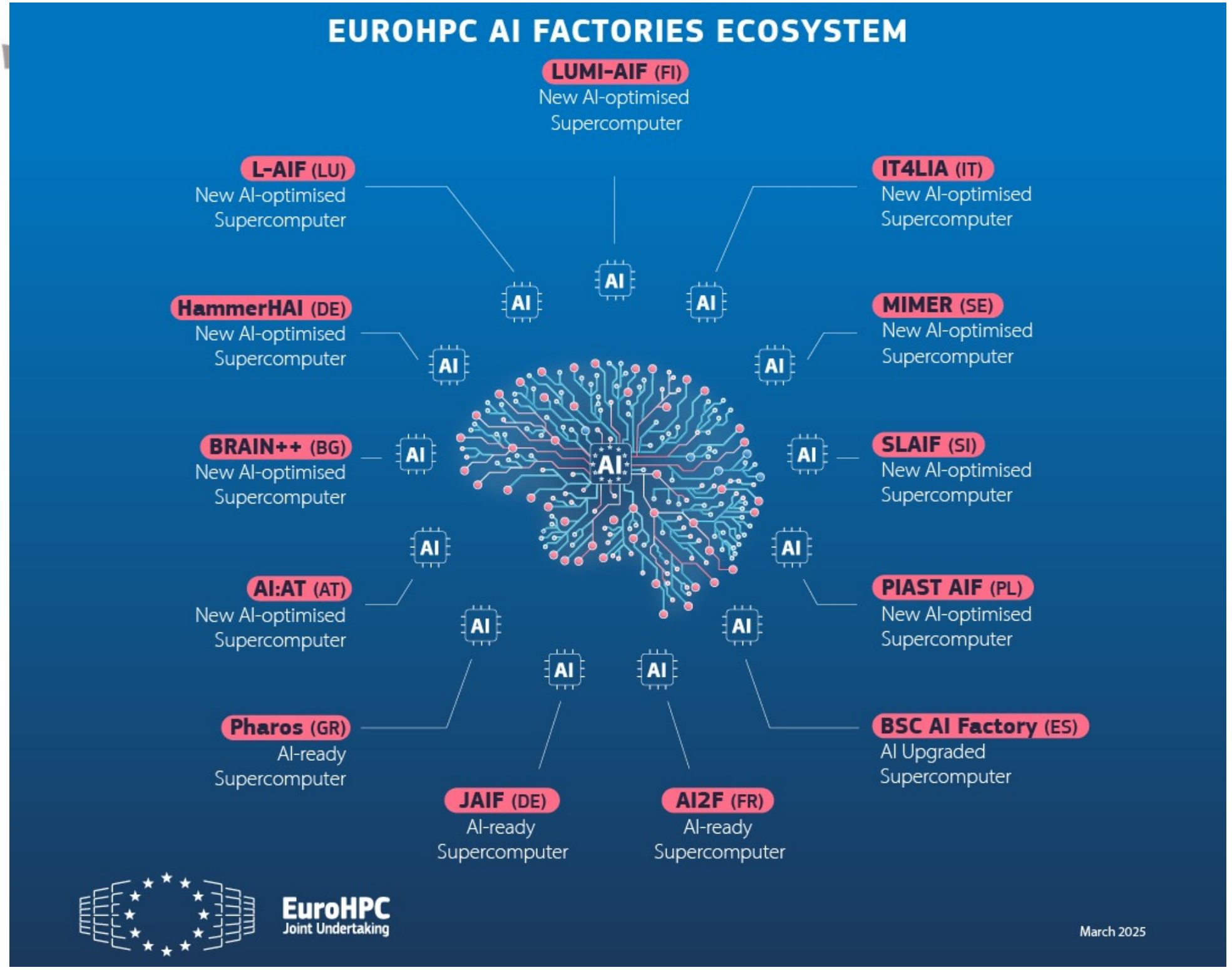




AI Continent



Annoncement on April 9th


EUROHPC AI FACTORIES ECOSYSTEM
LUMI-AIF (FI)
New AI-optimised Supercomputer
L-AIF (LU)
New AI-optimised Supercomputer
IT4LIA (IT)
New AI-optimised Supercomputer
HammerHAI (DE)
New AI-optimised Supercomputer
MIMER (SE)
New AI-optimised Supercomputer
BRAIN++ (BG)
New AI-optimised Supercomputer
SLAIF (SI)
New AI-optimised Supercomputer
AI:AT (AT)
New AI-optimised Supercomputer
PIAST AIF (PL)
New AI-optimised Supercomputer
Pharos (GR)
AI-ready Supercomputer
BSC AI Factory (ES)
AI Upgraded Supercomputer
JAIF (DE)
AI-ready Supercomputer
AI2F (FR)
AI-ready Supercomputer
AI
EuroHPC
Joint Undertaking
March 2025

Multi-Annual Strategic Programme

(MASP)

RIAG & INFRAG
from EuroHPC JU

What is the MASP

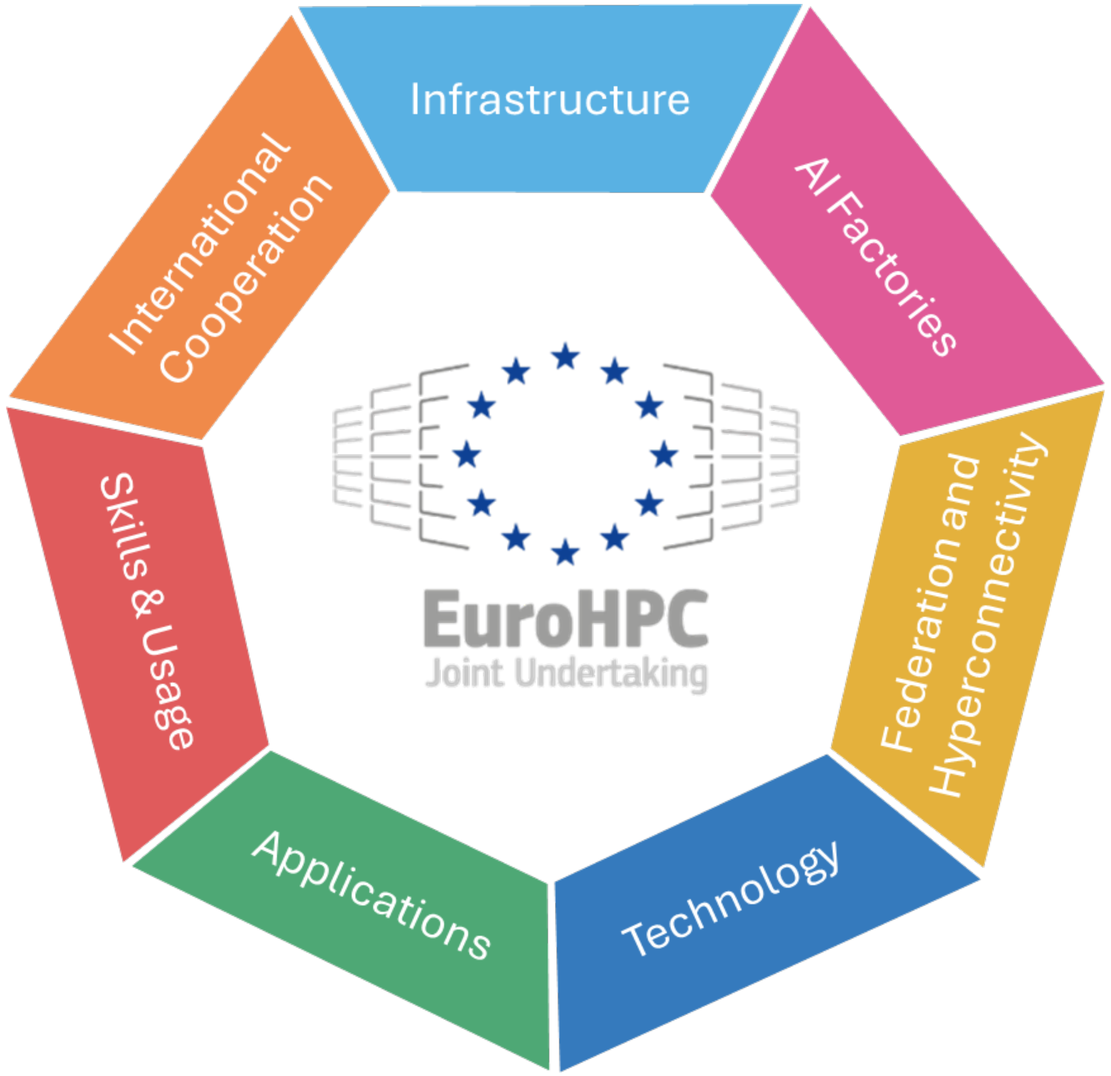
- Document laying down the mid/long term strategy for EuroHPC JU
  - Created first in 2021
  - Updated every one or two years
  - Latest edition: February 2025
- Recommendations
  - Global &
  - per Pillar

EuroHPC JU has **created** in 5 years one of the world's **most powerful and versatile** open **infrastructures for HPC, QC and AI**

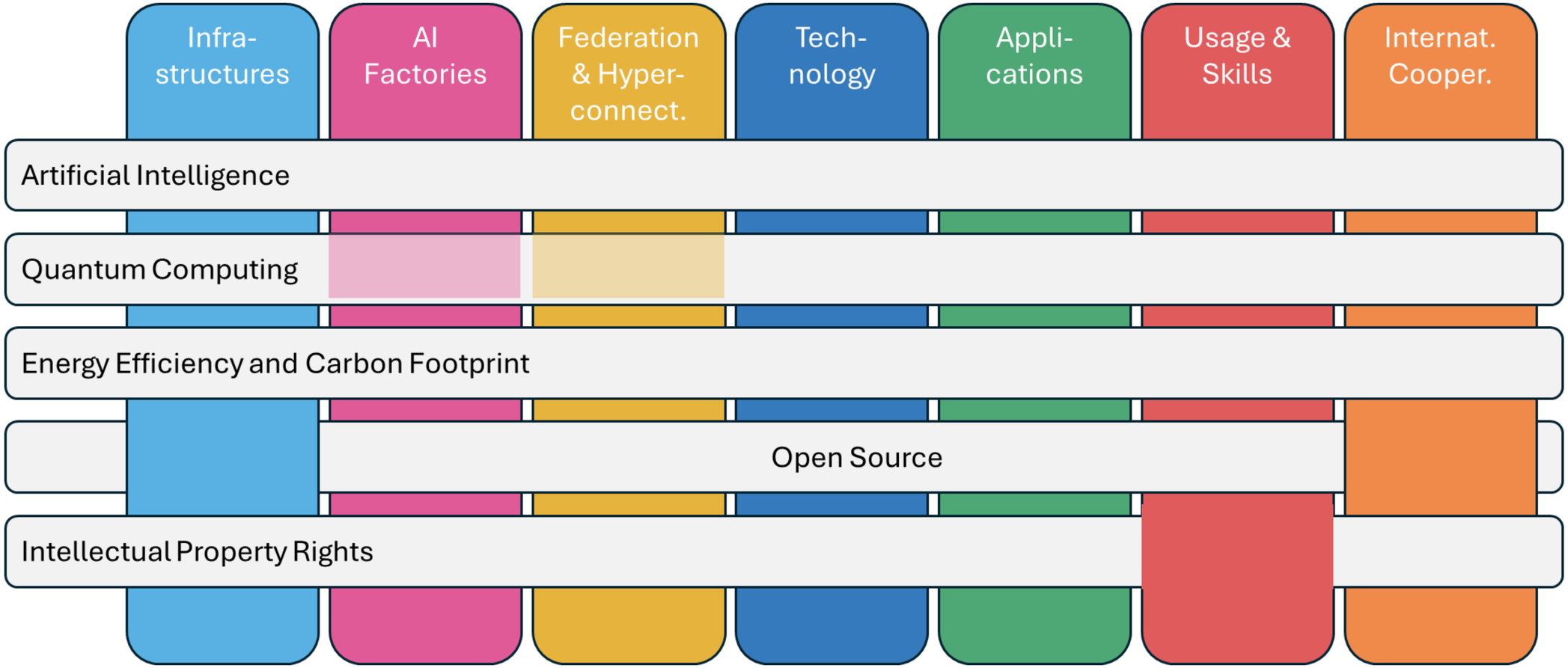
https://eurohpc-ju.europa.eu/about/key-documents_en#multi-annual-strategic-programme

EuroHPC Pillars

- Infrastructures
- AI-Factories
- Federation and Hyperconnectivity
- Technology (HW and SW)
- Applications
- Skills & Usage
- International Cooperation



Topics cutting across pillars



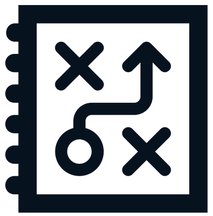
Legend: A topic laying over a pillar (e.g. AI over AIFs) is part of it. When the overlap is faded (e.g. QC the AIFs), it means that the overlap does not exist or is very weak right now, but that it should be intensified in the future. Topics laying behind the pillars (e.g. Open Source behind Infrastructures), the overlap is considered insignificant.

Global Recommendations

Rebalance distribution of funding across Pillars

Strengthen **European sovereignty**

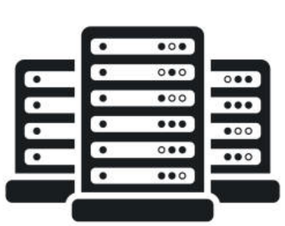
Close **cooperation & coordination** btw. **EuroHPC activities** and **those organized by EC**

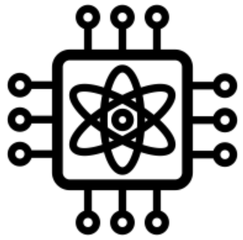


Roadmap for future **key Science & Industry use cases** and **European post-exascale definition**

Infrastructures

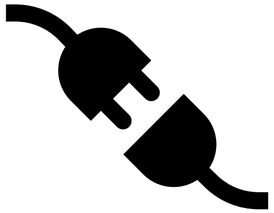
Upgrade mid-range & petascale systems, **deploy exascale**





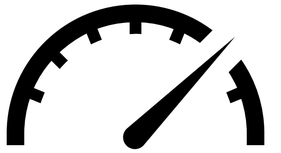
Deploy selected **QC systems** and plan for **next generation by 2027**

Tighten **connection** between **HPC, AI, and QC** infrastructures



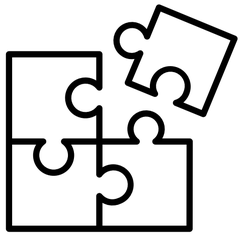
Standardisation, benchmarking, certification, and validation activities for **QC**

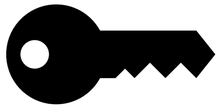
Beyond 2027: **metrics reflecting the real-world impact** of EuroHPC activities ➔ **position in Top500** is **not** the **main goal** in infrastructure procurements



AI Factories

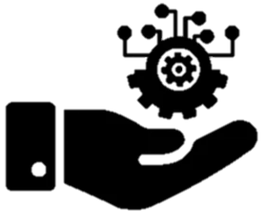
Implement all selected AIFs in a coherent way

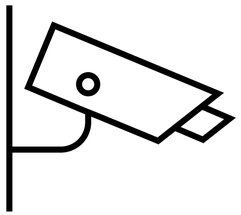




Develop specific access policies fitting the needs of AIFs users

Develop **novel AI-optimised architectures and services**



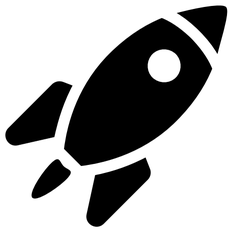


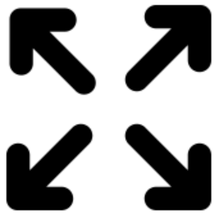
Establish and **reinforce technology watch**

Beyond 2027: **evolution of AI Factories**, learning from first AIFs and Gigafactories, with high **focus on applications and skills**

Federation and Hyperconnectivity

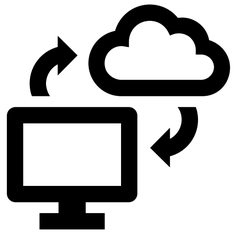
Deploy hyperconnectivity solutions by 2026





Extend federation of HPC systems to **cover** rapidly also **AIFs and QC,** plus **national infrastructures & private cloud providers**

Connect with European data spaces, repositories, data lakes, and edge data sources

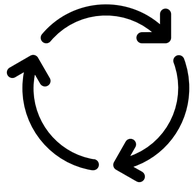


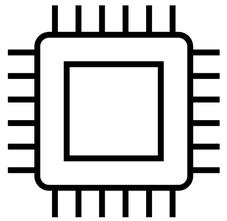
Security task force in sync with the European Unit Agency for Cybersecurity and national security agencies

Beyond 2027: **include data management and storage** topics **in next regulation** of EuroHPC

Technology

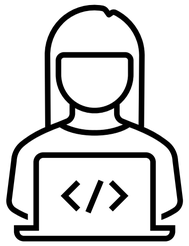
Build up **European supply chain** and demand its **use in EuroHPC deployments**

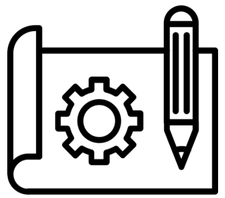




Invest on **European processors** (Arm, RISC-V, accelerators, packaging, chiplets)

Invest continuously on **European SW components** and foster **professional SW development**



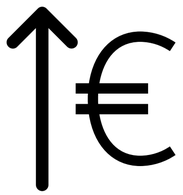


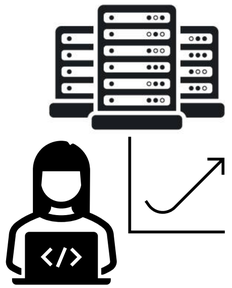
Build **demonstrators for disruptive technologies**

Beyond 2027: **increase funding and adoption** of **European technology** on production deployments

Applications

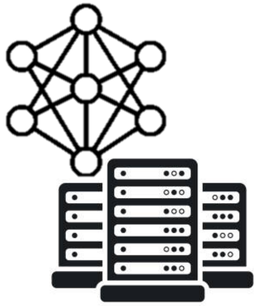
Strengthen funding of the application pillar





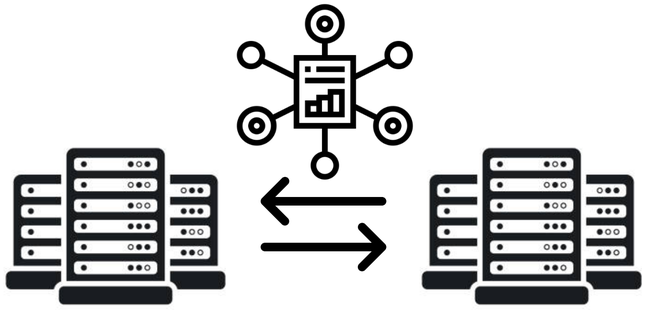
Support effort for **developing**, **porting** and **optimising applications** to predominant HPC architectures, with **HPC experts integrated in scientific application communities**

Optimise foundational models on HPC platforms and support **integration of AI and HPC approaches**



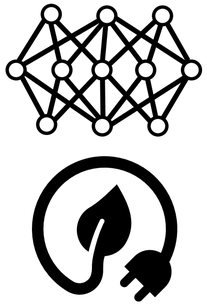
Support the **growth on QC applications**, in both stand-alone and hybrid HPC/AI/QC

Beyond 2027: develop and promote **frameworks to facilitate automated porting of domain applications on EuroHPC platforms**



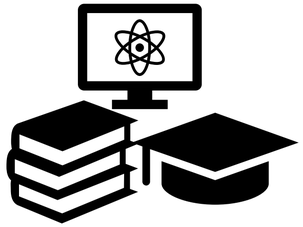
Skills and Usage

Training and **education to grow** the pool of **HW, system-SW developers,** and **system admins**



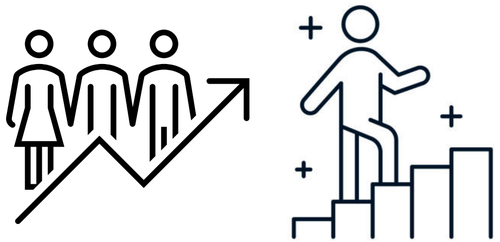
Specific **training and education** for **AI specialists to efficiently use HPC**

Foster **education in QC** and **collaboration between HPC/AI and QC**



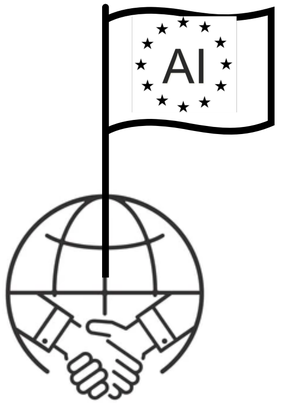
Continuous investment in **support structures for HPC/AI/QC users**

Beyond 2027: **intensify** investment in **growing a diverse pool of HPC/AI/QC experts**, particularly by developing attractive career paths and long term-perspectives



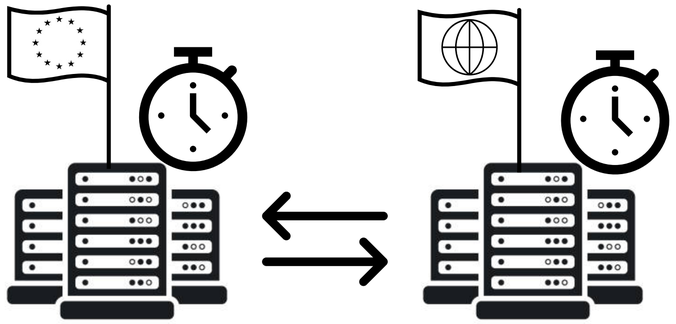
International Cooperation

Extend international cooperation to the regions **Latin America**, **South Korea**, **Singapore** and **Canada**, covering HPC, AI & QC



Support **collaboration with international initiatives** in a manner **coordinated at European level**, particularly in the area of AI (e.g. TPC)

Beyond 2027: means to **exchange compute cycles** with international partners



Thank you for your attention

Download the MASP 2025 ➔

https://eurohpc-ju.europa.eu/about/key-documents_en#multi-annual-strategic-programme