The European High Performance Computing Joint Undertaking

EuroHPC
Joint Undertaking

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ABOUT THE EUROHPC JOINT UNDERTAKING

An EU body and funding entity based in Luxembourg, established in 2018 and autonomous since 2020

Governed by a Board composed of the European Commission, 36 Participating States and 3 Private Members

Digital Europe Programme

1.98B EUR

- **Infrastructure**
- **Federation of supercomputing services**
- **Widening usage and skills**

Horizon Europe Programme

900 M EUR

- **Technology**
- **Applications**
- **International Cooperation**

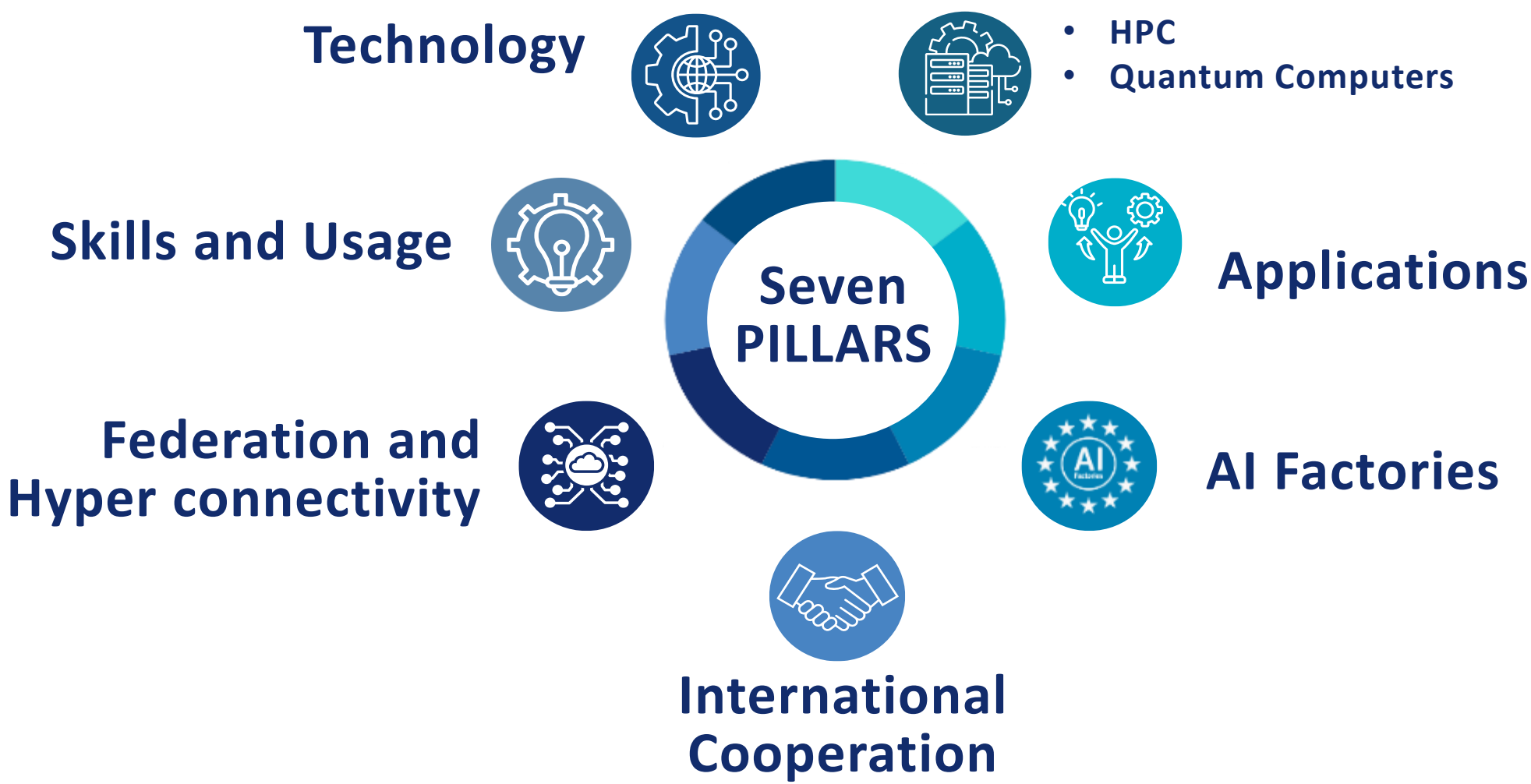
Connecting Europe Facility

200 M EUR

- **Hyperconnectivity**
- **Data Connectivity**

- Procure, deploy and maintain **High Performance Computing, AI Factories and Quantum infrastructure** in Europe
- **Fund innovative Research and Innovation projects**, to develop European skills, applications, software and hardware and foster a European supply chain
- Provide **access to High Performance Computing, AI Factories and Quantum resources** across Europe and user support

SEVEN PILLARS OF EUROHPC JU



EUROHPC SUPERCOMPUTERS

JUPITER

LUMI

Leonardo/LISA

MareNostrum5

Meluxina

Vega

Discoverer/Discoverer+

Karolina

Deucalion

3 EuroHPC systems in Top 10 ranking of the TOP 500 The List.

Ongoing Development

Federated platform for EuroHPC infrastructure

Hyperconnectivity

Daedalus

Arrhenius

Alice Recoque

An Industrial System

JUPITER

Julich, Germany

- The first exascale system in Europe
- Europe's fastest, ranked #4 on the TOP500 list
- The most energy-efficient system among the top 5 fastest systems
- JEDI module #1 in the Green500 list

QUANTUM

10 Quantum Computers

Inaugurated on 20 June

6 Different technologies

Piast-Q (PL)
Digital quantum computer
Trapped-ions

Lucy (FR)
Digital quantum computer
Photonics

Euro-Q-Exa (DE)
Digital quantum computer
Superconducting
Crystal

VLQ (CZ)
Digital quantum computer
Superconducting
Star-shaped

Superconducting

EuroQCS Spain (ES)
Analogue quantum computer
Superconducting
Annealing

Ruby (FR)
Analogue quantum simulator
Neutral atoms

JADE (DE)
Analogue quantum simulator
Neutral atoms

Neutral atoms

EuroQCS-Italy (IT)
Hybrid analogue/
digital quantum simulator
Neutral atoms

Semiconductor

EuroSSQ-HPC (NL)
Digital quantum computer
Semiconductor
Spin Qubits

MeluXina-Q (LU)
Digital quantum computer
Semiconductor
Spin Qubits

DESTINATION EARTH AND EUROHPC

Exploiting world-class EuroHPC supercomputers resources:

LUMI

LEONARDO

MARENOSTRUM5

MELUXINA

Total EuroHPC resource used:

CPUs = 6 484 570 node/h

GPUs = 4 163 772 node/h

(2023-2025)

Funded by the European Union

Destination Earth implemented by ECMWF esa EUMETSAT

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DESTINATION EARTH AND EUROHPC

Soon EuroHPC supercomputer JUPITER, the first Exascale system in Europe – at full potential.

(Early access = 12 550 node/h | 420 000 node/h for all 2025)

793.40 petaflops	930.00 petaflops
Sustained performance	**Peak performance**

Compute partitions:	Booster Module (highly-scalable GPU accelerated) Cluster Module (general-purpose, high memory bandwidth)
Central Processing Unit (CPU):	The Cluster Module utilises the SiPearl Rhea1 processor (ARM, HBM), integrated into the BullSequana XH3000 platform.
Graphics Processing Unit (GPU):	The Booster Module utilises NVIDIA technology, integrated into the BullSequana XH3000 platform.
Storage capacity:	JUPITER provides a 20-petabyte partition of ultra-fast flash storage. The spinning disk and backup infrastructure capacity will be procured separately and subject to change.
Applications:	JUPITER is designed to tackle the most demanding simulations and compute-intensive AI applications in science and industry. Applications include training large neural networks like language models in AI, simulations for developing functional materials, creating digital twins of the human heart or brain for medical purposes, validating quantum computers, and high-resolution simulations of climate that encompass the entire Earth system.
TOP500 rankings	Booster module: #4 globally (June 2025 ranking) JEDI module: #259 globally (June 2025 ranking)
Green500 ranking:	JEDI module: #1 globally (June 2025 ranking) Booster module: #21 globally (June 2025 ranking)

DESTINATION EARTH AND EUROHPC

Digital twins and EuroHPC

Proud that Destination Earth has been shortlisted for the ACM Gordon Bell Prize for Climate Modelling 2025!

RESEARCH

Developing European processors and accelerators for HPC, that will power EuroHPC supercomputers.

12+ **Centres of Excellence**, to improve performance of algorithms in strategic domains, and adapt applications to future advancements.

30+ **National Competence Centres** as points of access for HPC in each country.

Training courses for the next generation of European HPC experts: EUMaster4HPC, HPC SPECTRA, FFplus, EPICURE and more.

Build on EU strengths and develop an EU software stack.

13 AI FACTORIES → MORE THAN 30 KEY SECTORS

- Agriculture
- Food
- Health
- Cybersecurity
- Life Sciences
- Finance
- Biotechnology
- Fintech
- Robotics
- Earth Sciences
- Aerospace
- Physics
- Consumer Goods

- Gaming Industry
- Dual Use
- Universe

- Law Tech
- Digital Society
- Culture
- Sustainability
- Languages
- Manufacturing
- Engineering
- Media
- Public sector
- Insurance
- Material Sciences
- Space
- Green economy

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AI Factories

AI FACTORIES SERVICES

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Sophisticated hardware and software environment

Data

Expert consultation

AI Factories

Testing and Modelling

AI legislations consultation

Software and hardware expertise

AI FACTORIES ACCESS MODES

PLAYGROUND

- Access within **2 working days** and on a rolling basis
- Duration of allocations: **1, 2 or 3 months**
- Fixed allocation: **5,000 GPU hours**

FASTLANE

- Access within **4 working days** and on a rolling basis
- Duration of allocations: **1, 2 or 3 months**
- Flexible allocation: **10,000 – 50,000 GPU hours**

AI FOR INDUSTRIAL INNOVATION:
Large-scale Access
Peer-reviewed

- Access within **10 working days** after the cut-off date
- Duration of allocations: **3, 6 and 12 months**
- Flexible allocation: **> 50,000 GPU hours**

FREE ACCESS TO EUROHPC INFRASTRUCTURE

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Access for “classical" HPC

BENCHMARK	DEVELOPMENT	REGULAR	EXTREME SCALE
For scaling tests & benchmarks	For code and algorithm development	For projects that require large-scale HPC resources	For high-impact, high-gain projects that require extremely large-scale HPC resources
Fixed amount of allocation for 2 or 3 months	Fixed amount of allocation for 6 or 12 months	Allocation duration: for 12 months	Allocation duration: for 12 months
Continuously open with monthly cut-offs	Continuously open with monthly cut-offs	Continuously open with 2 cut-offs per year	Continuously open with 2 cut-offs per year
Results and access to system: 2 weeks from cut-off date	Results and access to system: 2 weeks from cut-off date	Peer-review process duration: 4 months	Peer review process duration: 6 months

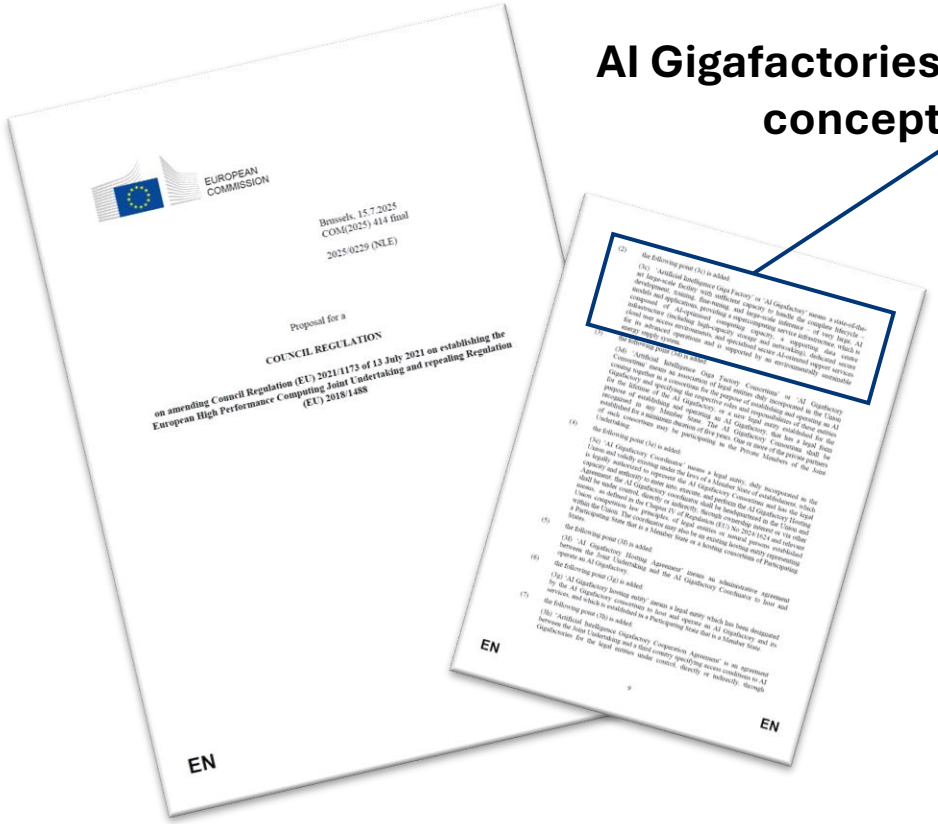
AI Access

AI AND DATA INTENSIVE for Collaborative Projects	INDUSTRIAL INNOVATION
For **scientific projects** intending to perform artificial intelligence and data-intensive activities	**PLAYGROUND**
Fixed allocation for 12 months on first-in / first-served basis	**FAST LANE**
Bimonthly cut-offs	**LARGE SCALE**
Peer-review process duration: 1 month	SELECTION: AIF Industrial Innovation Group
	Up to 30% of EU access time

AI GIGAFACTORIES – COMING SOON!

Council Regulation on amending Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488

"The amendment to the Regulation enlarges its scope in order to expand the objective of the Joint Undertaking related to development and operation of AI Gigafactories in Europe that will be federated with the AI Factories."



AI Gigafactories concept

*"(3c) Artificial Intelligence Giga Factory' or '**AI Gigafactory**' means a **state-of-the-art large-scale facility** with sufficient capacity to handle the complete lifecycle – development, training, fine-tuning, and large-scale inference – of **very large, AI models and applications**, providing a supercomputing service infrastructure, which is composed of **AI-optimised computing capacity**, a supporting **data centre infrastructure** (including high-capacity storage and networking), dedicated **secure cloud user access environments**, and **specialised secure AI-oriented support services** for its advanced operations and is supported by an environmentally sustainable energy supply system."*

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EUROHPC USER DAYS

30 SEPTEMBER
1 OCTOBER
2025

DENMARK

EURO DENMARK

DeiC
DANISH eINFRASTRUCTURE CONSORTIUM

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