EuroHPC
Joint Undertaking

The European High Performance Computing Joint Undertaking (EuroHPC JU) pools the resources of the European Union (EU), European countries and private partners to develop a world class supercomputing ecosystem in Europe, boosting European competitiveness, innovation and improving European citizens' quality of life.

Leading the Way in European Supercomputing

Since 2020, EuroHPC JU is contributing to the EU's digital strategic autonomy with:

- 14 world-class EuroHPC supercomputers across Europe, adding over 3 ExaFLOPs and significantly increasing European compute power available to boost competitiveness in science and industry;
- 10 quantum computers integrated into supercomputers across Europe, using 6 diverse experimental technologies developed by European companies;
- 64+ Research & Innovation (R&I) projects supporting European technologies, applications, software and skills initiatives, to create a stronger and coordinated supercomputing ecosystem in Europe;
- Free access for European scientists, startups and SMEs to cutting-edge European supercomputing resources and to the most advanced public HPC, quantum computing and AI infrastructure in the world.

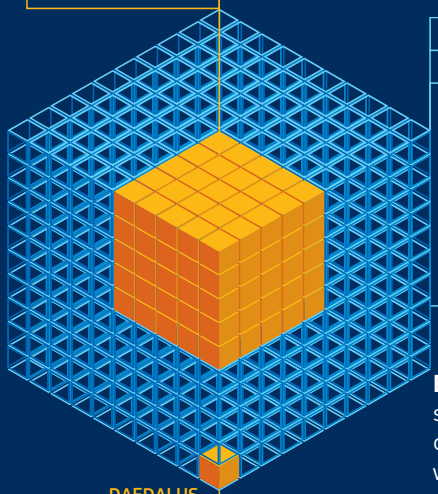
European Supercomputers

Pre-Exascale
10^{17}
CALC. PER SEC.

- LUMI
- LEONARDO
- MARENOSTRUM 5

- JUPITER
- ALICE RECOQUE

Exascale
10^{18}
1 BILLION BILLION CALC. PER SEC.
(PETASCALE x1000)



Exascale supercomputers can compute in 1 second what the entire world population would calculate in 6 years, doing 1 calculation per person/second.

Petascale & Mid-range
10^{15}
CALC. PER SEC.

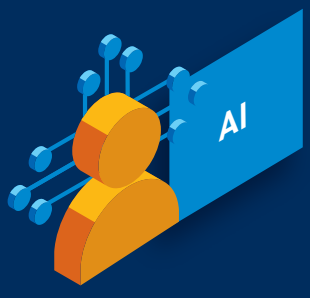
- DAEDALUS
- ARRHENIUS
- LEVENTE
- CASPIR
- MELUXINA
- KAROLINA
- VEGA
- DISCOVERER
- DEUCALION

European Quantum Computers

EuroHPC **quantum computers,** integrating and complementing the fastest supercomputers, can be used for defined very complex tasks and will compute new problems in a few seconds. They will accelerate calculations, develop groundbreaking algorithms and make HPC greener.

European AI Factories

Trustworthy AI models, developed by European scientists, startups, and SMEs with EuroHPC **AI Factories**, will contribute to accelerate our understanding of the potential of AI - bringing about a new renaissance of innovation and prosperity.



Supporting European HPC Users and Businesses Across Europe

EuroHPC JU is bringing Europe at the forefront of supercomputing and AI with:

15 new AI-optimised supercomputers to serve 19 AI Factories (AIFs) and 13 AIF Antennas, all offering compute time, AI sector-specific support services to European startups and SMEs;

An hyperconnected and federated supercomputing infrastructure for easier access;

EuroHPC JU amended regulation will bring AI Gigafactories that boost industrial capacity, competitiveness, innovation and further R&I activities in quantum technologies;

An AI Support Centre, the MINERVA project, providing HPC services to accelerate AI research and development.

Enabling European Research & Innovation

EuroHPC JU funds an ambitious R&I programme to develop a full European HPC ecosystem, with:

Multiple hardware and software, with projects like the European Processor Initiative (EPI), that developed the first European chip for HPC, powering EuroHPC exascale supercomputers JUPITER and Alice Recoque;

Innovative energy-efficient HPC hardware and software solutions to equip with European technologies future generations of supercomputers;

16+ Centres of Excellence, to improve performance of algorithms in strategic domains, and adapt applications to exascale and future post-exascale supercomputers;

2 European Quantum Excellence Centres, QEX and QEC4QEA, dedicated to applications for quantum computing.

Building HPC Competences and Skills

36+ National Competence Centres, acting as points of access for HPC across Europe, supporting adoption of HPC, delivering trainings adapted to HPC, AI and quantum skills development and providing services to support industry;

Various training initiatives to upskill HPC professionals through the 'HPC in Europe' Portal, including EuroHPC Training Academy, HPC SPECTRA, HPCTRAIN, HPC International Summer schools, and an expanded pan-European master programme EUMaster4HPC, to educate future generations of HPC experts.

Benefits for the Planet and for Citizens

Supercomputers, quantum computers and AI are essential for the digital transformation and will lead to further economic growth and prosperity.

Supercomputing can:

Model the human body, allowing for personalised medicine and discovering new lifesaving treatments faster - like in the Virtual Human Twins Initiative, or EuroHPC project MICROCARD 2, enabling digital twins of cardiac tissue;

Simulate Earth's natural phenomena and human impacts, contributing to the Green and Digital transitions - like in the award-winning project Destination Earth, or EuroHPC project ESIWACE3, focusing on simulations for earth system modelling, weather, and climate prediction;

Scale and test engineering design, improving safety, sustainability and competitiveness - like in EuroHPC project CEEC, enabling Computational Fluid Dynamics on exascale HPC for fuel-efficient planes and ships, or EXCELLERAT P2, for a low-carbon mobility and energy production.

Access EuroHPC supercomputers, quantum computers and AI Factories for free!

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