THE EUROPEAN HIGH PERFORMANCE COMPUTING JOINT UNDERTAKING

EFECS – 24/11/2022

EuroHPC
Joint Undertaking

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Joint Undertaking

WHO ARE WE?

- A legal and funding entity (Art 187 of the Treaty on the Functioning of the European Union -TFEU)
- Created in 2018 and autonomous since September 2020
- Based in Luxembourg (Cloche d'Or district)
- A small team of 25 employees and still in the process of recruiting additional employees

THE EUROHPC JU POOLS THE RESOURCES OF ITS MEMBERS TO:

- Develop, deploy, extend & maintain in Europe a **world-leading supercomputing, quantum computing, service** & **data infrastructure** ecosystem;
- Support the development of **innovative supercomputing components, technologies, knowledge** & **applications** to underpin a **competitive European supply chain**;
- Widen the use of **HPC** & **quantum infrastructures** to a large number of public & private users wherever they are located in Europe and support the development of **key HPC skills** for European science and industry.

OUR MEMBERS

- 32 participating countries
- The European Union (represented by the European Commission)
- 3 private partners

Each of our members is represented in the EuroHPC JU's Governing Board

The Governing Board also takes advice from the EuroHPC Industrial and Scientific Advisory Board (INFRAG & RIAG)

BDV BIG DATA VALUE ASSOCIATION

EUIC European Quantum Industry Consortium

ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

LEVEL AND SOURCES OF EU FUNDING 2021-2027

Digital Europe Program

1.98B Eur

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

Horizon Europe Program

900M Eur

- **Technology**
- **Application**
- **International Cooperation**

Connecting Europe Facility

200M Eur

- **Hyperconnectivity**
- **Data connectivity**

*Member states to match this with national contributions

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INFRASTRUCTURE

Up to now, the EuroHPC JU has procured 8 supercomputers:

- **6 operational systems,** all ranking among the world's most powerful supercomputers:
  - Slovenia,
  - Luxembourg,
  - Czechia,
  - Bulgaria,
  - Finland,
  - & Italy.

- **2 systems underway** in
  - Spain,
  - & Portugal.

OUR WORLD-LEADING SUPERCOMPUTERS

- **LEONARDO** enters the ranking at **4th place**
- **LUMI** retains its **3rd place** ranking
- All operational EuroHPC supercomputers rank among the 500 most powerful in the world

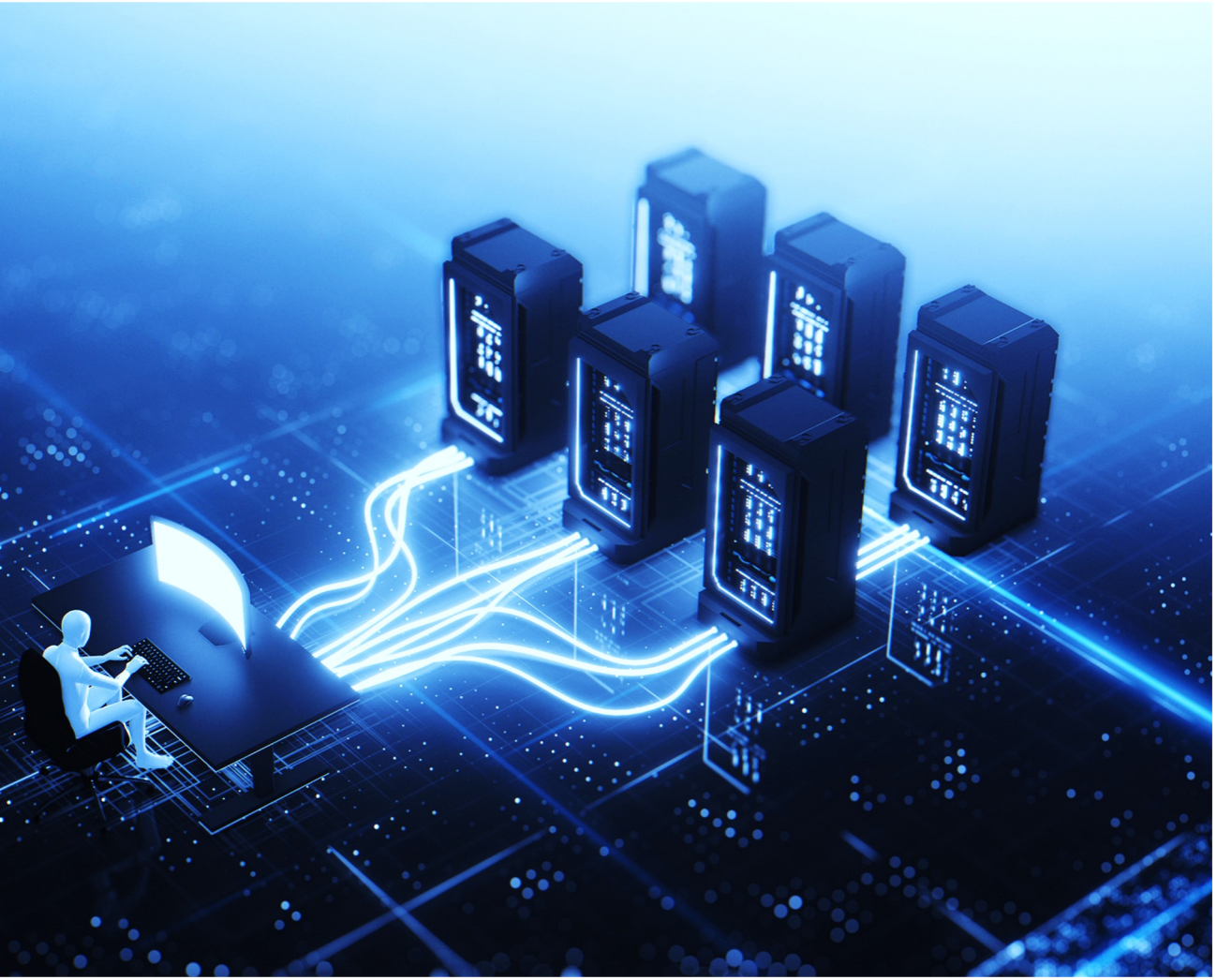
PURSUING MORE SUSTAINABLE HPC INFRASTRUCTURE

The EuroHPC JU is committed to building supercomputers which are both **powerful** and **eco-efficient** by:

- Procuring **energy efficient systems**, with low requirements for cooling. All our systems are **water cooled**, removing the requirement of high operational costs of air-cooled systems and in parallel reducing the energy footprint.
- Investing in the development of **next generation "green" microprocessors** that rely on energy efficient architectures.

Green and sustainable technologies are a priority for the JU, as part of the European Green Deal's aim to make Europe climate neutral by 2050

WHO CAN ACCESS OUR SUPERCOMPUTERS?



What organisations are eligible for access to EuroHPC JU machines?

Any organisation from a participating state is eligible for access to perform Open Science research. This includes public and private academic and research institutions, public sector organisations, industrial enterprises and SMEs.

What are the participation conditions?

- Participation conditions depend on the specific access call that a research group has applied. In general users of EuroHPC systems commit to:
- 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.

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RESEARCH & INNOVATION

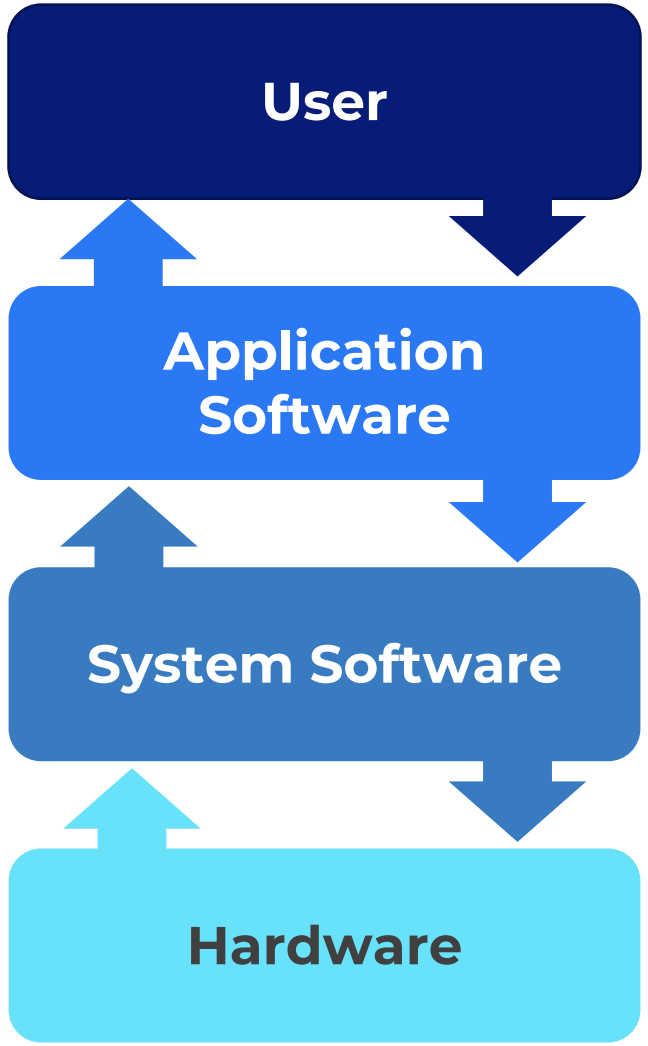
STRATEGIC R&I – INTERVENTION AREAS

Leadership in Use & Skills
Competence Centres and training programmes in HPC commensurate with the labour market.

Applications and Algorithms
Centres of Excellence for HPC Applications and new algorithms for European exascale technology.

European Software Stack
Software and algorithms, programming models and tools for exascale and post exascale systems.

European Open Hardware
Ecosystem for the low power high-end general purpose processor and accelerator.



EUROHPC HARDWARE PROJECTS

- Central challenge: develop a competitive European microprocessor and accelerator

- First phase:
  - Rhea General-Purpose Processor (GPP)
  - a proof-of-concept implementation of European accelerator technology

- **Second phase**:
  - finalising the 1st generation of low-power processor unit
  - 2nd generation GPP targeting European exascale
  - 2nd generation of low power accelerator test chips
  - developing sound industrialisation & commercialisation paths

EUROHPC HARDWARE PROJECTS

EUPEX
European Pilot for Exascale

- Developing first European platform for HPC
- Integrating European technologies from system architecture, processor, system software and development tools to applications
- Designed to be open, scalable and flexible
- Primary users will be scientific and industrial HPC technologies developers to build production-grade prototypes.

THE EUPILOT

- Demonstrating a European accelerator, designed, implemented, manufactured, and owned by Europe
- Based on open source and open standards using RISC-V instruction set architecture.
- Integrating accelerators into a highly dense pilot HPC system with liquid immersion cooling technologies.

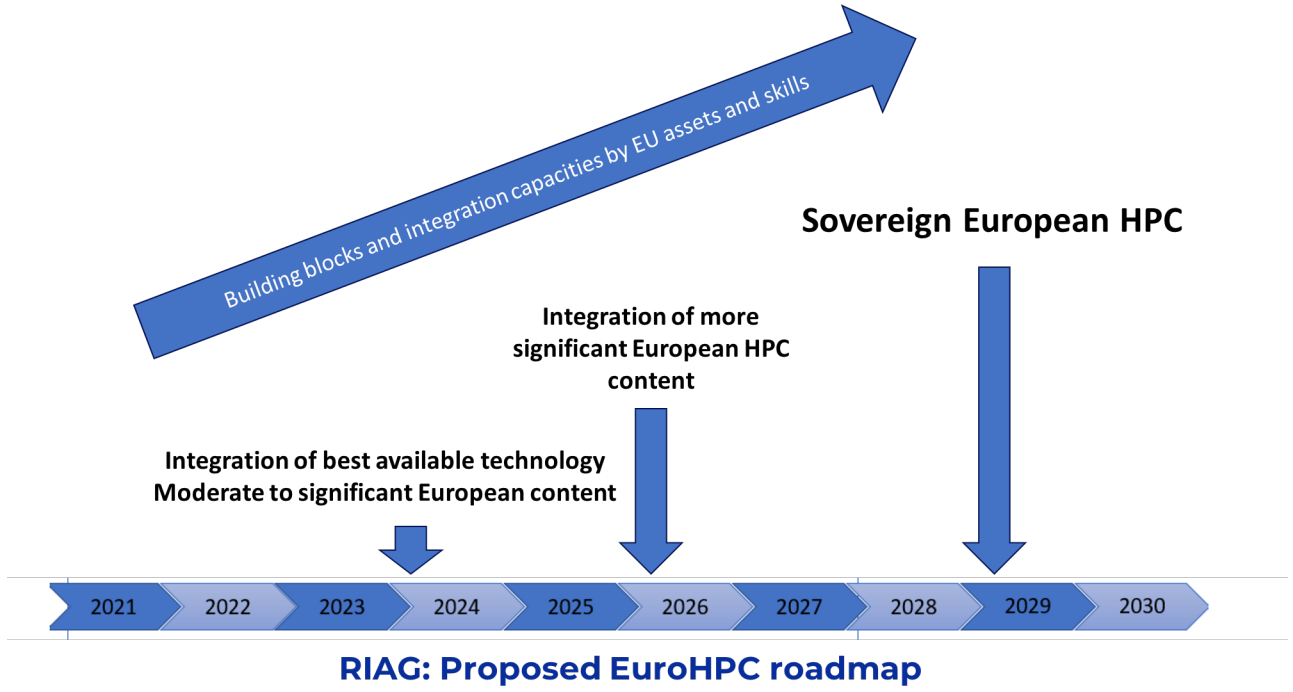
EUROHPC & HARDWARE: LOOKING TO THE FUTURE

Upcoming RISC-V processor call

- The EuroHPC JU is consulting with experts and looking towards first action
- The EuroHPC Governing Board will take a decision on 25/11

Opportunities to join forces

- RISC-V working group established by European Commission
- Availability of EDA tools
- Create chiplet ecosystem to build processor



RIAG: Proposed EuroHPC roadmap

THANK YOU

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https://eurohpc-ju.europa.eu

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