EuroHPC
Joint Undertaking

Research and Innovation Opportunities

EuroHPC JU Information Day for AI on Supercomputers

Funding for Research & Innovation

Co-funded by EuroHPC, Participating States and in-kind contributions

Digital Europe
1.98 B€
- Infrastructure
- Federation of HPC services
- **Widening usage and skills**

Horizon Europe
900 M€
- Technology
- Applications
- International cooperation

Connecting Europe Facility
200 M€
- Hyperconnectivity
- Data connectivity

EuroHPC Joint Undertaking

Total budget
1.5 B€ in 2019-2020
7 B€ in 2021-2027

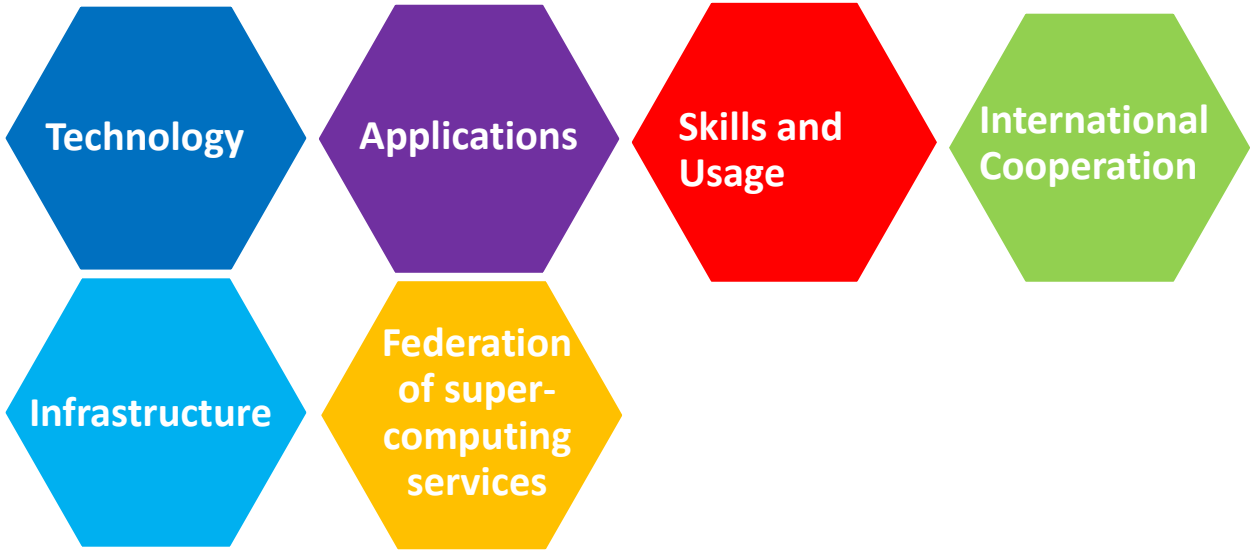
R&I and skills
350 M€ in 2019-2020
≈ 2 B€ in 2021-2027

BDV BIG DATA VALUE ASSOCIATION
ETP4HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING
BDVA
900 M€ in-kind contributions from Private Members

3 B€ from Participating States

Financial Instruments

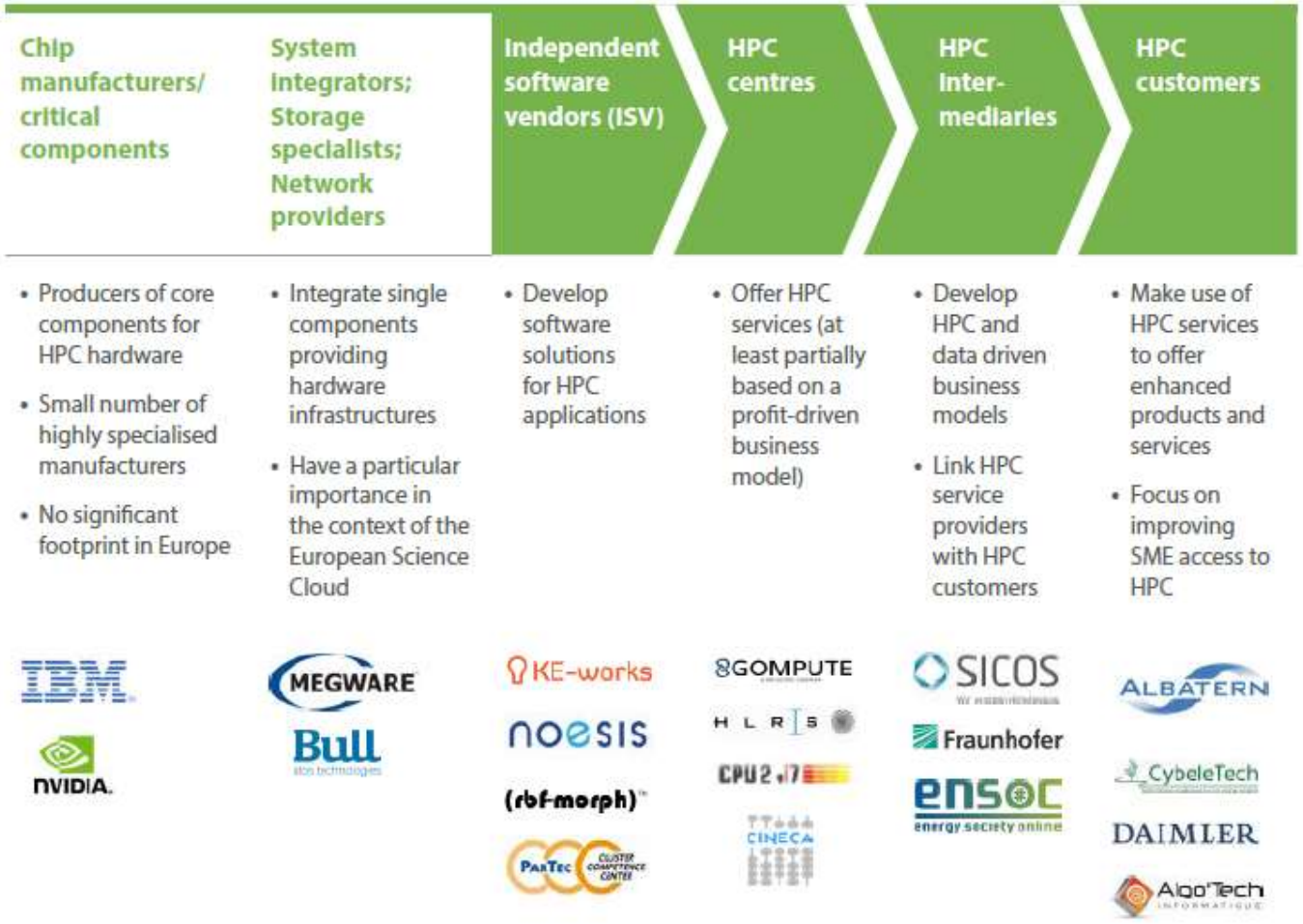
- **Grants**
  - Calls for Proposals
  - Synergy grants
- **Procurements**
  - Calls for Tender
  - Co-financing through ESIF, RRF



- **Equity & debt financing**
  - Not provided by the JU but could be used in combination with grants and procurements
  - The European Innovation Council offers equity, also blended with grants (SMEs)
  - The European Investment Bank offers loans

The HPC value chain

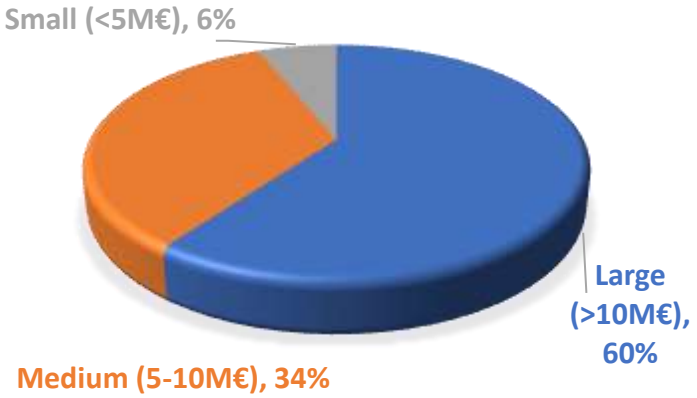
EuroHPC Joint Undertaking



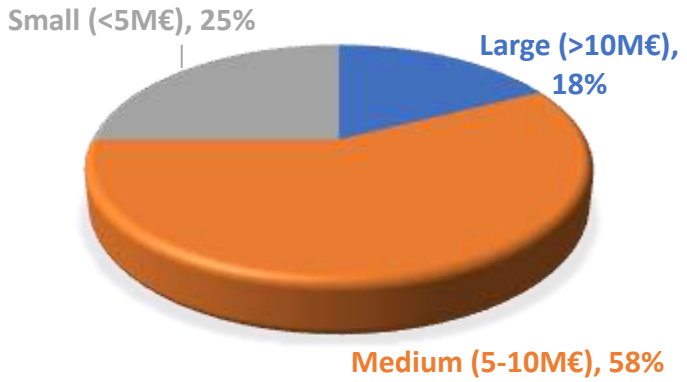
"Financing the future of supercomputing" EIB Advisory Services, 2018

R&I actions in numbers

Grant Budget
(>490M € total)



No of Grants
(40 actions funded)



EuroHPC JU pools European resources to fund large strategic projects

- HPC hardware including advanced processors, accelerators, high-speed interconnect
- Software stack including programming models, resource management software, HPC services
- Applications for R&I covering many scientific domains and topics, engineering
- Skills, usage and HPC adoption supported by a pan-European network of Competence Centres

Industrial R&I funded by EuroHPC JU

Industrial software, HPC applications and workflows

LIGATE

LIgand Generator and portable drug discovery platform AT Exascale

Industrial partners

- DOMPE FARMACEUTICI SPA (IT)
- E4 COMPUTER ENGINEERING SPA (IT)
- tofmotion GmbH (AT)

Objective: Implement a computer-aided drug design solution for automated drug discovery

Budget: €5,938,656.25

NextSim

Next generation of industrial aerodynamic simulation code

Industrial partners

- AIRBUS OPERATIONS SAS (FR)
- OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES (FR)
- DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV (DE)

Objective: development of CODA - the new reference flow solver for aerodynamic applications inside AIRBUS group

Budget: €3,998,703.75

ACROSS

HPC Big Data Artificial intelligence cross Stack Platform Toward Exascale

Industrial partners

- BULL SAS (FR)
- NEUROPUBLIC AE PLIROFORIKIS & EPIKOINONION (EL)
- GE AVIO SRL (IT)

Objective: Workflows and applications for aeronautics, climate and weather, and energy domains

Budget: €8,815,845.00

exaFOAM

Exploitation of Exascale Systems for Open-Source Computational Fluid Dynamics by Mainstream Industry

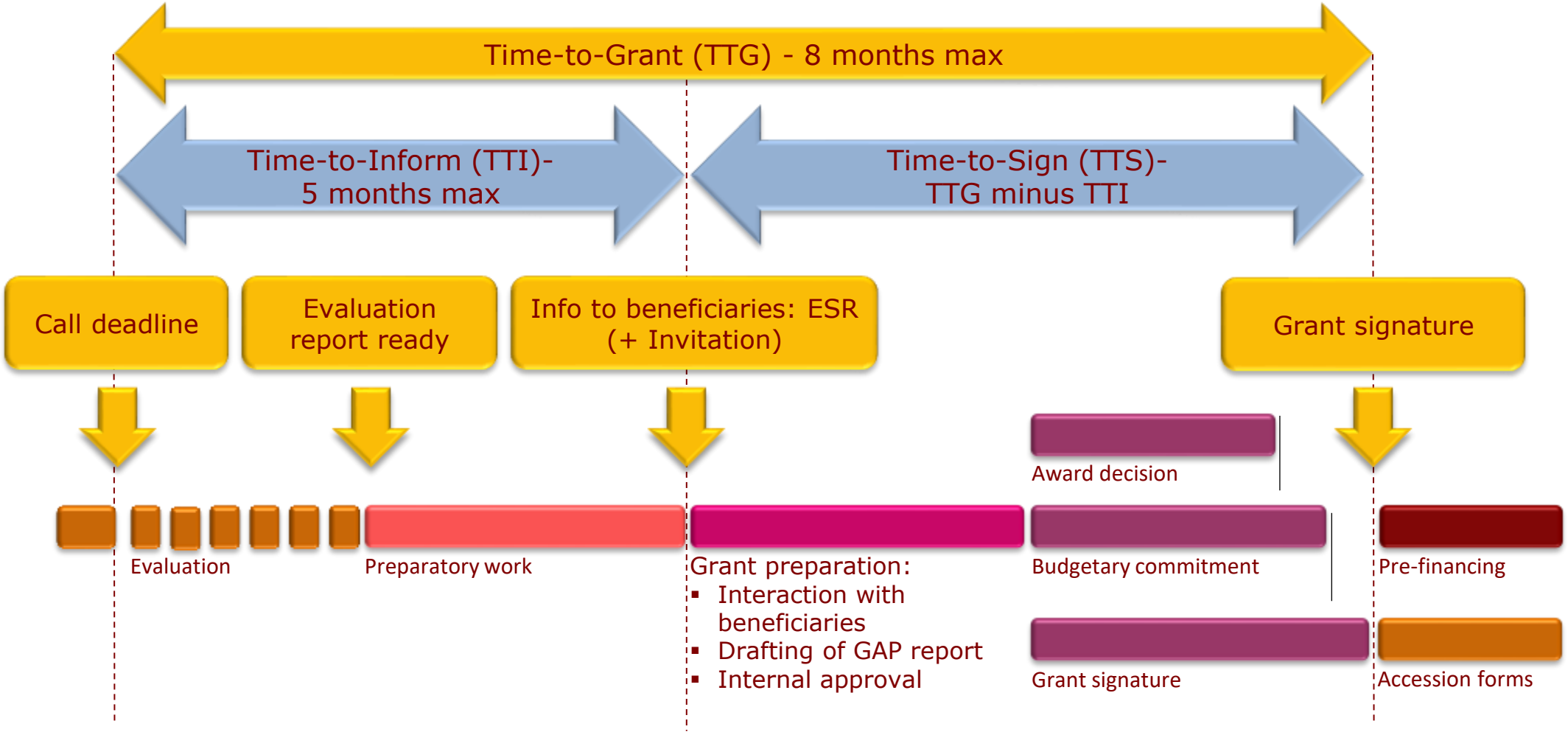
Industrial partners

- ESI GROUP (FR)
- E4 COMPUTER ENGINEERING SPA (IT)
- UPSTREAM CFD GMBH

Objective: Improvement of the OpenFOAM software for computational fluid dynamics across the entire processing chain

Budget: €5,425,618.75

Proposal evaluation



Skills and Usage

Expertise and HPC resources

- European network of NCCs in 32 countries to **widen the use of HPC** in Europe.
- Support **SMEs, public services** and **private businesses**
- **Gateway for** users to access **European HPC** resources

Financial support for HPC uptake

- Boost **innovation** and **business opportunities for SMEs**
- **Solve business problems with HPC,** financial support and expertise from European HPC leaders

Talent development

- Train the **next generation of HPC experts** in Europe
- 1st **pan-European MSc** Programme in HPC including 19 countries
- **Connect academic education with HPC industry**

„ It is our proposed level of ambition that by 2030:

- *75% of European enterprises have taken up cloud computing services, big data and Artificial Intelligence*
- *More than 90% of European SMEs reach at least a basic level of digital intensity “*

National Competence Centres for HPC

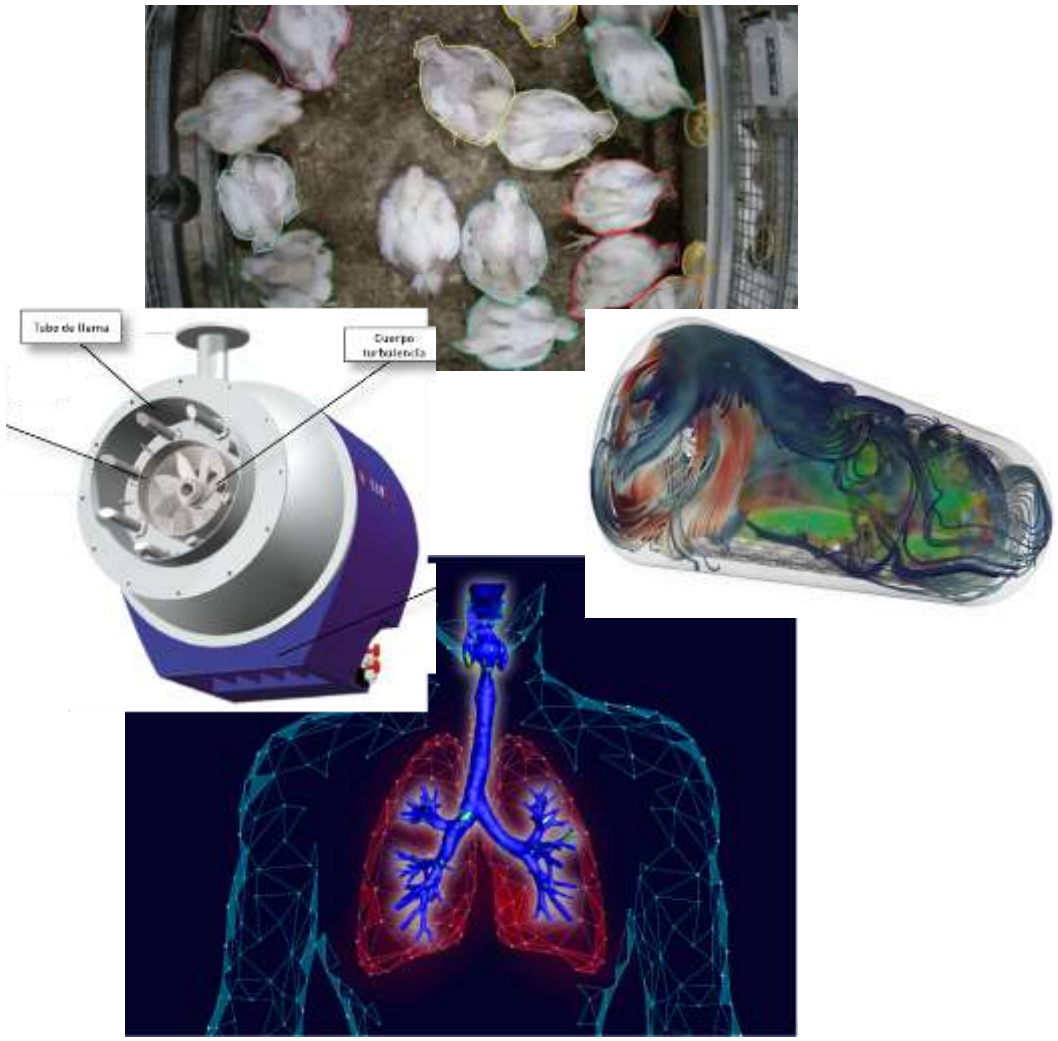
- **EuroCC**

  A European network of more than 30 national HPC Competence Centres to widen the use of HPC in Europe

  - Provide training and specific local support to access to HPC resources, expertise and funding free of charge
  - Serve as single point of access to a European network of HPC experts for users from academia, industry, public administrations and in particular SMEs
  - Support HPC uptake by businesses and implementation of best practice
  - Ensuring a coordinated and consistent high level of expertise across Europe in HPC and related disciplines e.g. data analytics (HPDA) and artificial intelligence
  - Mapping competencies and identifying knowledge gaps

Stimulating the innovation potential of SMEs

https://www.ff4eurohpc.eu/



- **Financial support for SMEs to**
  - **Boost innovation potential and competitiveness through HPC**
  - **Address business challenges with HPC**
  - **Adopt HPC in existing business models**
  - **Develop skills in related disciplines on the basis of HPC, such as high performance data analytics (HPDA) and artificial intelligence to solve specific business problems**
- **Most projects use or rely on AI and HPC**
- **Grant of 50.000 – 150.000 € per beneficiary**
- **Support by experts from leading European HPC centres**

Upcoming R&I opportunities

Call DIGITAL-EUROHPC-JU-2023-SME-01

Supporting competitiveness and innovation potential of SMEs

Three Open Calls for proposals in 2024, 2025 and 2026 on two topics

1. **Uptake of HPC by SMEs to address specific business challenges**
2. **Adoption of large scale HPC resources for the development of models for generative AI**
   - **SMEs must demonstrate an existing business model in the field of generative AI**
   - **Business concept must significantly benefit from advanced supercomputing resources**
   - **Existing training data set of sufficient scope and quality must be available**

- **Up to 30M funding – 80% of funds reserved for direct financial support to SMEs**
- **Expertise from leading HPC centres to access and use large scale HPC resources**

Upcoming R&I opportunities

Proposed action for 2024: Support for HPC in AI

Address challenges related to HPC, for example

- Support pooling and consolidation of efforts by European communities to develop competitive AI enabled by HPC
- Support the adaptation and tuning of an AI software stack for (Euro)HPC supercomputers
- Facilitate the development and deployment of HPC-ready AI software to EuroHPC supercomputers, e. g. through the EuroHPC Continuous Integration and Deployment platform
- Provide well documented pre-trained models adapted to EuroHPC supercomputer
- Support communities to access supercomputing resources
- Contribute to HPC-AI training such as the proposed EuroHPC Academy