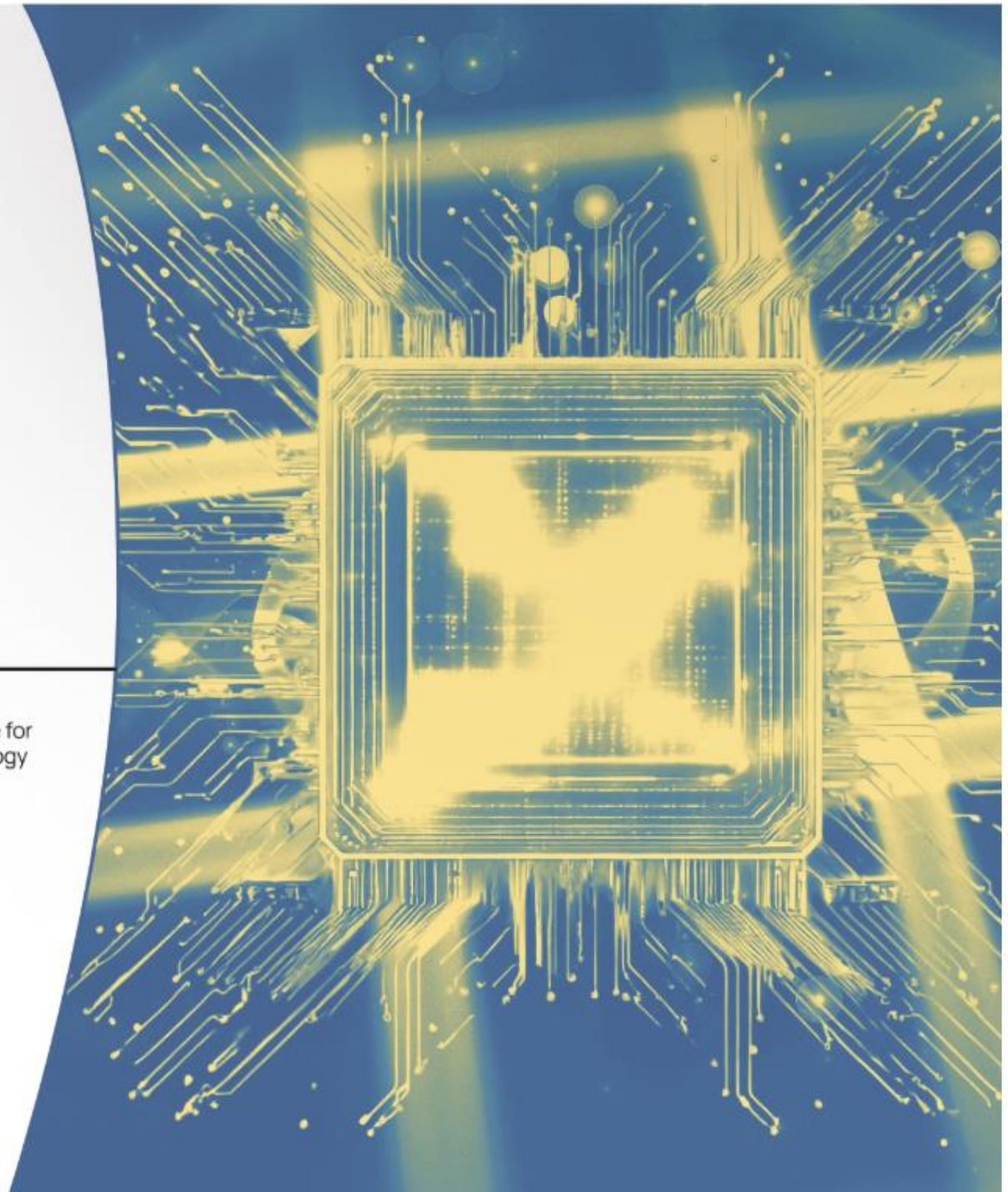
QUANTUM AUTUMN SCHOOL 2025

ENCCS
EuroCC National Competence Centre Sweden

Danish Competence Center for HPC
EURO

EURO
LITHUANIA

WACQT | Wallenberg Centre for Quantum Technology



Welcome to RISE!

Our mission is to strive for sustainable growth in Sweden by **strengthening the competitiveness and capacity for renewal of Swedish industry**, as well as promoting the **innovative development of society as a whole**.

ENCCS

EuroCC National Competence Centre Sweden

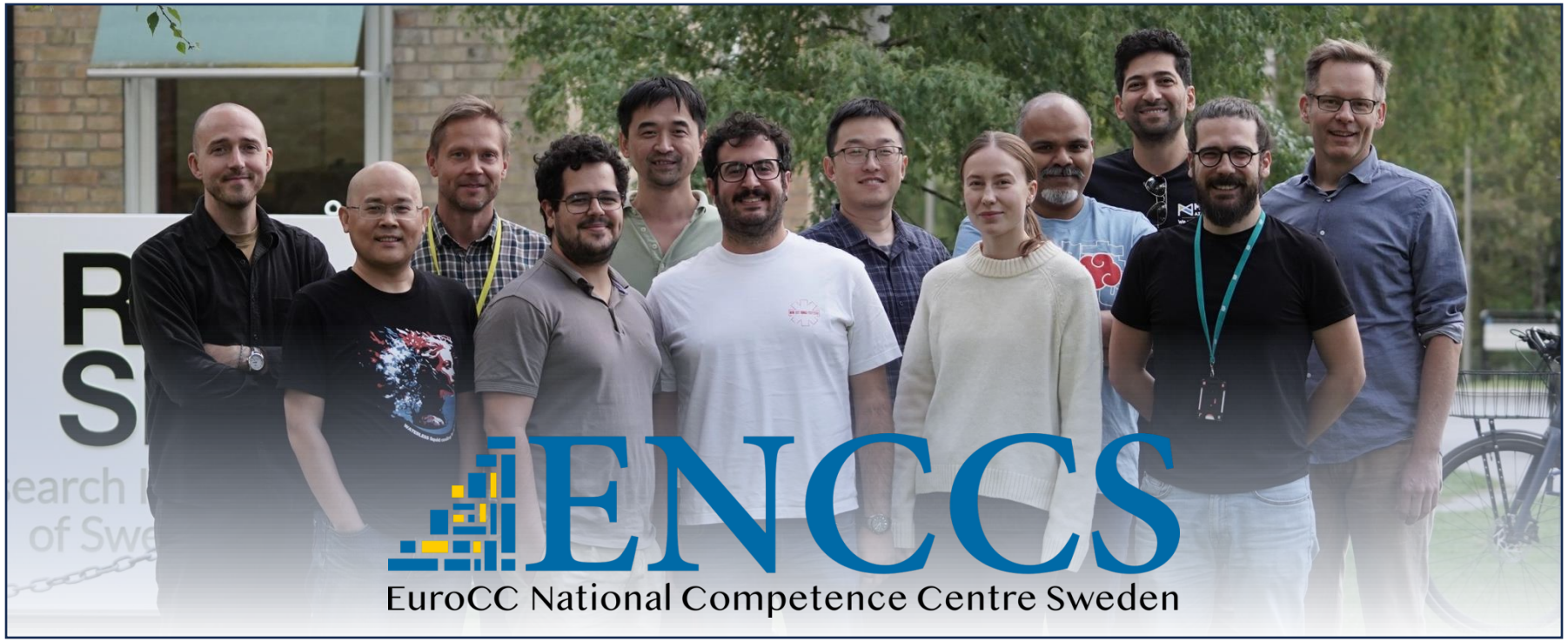
*ENCCS empowers Swedish **industry and the public sector achieve their business targets by** leveraging **HPC, HPDA and QC** efficiently and effectively.*

HPC access

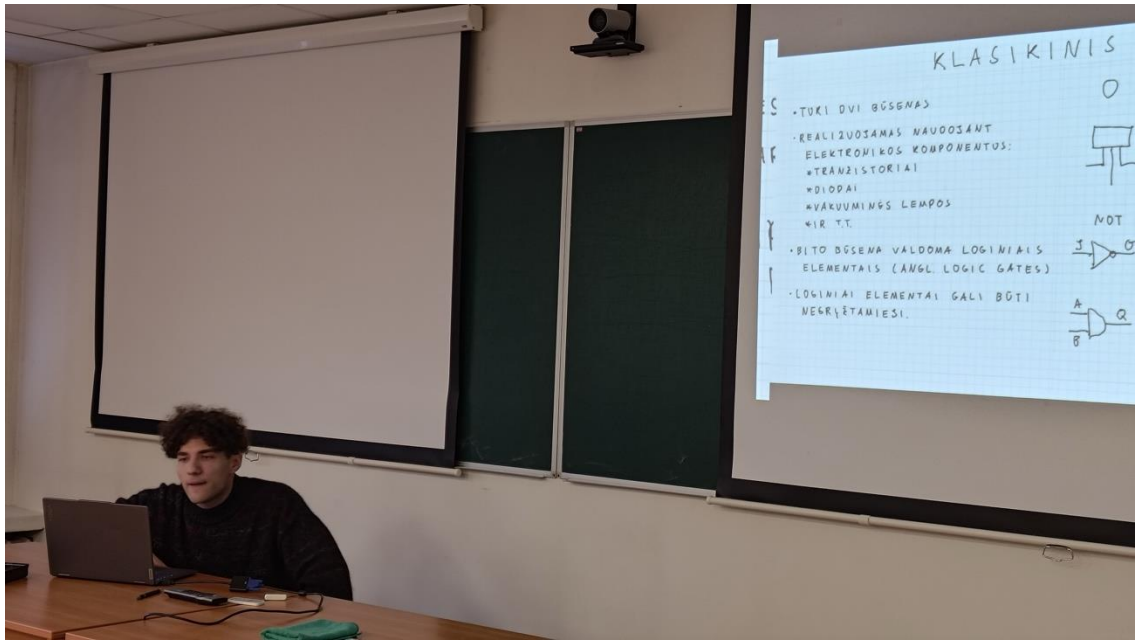
Training

Support

Countries with an equivalent National Competence Centre.



We have diverse academic and professional backgrounds (physics, chemistry, AI, computer science), and **extensive experience in and passion for supercomputing.**


KLASIKINIS
•TURI DVI BŪSENAS
•REALIZUOJAMAS NAUDOJANT ELEKTRONIKOS KOMPONENTUS:
*TRANZISTORIAI
*DIODAI
*VAKUUMINĖS LEMPOS
*IR T.T.
•BITO BŪSENA VALDOMA LOGINIAIS ELEMENTAIS (ANGL. LOGIC GATES)
•LOGINIAI ELEMENTAI GALI BŪTI NEGRĮŽTAMIEJI.
NOT

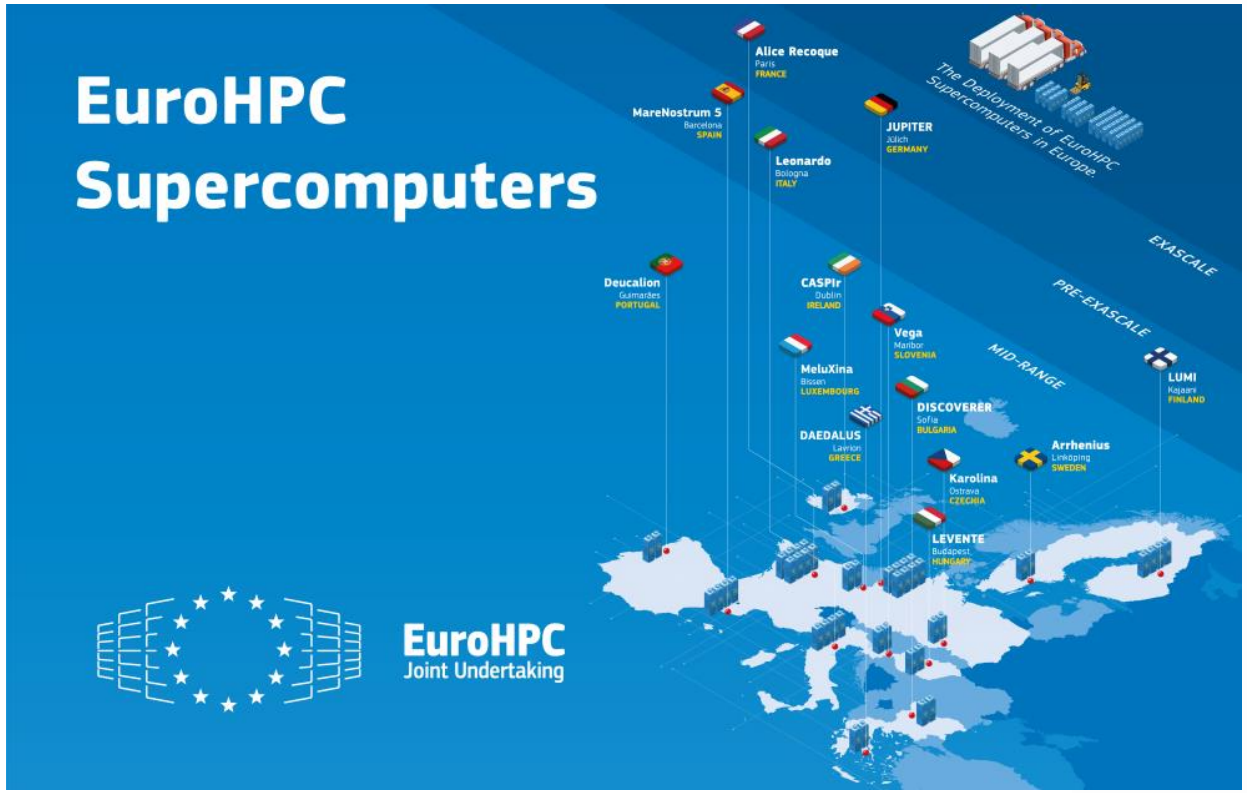

NCC Lithuania
http://www.eurocc-lithuania.lt/
Competences on Exchange
Collaboration with National HPC/Cloud Infrastructure
Expertise with Platforms and Packages
Collaborate with NCC Lithuania!
E-mail: info@eurocc-lithuania.lt
National partners
Acknowledgements
Co-funded by the European Union
EuroHPC JU calls
National calls
European Commission Calls
ECOSYSTEM THINKING TO BUILD SUS
Active collaboration with the national ecos
enhancing the visibility and recognition of
Maximising specialisation, efficiency,
resource optimisation

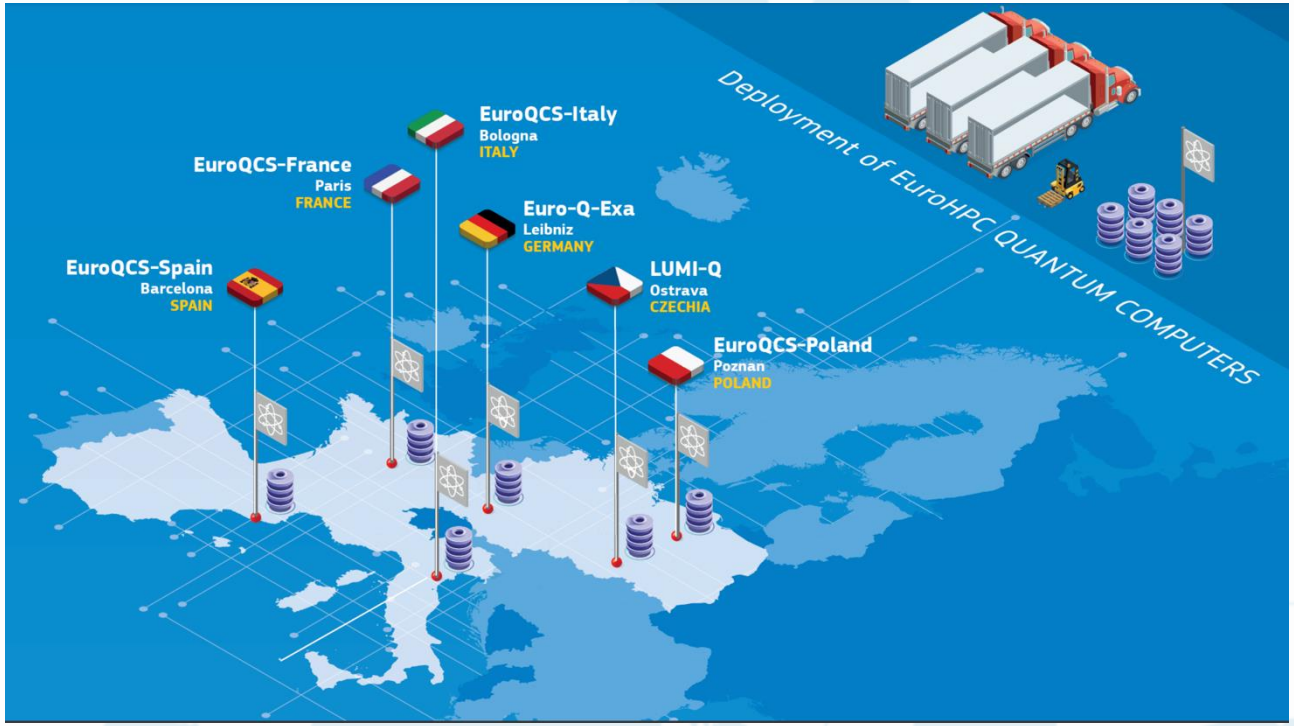
EuroHPC JU ecosystem

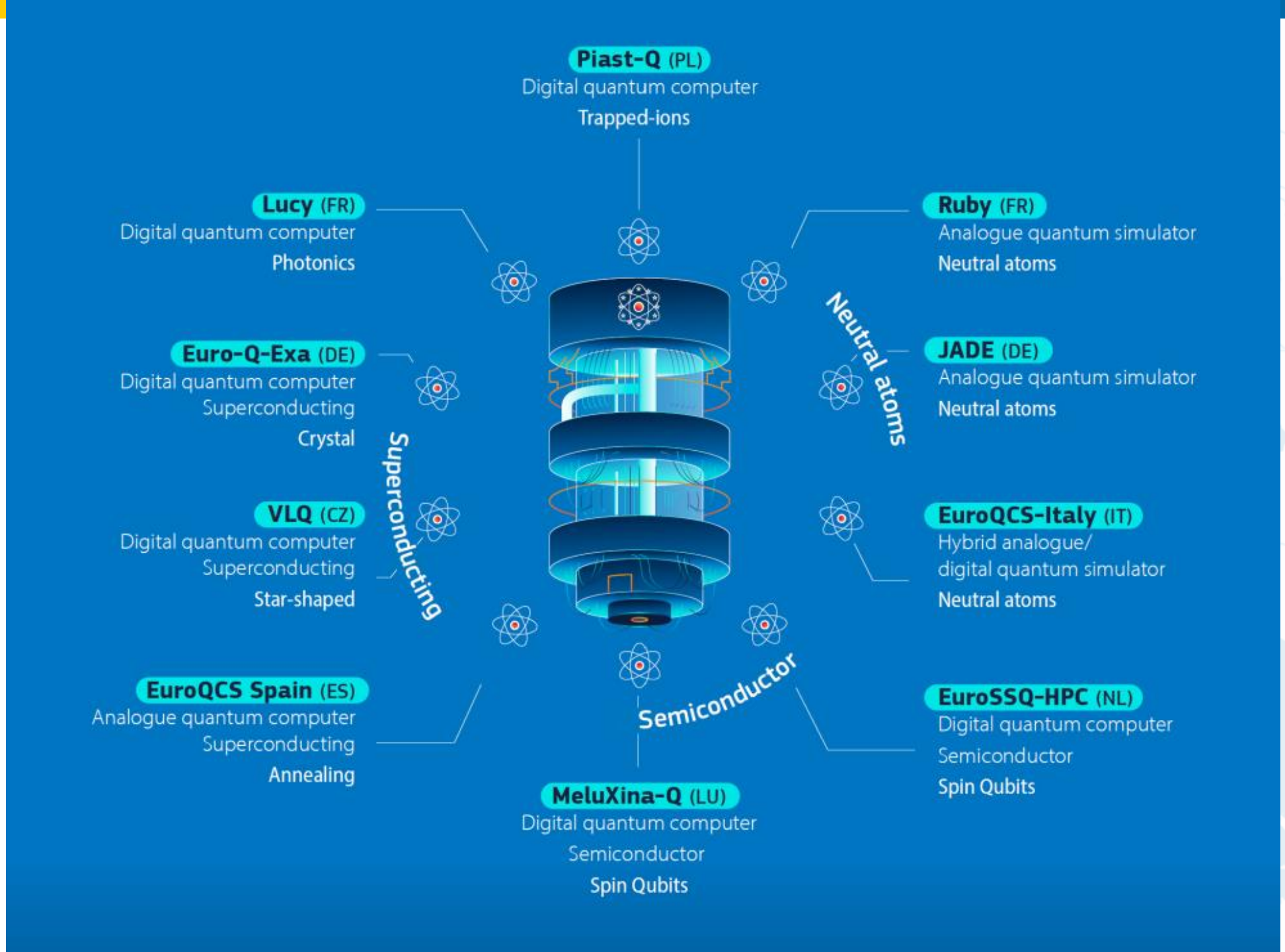
"Develop, deploy, extend and maintain in the EU a world-leading federated, secure and hyper-connected supercomputing, quantum computing, service and data infrastructure ecosystem"

- **Infrastructure**: Secure, hyper-connected network of supercomputers, quantum computers, and data infrastructures.
- **Federation**: Integrating EuroHPC resources across the EU to provide seamless access
- **Technology**: Creating cutting-edge European hardware components and software stacks
- **Applications**: Supporting the development and optimisation of software applications
- **Usage and Skills**: Investing in education, training, and national competence centres
- **International Cooperation**: Collaborating with global partners
- **AI Factories**: Environments tailored for AI innovation.

EuroHPC JU Quantum-Centric Supercomputing





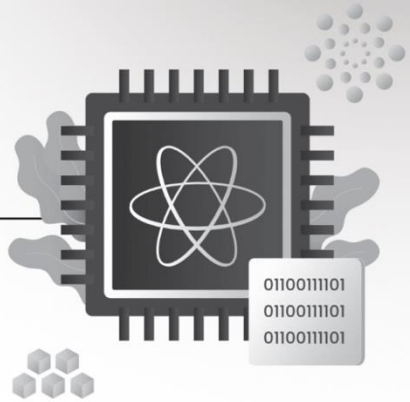

Piast-Q (PL)
Digital quantum computer
Trapped-ions
Lucy (FR)
Digital quantum computer
Photonics
Ruby (FR)
Analogue quantum simulator
Neutral atoms
Euro-Q-Exa (DE)
Digital quantum computer
Superconducting
Crystal
JADE (DE)
Analogue quantum simulator
Neutral atoms
Neutral atoms
Superconducting
VLQ (CZ)
Digital quantum computer
Superconducting
Star-shaped
EuroQCS-Italy (IT)
Hybrid analogue/
digital quantum simulator
Neutral atoms
EuroQCS Spain (ES)
Analogue quantum computer
Superconducting
Annealing
Semiconductor
EuroSSQ-HPC (NL)
Digital quantum computer
Semiconductor
Spin Qubits
MeluXina-Q (LU)
Digital quantum computer
Semiconductor
Spin Qubits

Quantum training at ENCCS: Quantum Autumn School 2023, 2024, 2025

ENCCS
EuroCC National Competence Centre Sweden
WACQT Wallenberg Centre for Quantum Technology
NordIQuEst
Quantum Autumn School

QUANTUM AUTUMN SCHOOL 2024

ENCCS EuroCC National Competence Centre Sweden · NordIQuEst · CSC · EURO DENMARK · EURO FINLAND · IHPC National competence center for HPC & AI in Iceland



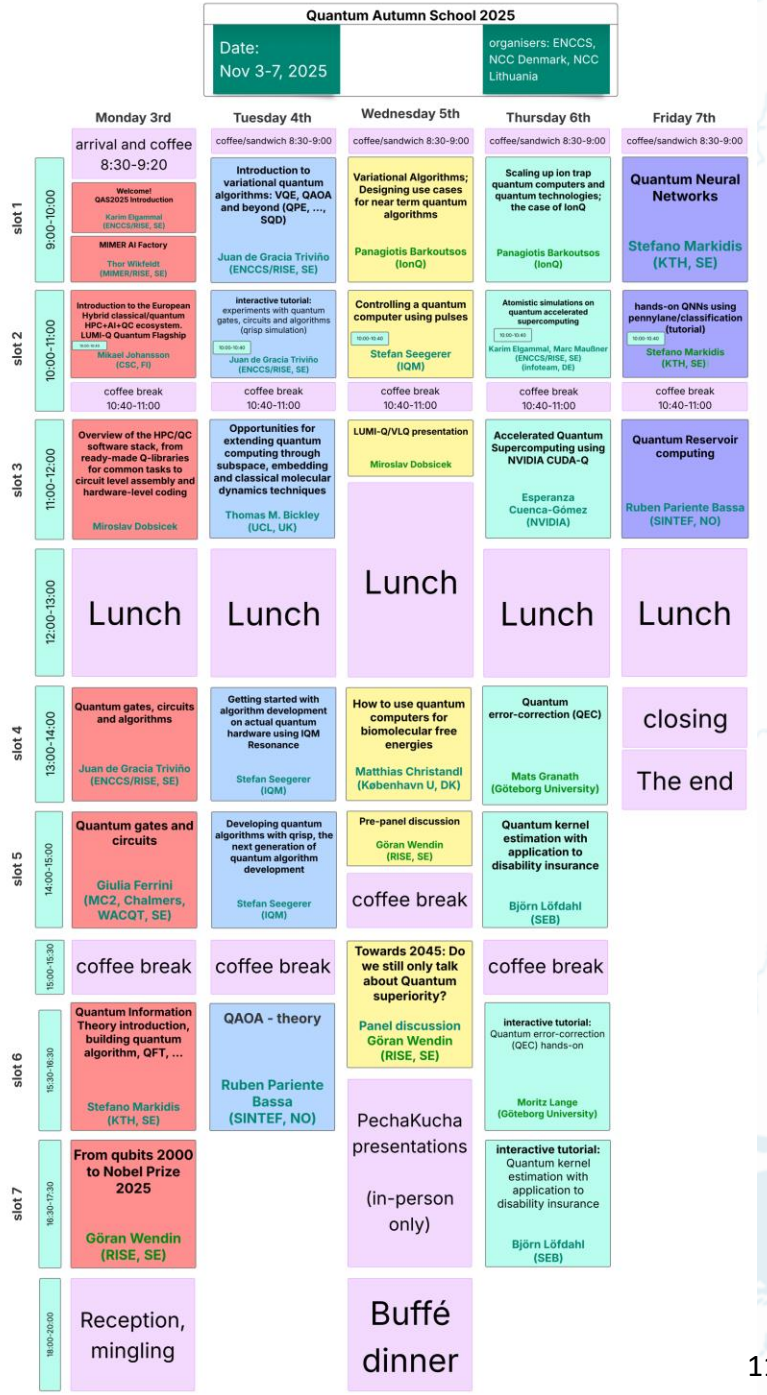
EURO · RISE · LINKÖPING UNIVERSITY · EuroHPC Joint Undertaking · Research Council · VINNOVA Sweden's Innovation Agency

- 5 days In-person in Stockholm + online
- 5-day intensive quantum computing program
- Organized by ENCCS with EuroCC Denmark & Lithuania, partial support by WACQT
- Target audience:
  - industry professionals, researchers, students
  - beginner to intermediate quantum computing level
- Speakers from academia and industry
- Key features:
  - Hands-on access to real European quantum hardware (IQM devices)
  - Mix of lectures, tutorials, and networking opportunities
  - Focus on quantum algorithms understanding, usecases, HPC-QC integration and European quantum ecosystem

- ENCCS's flagship event for quantum computing training

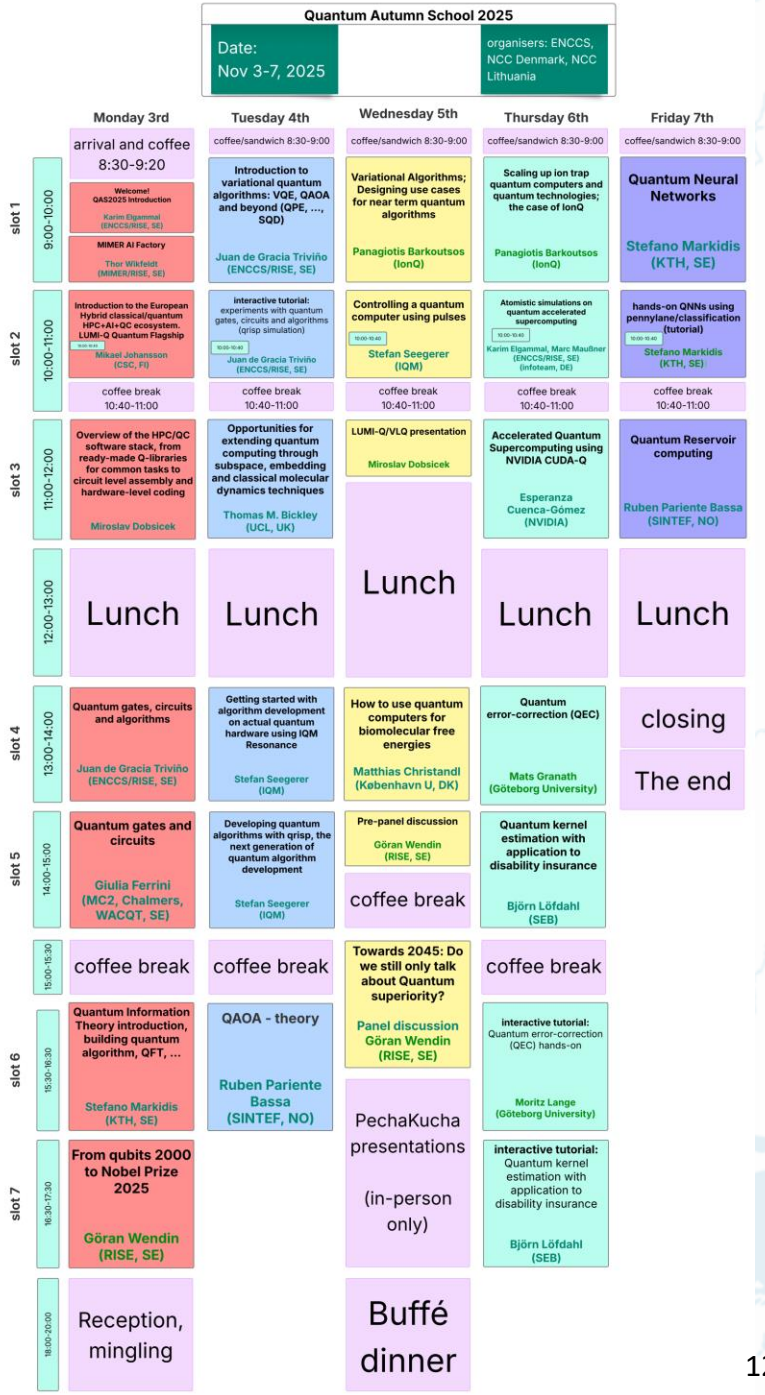
QAS 2025 program

- The school website https://enccs.github.io/qas2025
- Preparatory materials and so https://enccs.github.io/qas2025/day0/
- Starter notebook for Qrisp SDK with IQM access https://enccs.github.io/qas2025/notebooks/getting-started/qrisp-starter-tutorial/ including binder launcher
- IQM resonance special signup link for the school (with credits): https://resonance.meetiqm.com/sign-up/qas2025
- A Nextcloud markdown Q&A pages, where everyone can post questions/answers https://bit.ly/4hFXlrQ
- IQM school in Dec 2-4 signup link: https://resonance.meetiqm.com/sign-up/quantumschool
- The program is suitable for beginner and intermediate audience
- The program gets easier towards the end of the week!



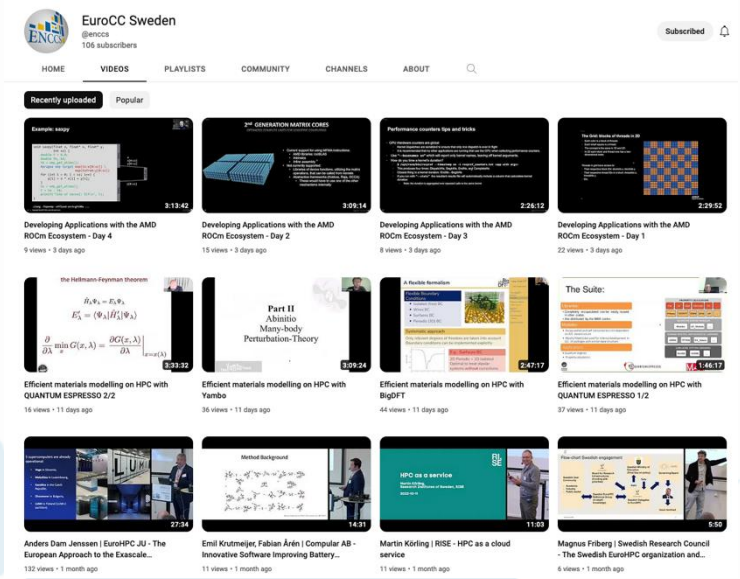
Acknowledgment

- I want to deeply thank:
- All the speakers who volunteered their time and budgets to make this happen for you (let's be kind to them!)
- WACQT for sponsoring our mingle on Monday and dinner on Wednesday
- CASTIEL2 for lunches, coffee breaks, breakfast
- All the organizers including ENCCS, RISE, NCC Denmark, NCC Lithuania
  - Apostolos Vasileiadis
  - Ashwin Mohanan
  - Emma Wållberg
  - Gergely István Barsi
  - Göran Wendin
  - Juan de Gracia Triviño
  - Stepas Toliautas
  - Thor Wikfeldt
  - Yonglei Wang

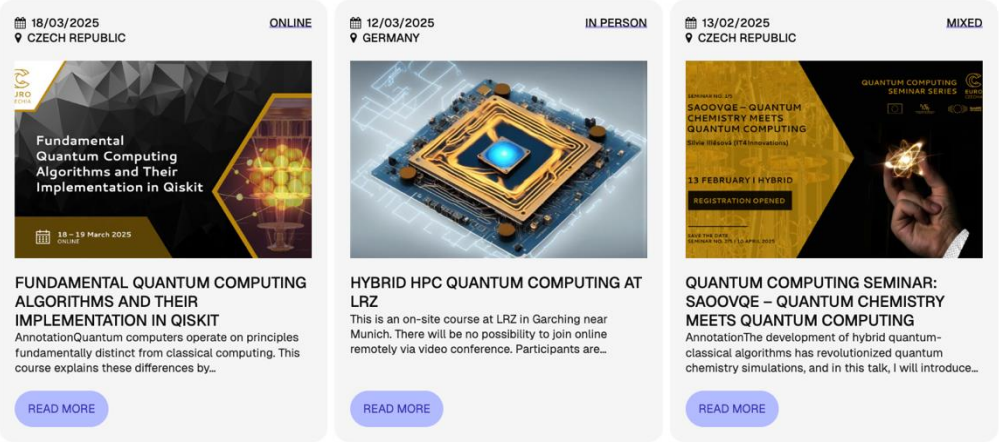


Training material

- Public and open source
- Based on Sphinx documentation generator
- Web traffic monitoring
- Recordings on YouTube



EuroHPC Training



- HPC in Europe portal https://hpc-portal.eu
- Training events on topics HPC, AI and QC
- Offerings from EuroCC and CoEs (& QECs)

EuroHPC Virtual Training Academy - EViTA

EVITA will enhance HPC+ education by creating a structured Competence and Qualification Framework, offering high-quality training modules through a cascade funding mechanism and an innovative online platform with guided learning pathways and certification. EVITA will build a connected community of learners, educators, and industry professionals, ensuring a skilled workforce for emerging challenges.

PODCAST

NEW EPISODE EVERY 2 WEEKS

Practical information

- **Use NextCloud for questions**
  - Our experts will answer there
  - Let us know if there are any issues
  - Avoid using Zoom chat, we may miss the question
- **For on-site participants**
  - Emergency exists
  - Wardrobe
  - **Scan your badge to log out each day at the reception**
  - Log in again the next day by scanning your badge
  - Please raise your hand and **ask for a mic** so that you can be heard
  - Don’t keep the doors open after 18:00 for more than 10 seconds ❗
- **For on-line participants**
  - Ask questions on NextCloud and we will answer it as soon as possible
- **WhatsApp group**
  - Social interaction between participants
  - We are not the moderators

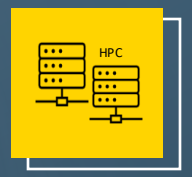
ENCCS

EuroCC National Competence Centre Sweden

ENCCS is Sweden's national competence centre for supercomputing hosted at LiU and RISE.

ENCCS empowers Swedish industry and the public sector achieve their business targets by leveraging HPC, AI, HPDA and QC efficiently and effectively.

We are ENCCS



Free HPC Access

Apply for free supercomputing time in Europe's largest machines (EuroHPC JU)

HPC Training workshops

Follow the ENCCS training schedule with workshops on GPU programming, Python for HPC, Best Practices and more

Hands-on support

Get help from our HPC experts to get started and make the most out of those supercomputers

Software support

Boost your business with our PoCs enabling your code to efficiently utilise multiple CPUs or GPUs with the help of our experts