PRACE Training

Tiina Leiponen, WP4 training lead, CSC – IT Center for Science, Finland

Simon Wong, WP4 training co-lead, ICHEC, Ireland

PRACE | members
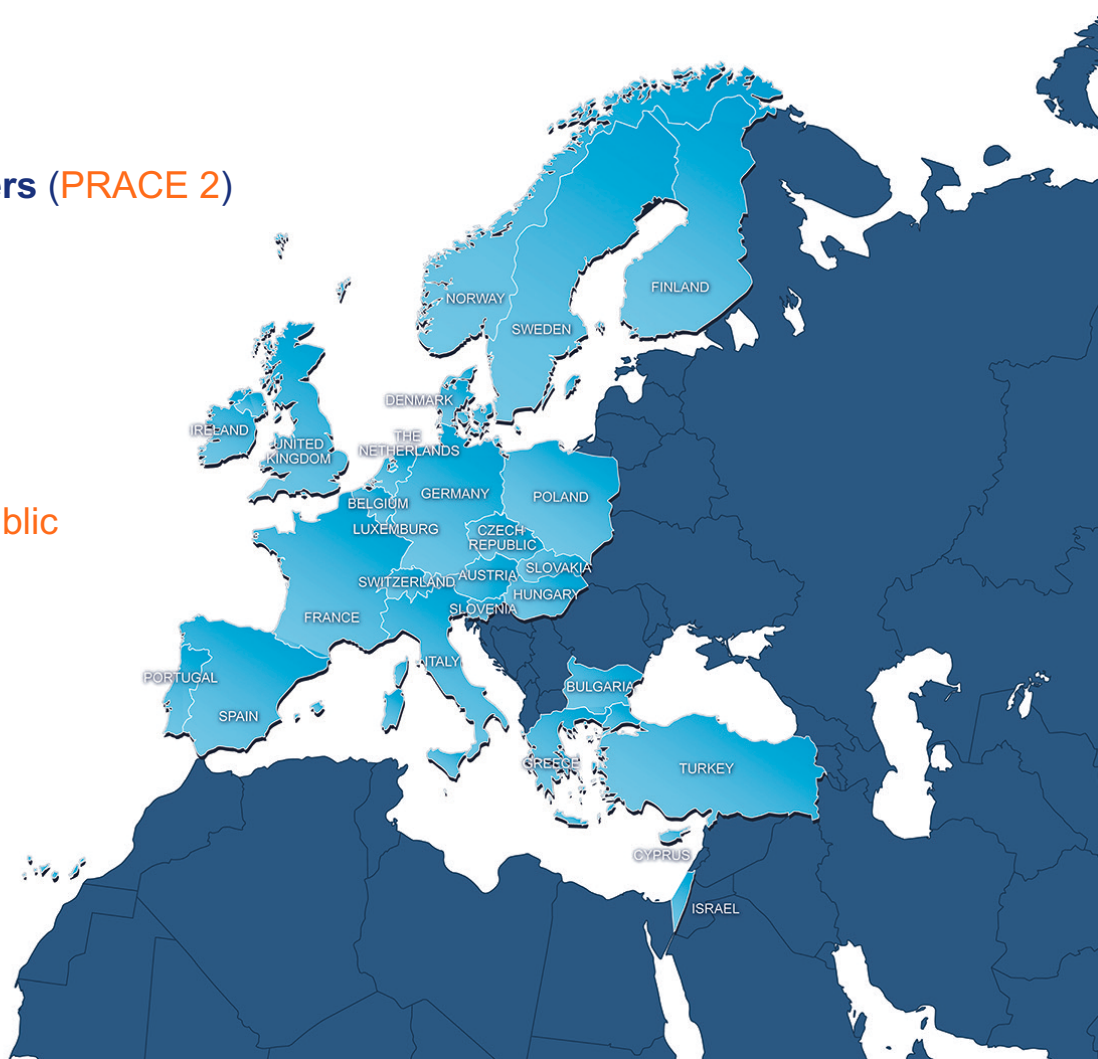
Hosting Members

- France
- Germany
- Italy
- Spain
- Switzerland
- Luxembourg
- Netherlands
- Poland

- Portugal
- Slovakia
- Slovenia
- Sweden
- Turkey
- United Kingdom

Observers

- Croatia
- Romania

General Partners (PRACE 2)

- Austria
- Belgium
- Bulgaria
- Cyprus
- Czech Republic
- Denmark
- Finland
- Greece
- Hungary
- Ireland
- Israel

PRACE | Tier-0 Systems in 2021

MareNostrum: Lenovo
BSC, Barcelona, Spain
#64 Top 500

Piz Daint: Cray XC50
ETH Zurich/CSCS, Lugano,
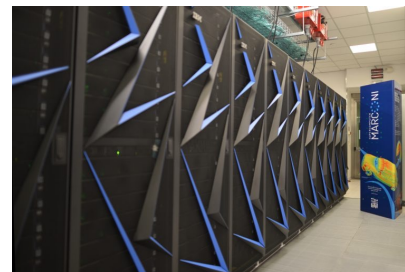Switzerland
#15 Top 500

SuperMUC NG : Lenovo
cluster GAUSS @ LRZ,
Garching, Germany
#17 Top 500

**JUWELS Booster
Module**: Atos/Bull
Sequana
GAUSS @ FZJ, Jülich,
Germany   #8 Top 500

©FZ Jülich / R.-U. Limbach

JOLIOT CURIE : Atos/Bull Sequana
X1000; GENCI @ CEA, Bruyères-le-
Châtel, France #60 Top 500

© CEA

MARCONI-100: IBM
CINECA, Bologna, Italy
#14 Top 500

**NEW ENTRY 2020
HAWK:** HPE Apollo
GAUSS @ HLRS,
Stuttgart, Germany
#18 Top 500

© by Ben Derzian for HLRS

**Close to 220 Petaflops
total peak performance**

Mission – PRACE Training

Foster European research and innovation by providing world-class training in high-performance and scientific computing

Guiding Principles

▶ PRACE Training is integral part of the European HPC ecosystem

  ▶ One of the **core activities of PRACE**

  ▶ Collaboration with European HPC **CoEs** and **other European projects**

▶ PRACE Training is open to all European researchers and developers

  ▶ Training events are **free of charge** for participants from academia and industry

Main Objectives

1. Develop an advanced base of researchers and developers for exploiting current and future supercomputers in Europe

2. Support a community of intermediate to advanced HPC users and developers, offer a diverse range of HPC training across Europe

3. Bring new user groups and scientific disciplines, such as SMEs, bio- and life sciences and digital humanities into HPC

4. Provide remote learning opportunities and resources

5. Make available materials for other trainers

Key Target Groups

▶ **Scientists in academia**

  ▶ Ph.D. students, post-docs, senior researchers

  ▶ Key application developers

▶ **Researchers in industry**

  ▶ R & D laboratories

  ▶ SMEs

▶ **Other targets**

  ▶ Sysadmins, science students, educators

PRACE Training Overview

F2F Courses	Summer of HPC	Online Training

F2F Courses
- PRACE Training Centres
- Seasonal Schools
- Int. HPC Summer School
- On-demand Events
- Normally face to face events, during COVID-19 pandemic, most courses take place online

Summer of HPC
- Training & Placement at a European HPC Centre

Online Training
- Training Portal
- MOOCs
- CodeVault

Highlights in PRACE Training
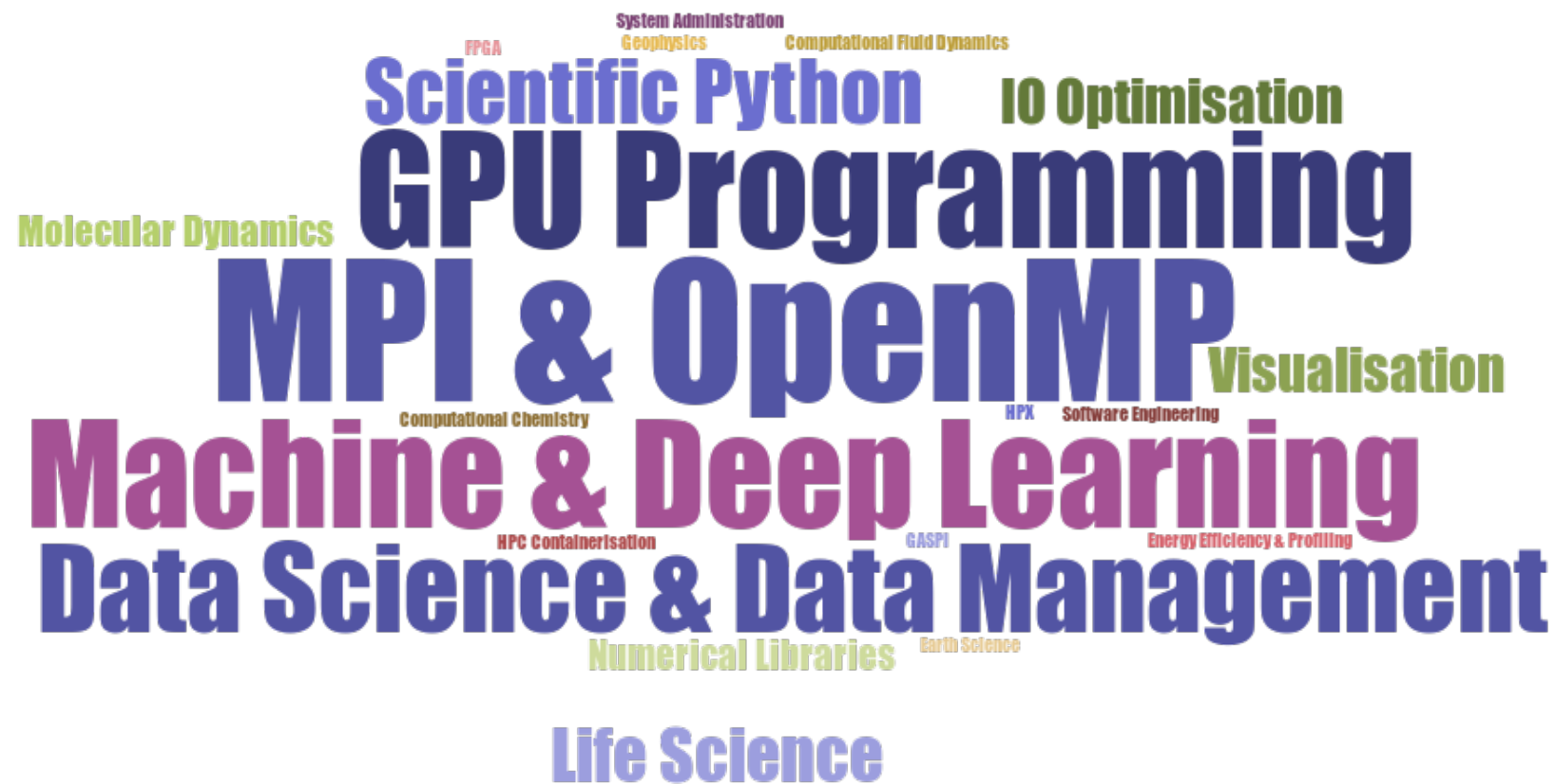
PRACE Training Centres

- Barcelona Supercomputing Center (Spain)
- CINECA Consorzio Interuniversitario (Italy)
- CSC – IT Center for Science Ltd (Finland)
- EPCC at the University of Edinburgh (UK)
- Gauss Centre for Supercomputing (Germany)
- Maison de la Simulation (France)
- GRNET – Greek Research and Technology Network (Greece)

- ICHEC – Irish Centre for High-End Computing (Ireland)
- IT4I – National Supercomputing Center VSB Technical University of Ostrava (Czech Republic)
- SNIC (Sweden)
- SURFsara (The Netherlands)
- TU Wien (Austria)
- UANTWERPEN (Belgium)
- University of Ljubljana (Slovenia)

Mission: Serve as **European hubs** and **key drivers of advanced high-quality training** for researchers working in the computational sciences.
14 PRACE Training Centres, PTCs, established in 2012, 2017, 2020

The PTC Programme

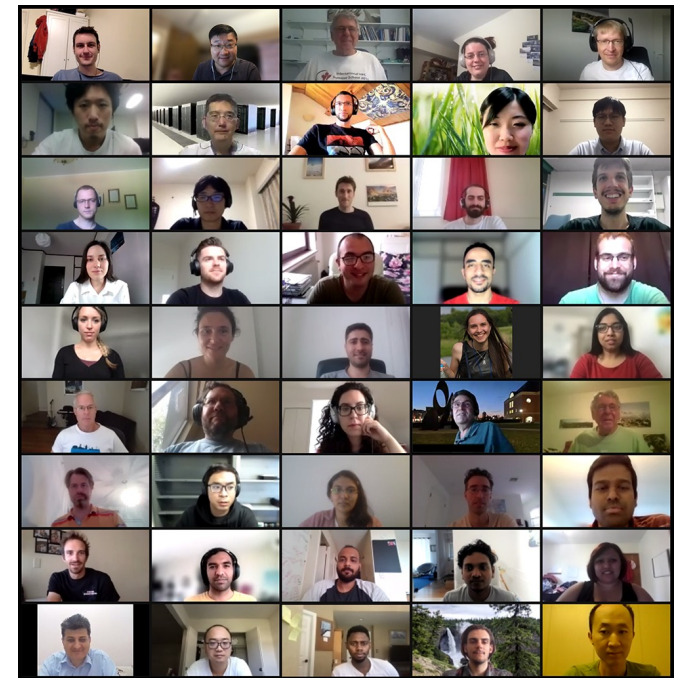# Other "F2F" Training Events

▶ **Seasonal Schools**

  ▶ Take place throughout Europe in the Spring, Autumn, Winter.

  ▶ 8 planned PRACE seasonal schools in 2020-2021: many postponed due to COVID, now hybrid or online events.

▶ **On-demand events**

  ▶ In collaboration with CoEs and other European projects
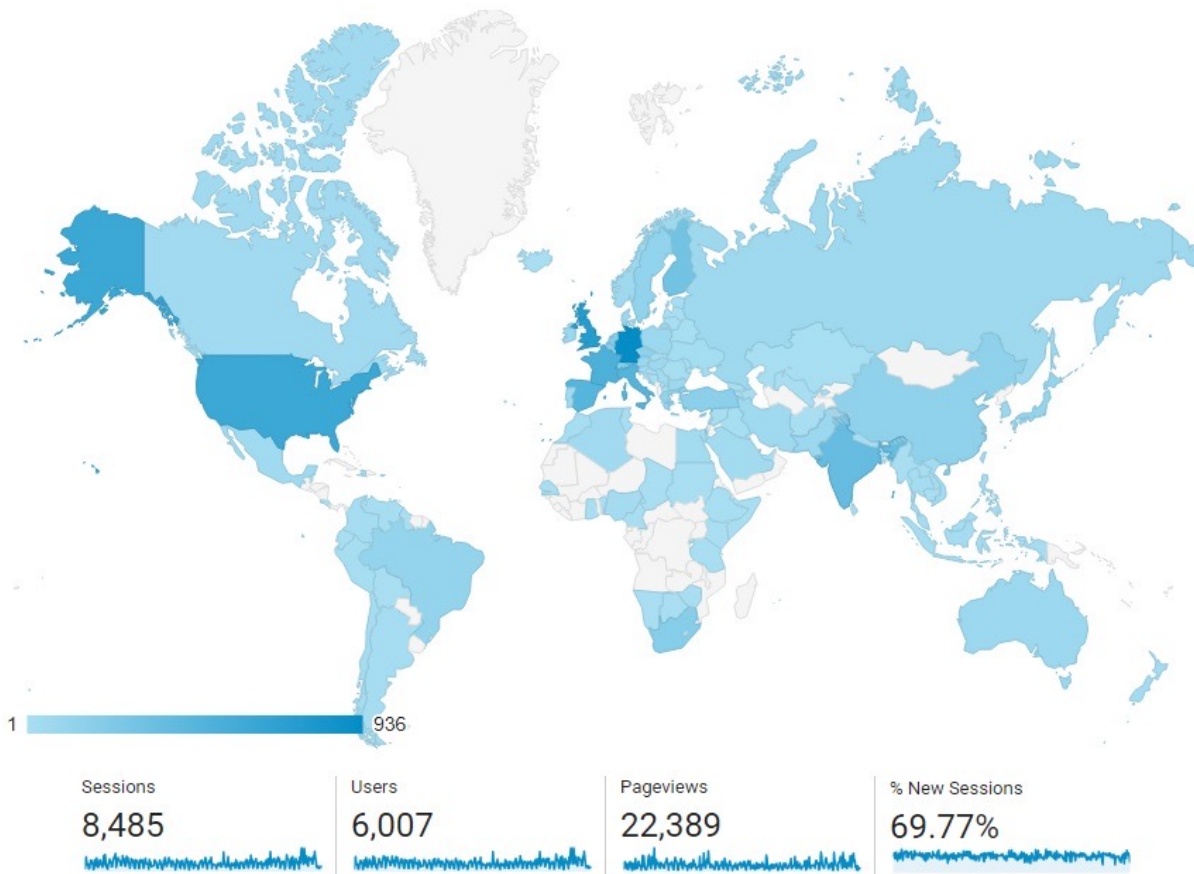
▶ **International HPC Summer School**

  ▶ 4-way collaboration: U.S., Canada, Japan, Europe

  ▶ Prestigious event, highly competitive, 80 total places per edition (2017 - Boulder, US; 2018 - Ostrava, Czechia; 2019 - Kobe, Japan; 2020 - Toronto postponed to 2021 online)

Participants of the
International HPC Summer
School 2021

PRACE Training Portal

- ▶ Advertises forthcoming PRACE Training Events
- ▶ Hundreds of training material documents
- ▶ Link to CodeVault

Visit the training portal at:

www.training.prace-ri.eu

TRAINING EVENTS   MATERIALS ▾   TUTORIALS   CODEVAULT   MOOCS   ABOUT ▾

PRACE Training Portal

Browse, search, explore our upcoming training events as well as a range of other HPC-related training resources.

Training Events   Materials   PRACE Tutorials   PRACE Code Vault   PRACE MOOCs

Upcoming PRACE Training Courses

Due to the Covid-19 pandemic, all in-person PRACE courses have been suspended until at least August 2020. Nevertheless, a considerable number of PRACE courses can now be taken online as indicated below – courses prefixed with [ONLINE] represent synchronous courses while those prefixed with [MOOC] indicate asynchronous course delivery. We are monitoring the situation closely across Europe and hope to offer in-person courses again once conditions allow.

Any in-person courses listed below from September 2020 onwards will be subject to change depending on the prevailing circumstances. They may have to be converted to an online course, be postponed or cancelled on short notice. Please allow some flexibility and understanding when registering for these courses.

Thu, 8 July   ✚ ADD EVENT   ⊞ Expand   🔍 Search   👤 Sign In   📅 Add To Calendar ▾   ☰ Agenda View ▾
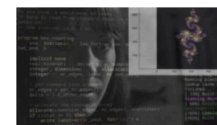
Course calendar

Country	Instruction Level	Presence	Project	Scientific Domain	Target audience	Technical Domain

OCT 4 MON — [ONLINE] Hybrid CPU programming with OpenMP and MPI @ CSC `PRIMARY EVENT PAGE`
4 Oct @ 6:00

OCT 5 TUE — Swedish HPC Business Day `PRIMARY EVENT PAGE`
5 Oct @ 7:00 | online

Advanced OpenMP @ EPCC Online 5th and 8th October 2021 `PRIMARY EVENT PAGE`
5 Oct @ 8:00 | Online (EPCC)

OCT 7 THU — [ONLINE] CUDA Workshop @ENCCS `PRIMARY EVENT PAGE`
7 Oct @ 7:00 | online

OCT 11 MON — [ONLINE] Parallel Programming Workshop (Train the Trainer) @ HLRS `PRIMARY EVENT PAGE`
11 Oct @ 6:15 | Ruehle Saal (HLRS (High-Performance Computing Center Stuttgart))

[ONLINE] Parallel Programming Workshop (MPI, OpenMP and advanced topics) @ HLRS `PRIMARY EVENT PAGE`
11 Oct @ 6:30 | Ruehle Saal (HLRS (High-Performance Computing Center Stuttgart))

PRACE Autumn School 2021: Harnessing the EuroHPC Flagship Supercomputers / Vuokatti, Finland
11 Oct @ 18:00

OCT 18 MON — [ONLINE] Parallel Programming Workshop @ BSC `PRIMARY EVENT PAGE`
18 Oct @ 7:30

OCT 19 TUE — [ONLINE] Advanced MPI @ IT4Innovations `PRIMARY EVENT PAGE`
19 Oct @ 6:45 | [ONLINE]

Massive Open Online Courses - MOOCS

▶ **Supercomputing**

▶ **Managing Big Data with Hadoop and R**

▶ **Defensive Programming & Debugging**

▶ **Python in HPC**

▶ **Fortran for Scientific Computing**

▶ **MPI: A Short introduction to One-sided Communication**

Partnership for Advanced Computing in Europe (PRACE) & Vlaams Supercomputer Centre

NEW

Fortran for Scientific Computing

Learn how to program in Fortran. Use object-oriented programming to design efficient and maintainable code.

⧗ 5 weeks ⏱ 4 hrs per week
∞ Included in Unlimited

Find out more

Partnership for Advanced Computing in Europe (PRACE) & Vlaams Supercomputer Centre
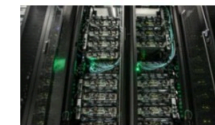
Defensive Programming and Debugging

Find out how to write clean and robust code as a programmer. Explore techniques to minimise the number of bugs during development.

⧗ 5 weeks ⏱ 4 hrs per week
∞ Included in Unlimited

Find out more

Partnership for Advanced Computing in Europe (PRACE)

MPI: A Short Introduction to One-sided Communication

★★★★☆ 4.6 (9 reviews)

Learn the details of one-sided communication in MPI programming.

⧗ 2 weeks ⏱ 4 hrs per week
∞ Included in Unlimited

Find out more

Partnership for Advanced Computing in Europe (PRACE)

Managing Big Data with R and Hadoop

★★★★☆ 4.4 (5 reviews)

Learn how to manage and analyse big data using the R programming language and Hadoop programming framework.

⧗ 5 weeks ⏱ 6 hrs per week
∞ Included in Unlimited

Find out more

Partnership for Advanced Computing in Europe (PRACE)

Python in High Performance Computing

★★★★☆ 4.6 (31 reviews)

Learn how to analyse Python programmes and identify performance barriers to help you work more efficiently.

⧗ 4 weeks ⏱ 4 hrs per week
∞ Included in Unlimited

Find out more

Partnership for Advanced Computing in Europe (PRACE), The University of Edinburgh & SURFsara

Supercomputing

★★★★☆ 4.7 (19 reviews)

Discover how supercomputers work and the real-life scientific breakthroughs made possible by today's computer simulations.

⧗ 5 weeks ⏱ 3 hrs per week
∞ Included in Unlimited

Find out more

Future Learn

Summer of HPC

▶ **Outreach and dissemination event for undergraduates and early graduate students.**

  ▸ Students spend a two-month period at a PRACE centre, including a training week

  ▸ 66 students selected in 2021

  ▸ Virtual training week in ICHEC, Ireland

  ▸ Awards:

   ▸ Best HPC Ambassador Award

   ▸ Best Performance Award

SoHPC participants 2019

SoHPC participants 2020

THANK YOU FOR YOUR ATTENTION

www.prace-ri.eu

www.training.prace-ri.eu