

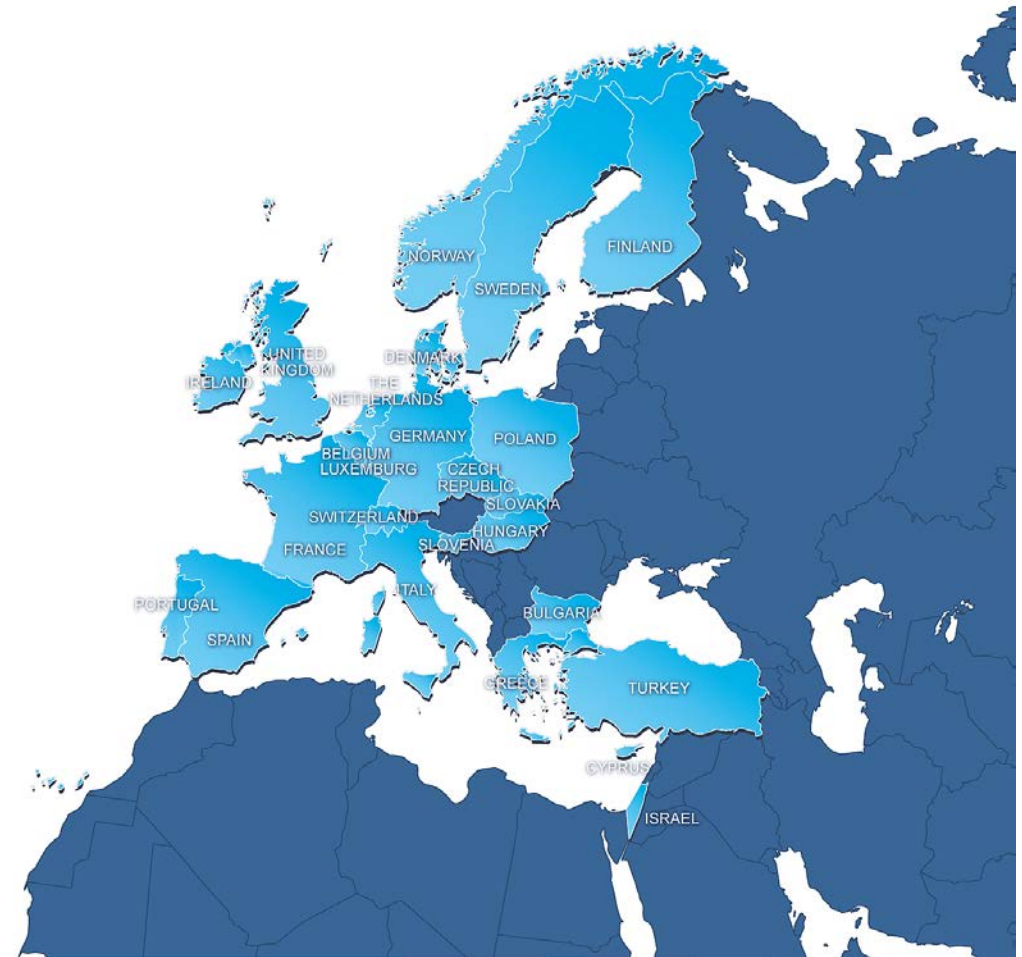


Partnership for Advanced Computing in Europe

International HPC Summer School 2018

Ostrava, 10.07.2018

Florian Berberich
PRACE Board of Directors





PRACE - OVERVIEW



Partnership for Advanced Computing in Europe

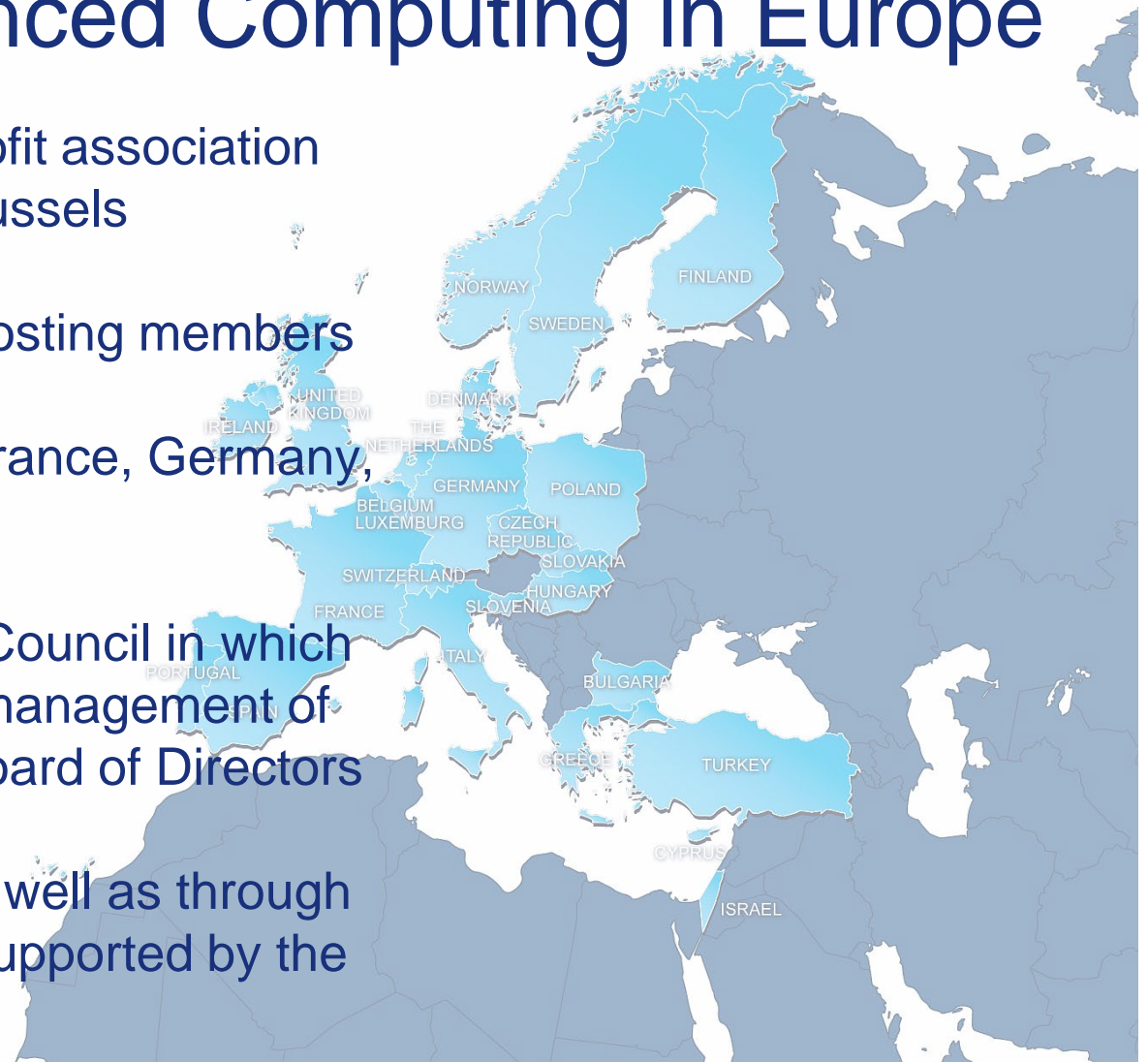
PRACE is an international not-for-profit association under Belgian law, with its seat in Brussels

PRACE counts 25 members and 5 hosting members

The **PRACE** Hosting Members are France, Germany, Italy, Spain and Switzerland

PRACE is governed by the **PRACE** Council in which each member has a seat. The daily management of the association is delegated to the Board of Directors

PRACE is funded by its members as well as through a series of implementation projects supported by the European Commission





PRACE Tier-0 Systems in 2018

NEW ENTRY 2018

JUWELS: Bull Sequana

GAUSS @ FZJ, Jülich, Germany

#23 Top 500



MareNostrum: IBM
BSC, Barcelona, Spain
#22 Top 500

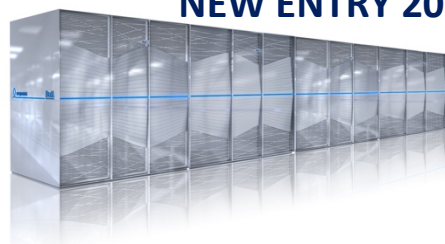


Piz Daint: Cray XC50
CSCS, Lugano, Switzerland
#6 Top 500



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

NEW ENTRY 2018



NEW ENTRY 2018

JOLIOT CURIE : Bull Sequana
GENCI/CEA, Bruyères-le-Châtel, France
#34 Top 500



MARCONI: Lenovo
CINECA, Bologna, Italy
#18 Top 500

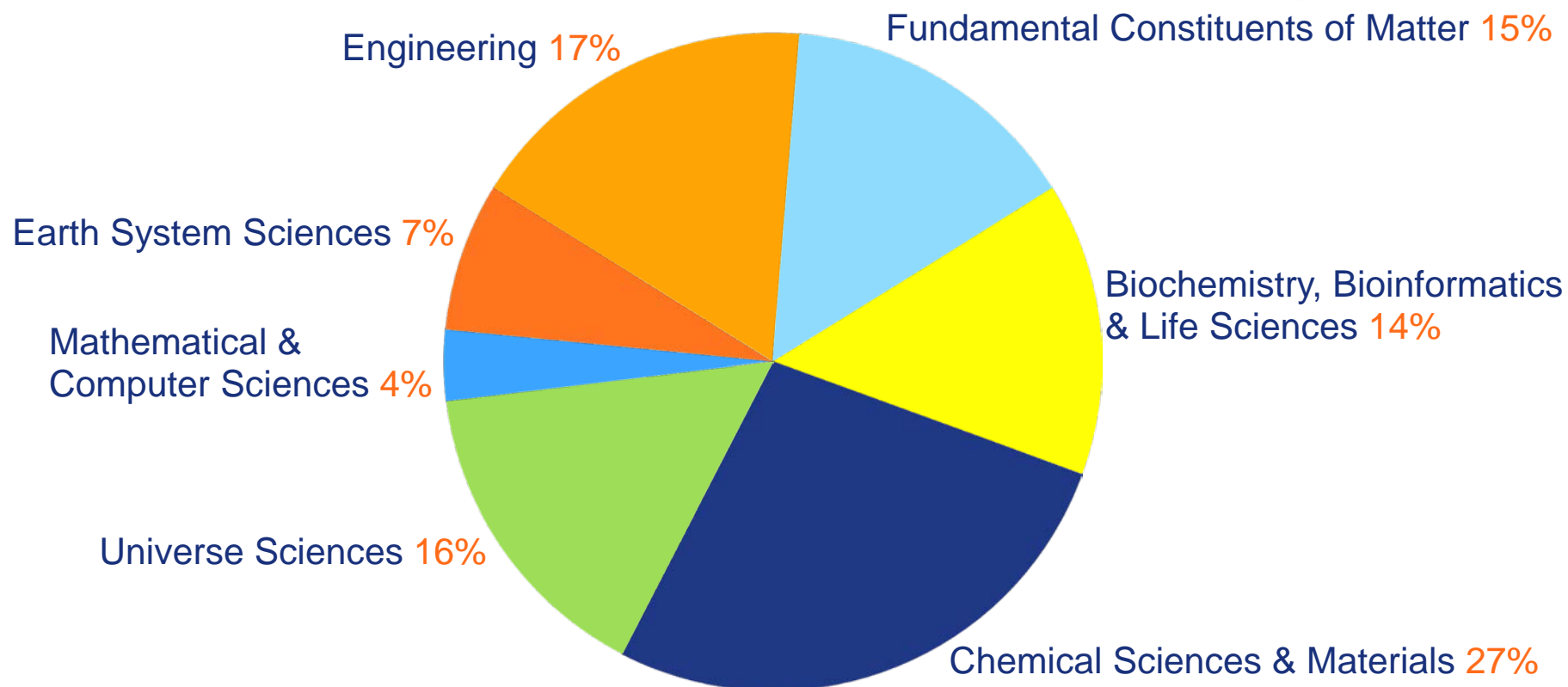
Hazel Hen: Cray
GAUSS/HLRS,
Stuttgart, Germany
#27 Top 500



Close to 110 PFlops
cumulated peak
performance

PRACE's support to science

**Criterion:
Scientific
Excellence**



Data up to and including Call 16, % of total projects awarded (Project Access)



610 scientific projects **enabled**



>17 billion core hours awarded since 2010 with peer review, main criterion is **scientific excellence**. **Open R&D** access for **industrial users** with **>50 companies** supported



>11 000 people trained through PRACE training



Close to 110 Petaflops of peak performance on **7 world-class systems**



25 members, including **5 Hosting Members**
(France, Germany, Italy, Spain and Switzerland)

Access through PRACE Peer Review



Free-of-charge BUT required to publish results at the end of the award period



Preparatory Access (2 or 6 months)



SHAPE Programme (2 or 6 months)



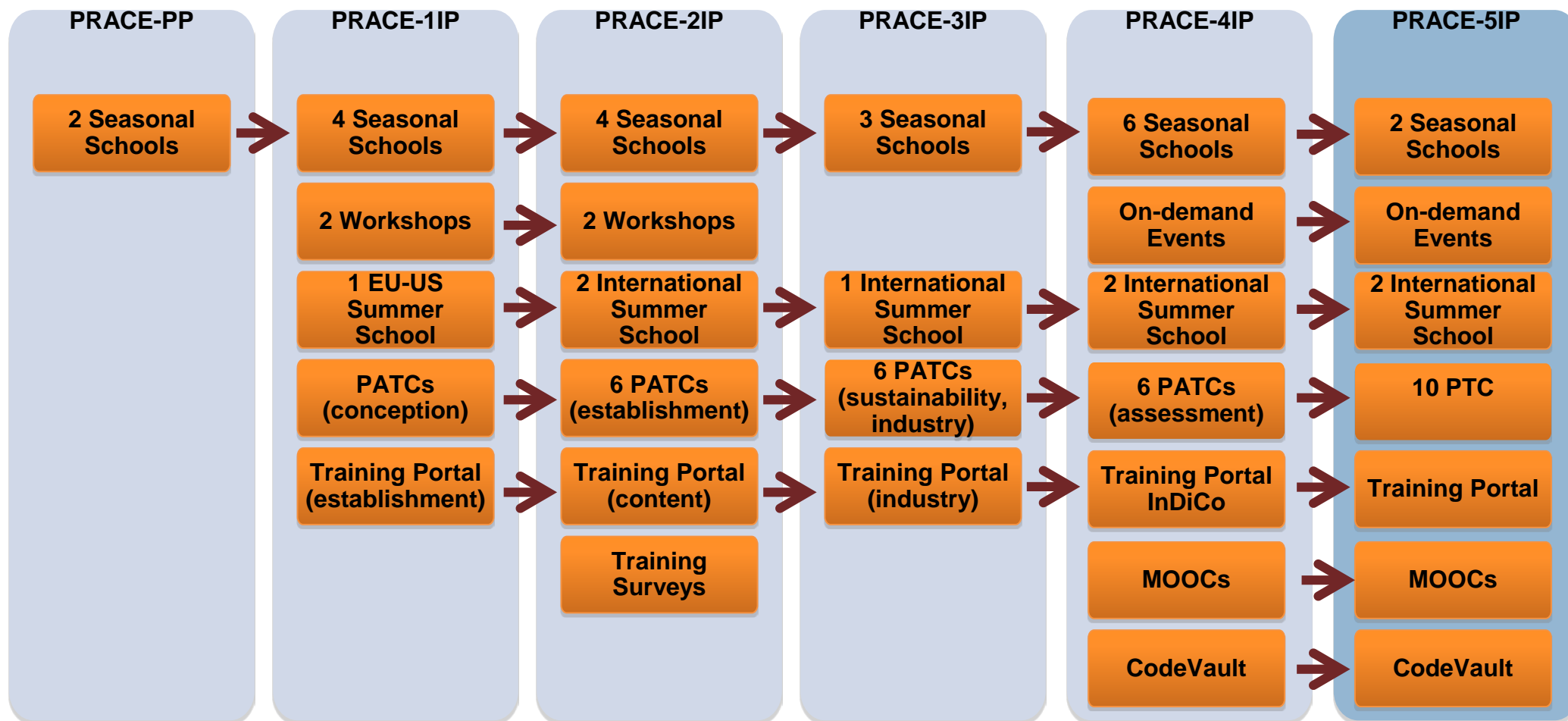
Project Access (12, 24 or 36 months)

**Criterion:
Scientific
Excellence**



PRACE TRAINING

PRACE Training Offerings



Seasonal Schools

- Have been running since 2008
- Offering top-quality face-to-face training events
- Organised around / all over Europe
- Topics range from generic intermediate to advanced
- From programming techniques to more specialised topical schools

Upcomming Seasonal Schools

- ▶ 24 - 26 September 2018, University of Ljubljana

PRACE Autumn School 2018, HPC for engineering and Life sciences



PTC Programme

- ▶ 90 – 100 courses in each term
- ▶ PRACE Training Centres
 - ▶ PRACE Advanced Training Centres renamed
 - ▶ Common annual planning
- ▶ Go on: <http://www.prace-ri.eu/patcs-courses-calendar?start=20180701&months=1> to see the current PATs courses events calendar

PATCs Courses events

Wednesday 18 May 2016

July 2018

«Jun

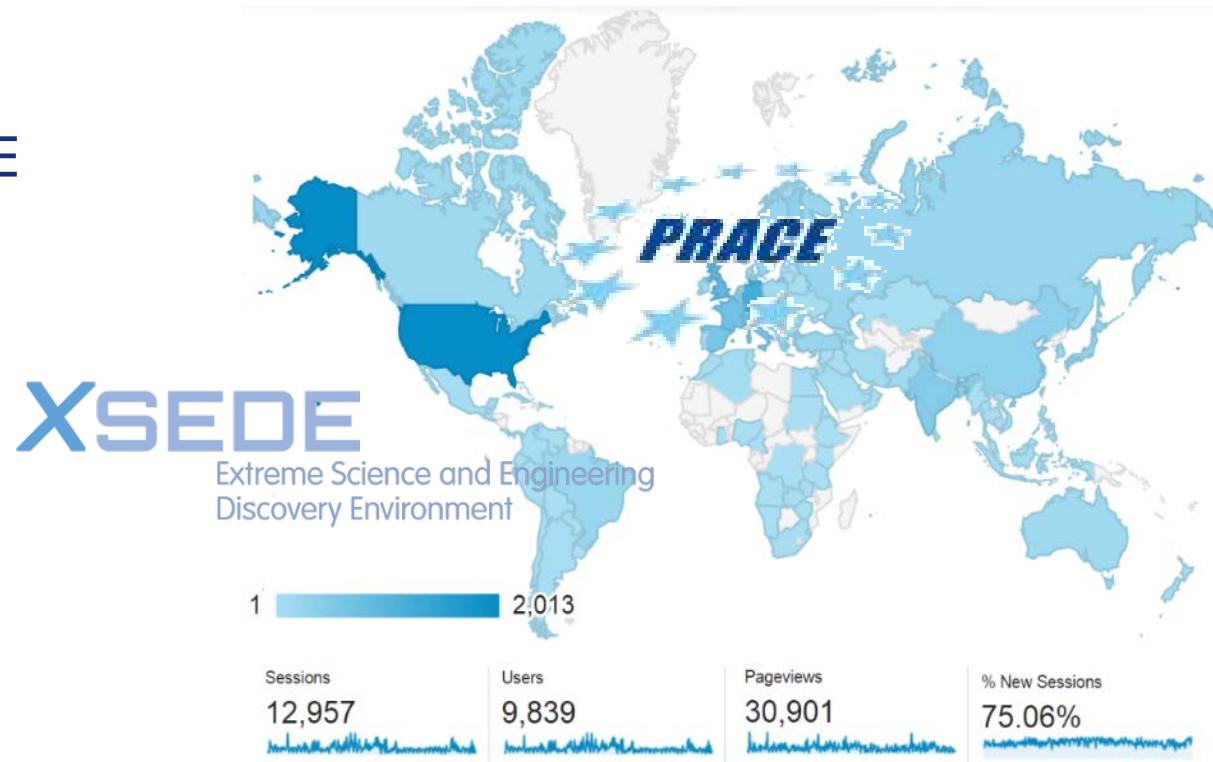
Aug»

July 2018

Mon	Tue	Wed	Thu	Fri	Sat	Sun
2	3	4	5	6	7	
Concepts of GASPI and interoperability with other communication APIs @ HLRS	Concepts of GASPI and interoperability with other communication APIs @ HLRS Advanced usage on Irene Joliot-Curie supercomputer : Architecture & Best practices @ MdlS / TGCC	Advanced usage on Irene Joliot-Curie supercomputer : Architecture & Best practices @ MdlS / TGCC Message-passing Programming with MPI @ EPCC	Advanced usage on Irene Joliot-Curie supercomputer : Architecture & Best practices @ MdlS / TGCC Message-passing Programming with MPI @ EPCC Introduction to Unified Parallel C (UPC) and Co-array Fortran (CAF) @ HLRS	Message-passing Programming with MPI @ EPCC Introduction to Unified Parallel C (UPC) and Co-array Fortran (CAF) @ HLRS		
9	10	11	12	13	14	15
16	17	18	19	20	21	22
9th Programming and Tuning Massively Parallel Systems summer school (PUMPS)@BSC - UPC	9th Programming and Tuning Massively Parallel Systems summer school (PUMPS)@BSC - UPC	9th Programming and Tuning Massively Parallel Systems summer school (PUMPS)@BSC - UPC	9th Programming and Tuning Massively Parallel Systems summer school (PUMPS)@BSC - UPC	9th Programming and Tuning Massively Parallel Systems summer school (PUMPS)@BSC - UPC		
Intel Manycore Programming Workshop @ LRZ	Intel Manycore Programming Workshop @ LRZ	Intel Manycore Programming Workshop @ LRZ	Advanced OpenMP @ EPCC at Cambridge 17-19 July 2018			
	Advanced OpenMP @ EPCC at Cambridge 17-19 July 2018	Advanced OpenMP @ EPCC at Cambridge 17-19 July 2018				
23	24	25	26	27	28	29
30	31					
Advanced MPI @ EPCC at Milton Keynes	Advanced MPI @ EPCC at Milton Keynes					

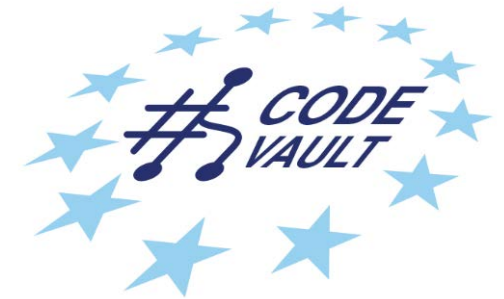
Training and Events Portal

- ▶ www.training.prace-ri.eu
- ▶ Single hub for the PRACE training events, training material and tutorials



CodeVault and More

- ▶ Repository of Open Source code samples
 - ▶ <https://gitlab.com/PRACE-4IP/CodeVault>
 - ▶ Examples and model solutions of common HPC programming tasks
 - ▶ *Possible to utilise in training and as building blocks of real-world applications*
 - ▶ Anonymous read access
- ▶ Best Practice Guides
 - ▶ <http://www.prace-ri.eu/best-practice-guides/>
- ▶ White Papers
 - ▶ <http://www.prace-ri.eu/white-papers/>



Future Training Activities

- ▶ On-demand events addressing the needs of the CoEs
 - ▶ Needs for basic, intermediate, and advanced training
- ▶ Massive Open Online Courses (MOOCs)
 - ▶ *Supercomputing, coordinated by EPCC*
 - ▶ *Managing Big Data with R and Hadoop, coordinated by Univ. Ljubljana*

In preparation:

- ▶ *High-performance computing with Python, coordinated by CSC*
 - ▶ *Defensive programming and debugging, coordinated by KU Leuven*
 - ▶ *MPI-3 Shared Memory Programming, coordinated by HLRS*
- ▶ PRACE Training Centres (PTCs)
 - ▶ Cover basic and advanced needs across Europe

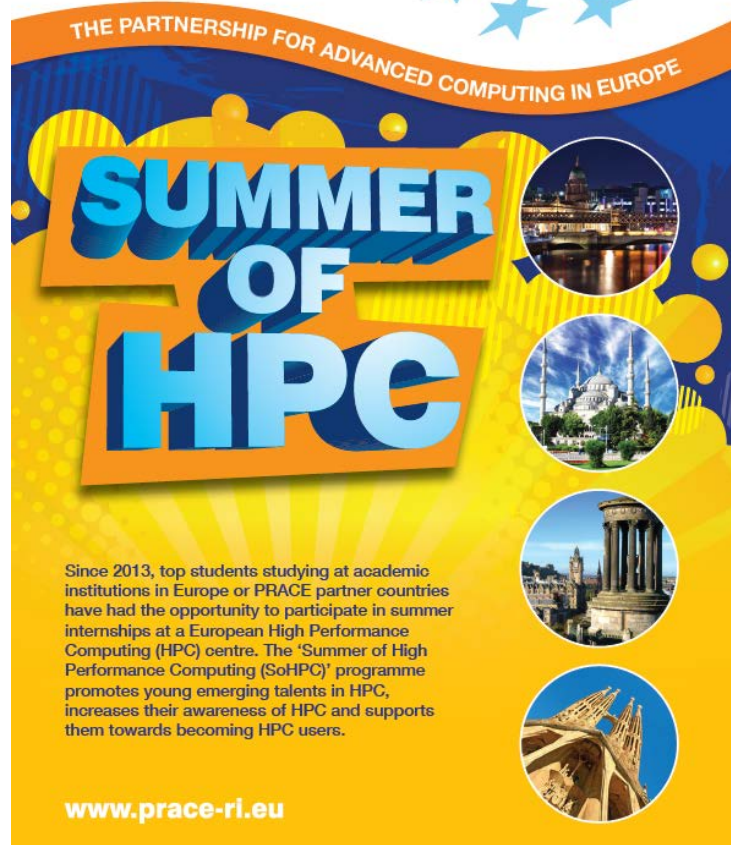


PRACE SUMMER OF HPC



PRACE Summer of HPC (SoHPC)

PRACE
Summer of HPC



Goal: To inspire the next generation of software engineering, system administrators, and general users of HPC

PRACE Summer of HPC (SoHPC)

SoHPC 2015

- ▶ 9 Partners/Sites
- ▶ 80 applications
- ▶ 20 Students chosen
- ▶ 2 Month internship
- ▶ 2 Award winners

SoHPC 2016

- ▶ 10 Partners/sites
- ▶ 110 applications
- ▶ 21 students chosen
- ▶ Training week in Juelich
- ▶ 2 month internship
- ▶ 2 Award winners

SoHPC 2017

- ▶ 30 European Students
- ▶ 2 Award winners
- ▶ Training week in Ostrava

SoHPC 2018

- ▶ Training week in Edinburgh





PRACE – JOB OPPORTUNITIES



Job Opportunities

- ▶ PRACE is an association of 25 members with over 50 HPC centres involved
- ▶ Job offers are announced on the PRACE website: www.prace-ri.eu
 - Approximately one job announcements every week



University of Ljubljana



Fakulteta za informacijske študije
Faculty of information studies



KØBENHAVNS
UNIVERSITET







THANK YOU!

QUESTIONS?