# The Partnership for Advanced Computing in Europe | PRACE

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# PRACE | what we do
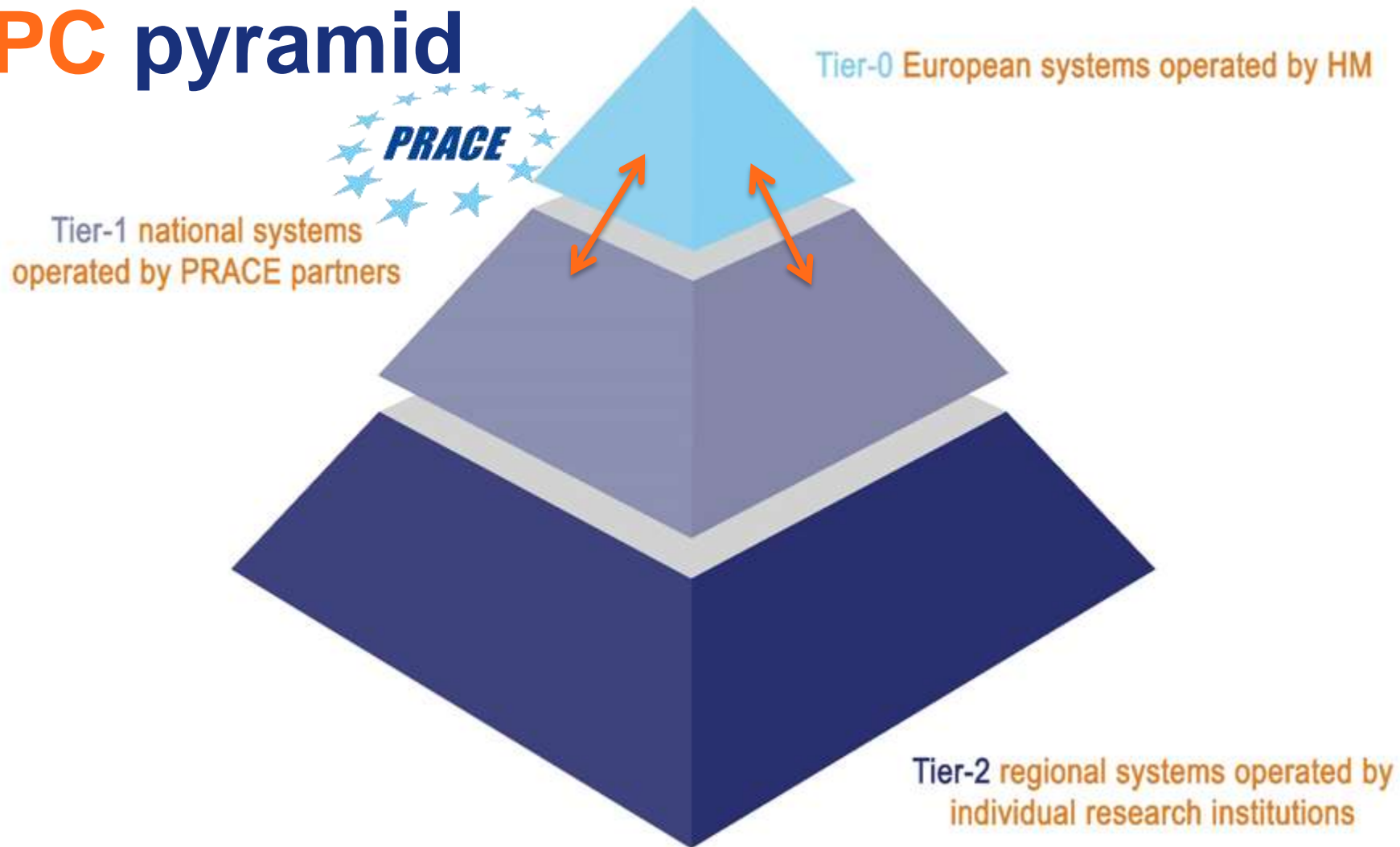
▶ Open access to world-class HPC systems to EU scientists and researchers

▶ Variety of architectures to support the different scientific communities

▶ High standards in computational science and engineering

▶ Peer Review at European level to foster scientific excellence

▶ Robust and persistent funding scheme for HPC supported by national governments and European Commission (EC)

▶ Support the development of intellectual property rights (IPR) in Europe by working with industry and public services

▶ Collaborate with European HPC industrial users and suppliers

# PRACE | achievements

▶ 652 scientific projects enabled

▶ > 19 000 000 (billion) core hours awarded since 2010

▶ Of which 63% led by another PI nationality than the HM

▶ R&D access to industrial users with >50 companies supported

▶ >12 000 people trained through PRACE Training

▶ ~110 Petaflops of peak performance on 7 world-class systems

▶ 26 PRACE members, including 5 Hosting Members
(France, Germany, Italy, Spain and Switzerland)

▶ PRACE is the only e-infrastructure Landmark on the ESFRI Roadmap 2016

# HPC pyramid

Tier-0 European systems operated by HM

PRACE

Tier-1 national systems operated by PRACE partners

Tier-2 regional systems operated by individual research institutions

# PRACE | members

## Hosting Members
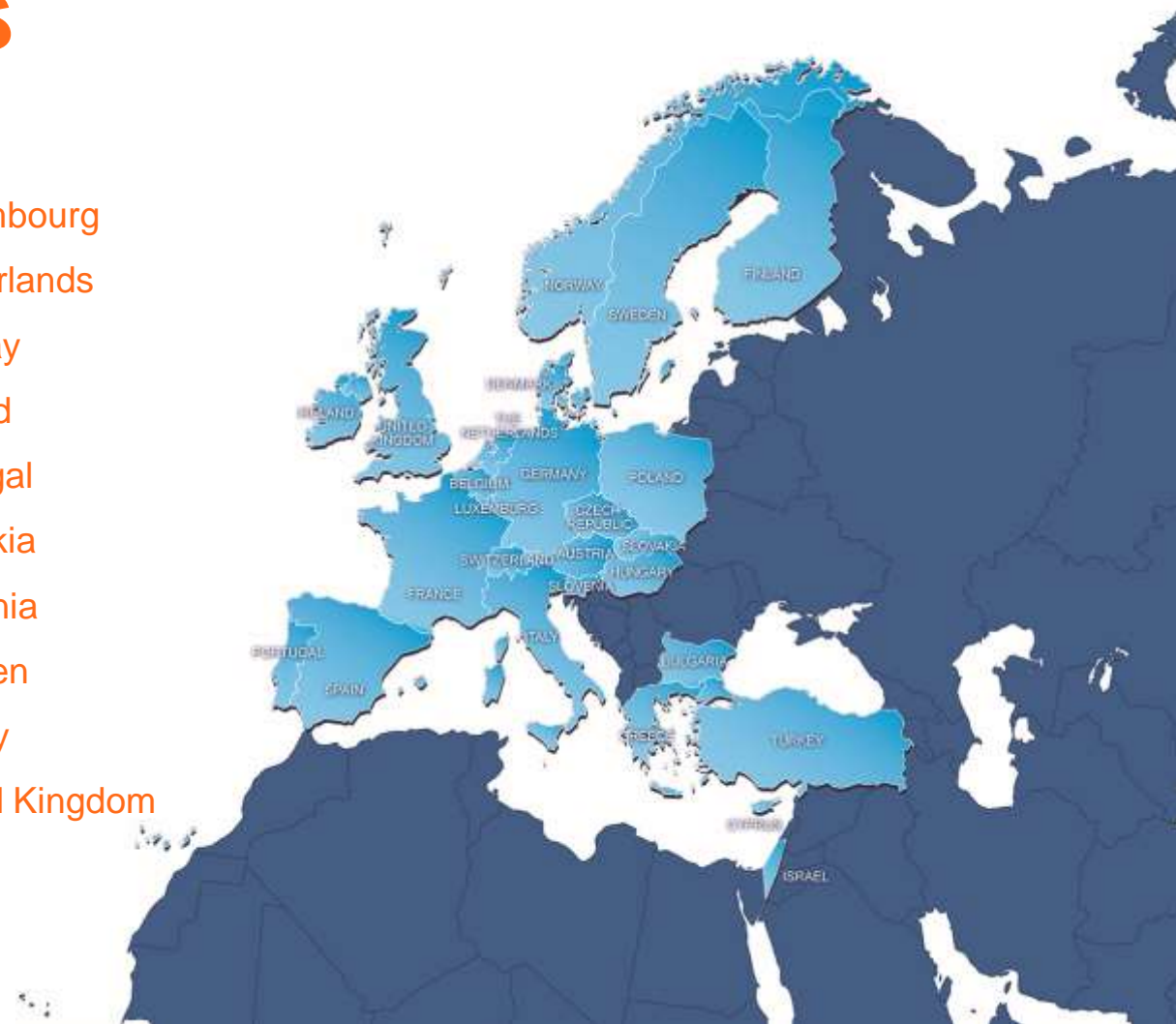
▶ France

▶ Germany

▶ Italy

▶ Spain

▶ Switzerland

## General Partners (PRACE 2)

▶ Austria

▶ Belgium

▶ Bulgaria

▶ Cyprus

▶ Czech Republic

▶ Denmark

▶ Finland

▶ Greece

▶ Hungary

▶ Ireland

▶ Israel

▶ Luxembourg

▶ Netherlands

▶ Norway

▶ Poland

▶ Portugal

▶ Slovakia

▶ Slovenia

▶ Sweden

▶ Turkey

▶ United Kingdom

## Observers

▶ Croatia

▶ Romania

# PRACE | membership

- Hosting Members (HMs) provide access to Tier-0 systems as in-kind participation to the PRACE Research Infrastructure (RI)

- General Partners (GPs) fund High-Level Support Teams (HLST) providing tailored user support on HMs' Tier-0 systems

- All 26 PRACE members contribute to high-value services including DECI, Implementation Projects, Peer Review, and dissemination & Communication

# PRACE | Tier-0 Systems in 2018

**NEW ENTRY 2018**
**JUWELS (Module 1)** 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** Lenovo cluster
GAUSS @ LRZ, Garching,
Germany #57 Top 500
**NEW ENTRY soon** **SuperMUC NG**

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

**NEW ENTRY 2018**
**JOLIOT CURIE** Bull Sequana
GENCI/CEA, Bruyères-le-Châtel, France
#34 Top 500

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

**Close to 110 PFlops cumulated peak performance**

# PRACE | Access Modes

1. Project Access      Peer Reviewed (Tier-0)

2. Preparatory Access      Benchmarking & Optimising

3. SME HPC Adoption Programme in Europe    SHAPE

4. Distributed European Computing Initiative    DECI (Tier-1 exchange)

# PRACE | PRACE 2

▶ Flagship access mechanism
  ▶ Basic principle is *To compute, you must contribute*

▶ The Principal Investigator (PI) should come from one of the countries contributing to PRACE 2

# PRACE | SHAPE

▶ SME HPC Adoption Programme in Europe

▶ Target SMEs that would like to test how HPC supports their business case

▶ Calls for applications judged on :

  ▶ Strength of business case

  ▶ Achievability, commitment from the SME and innovation

  ▶ Social and economic impact for society

▶ Increasing competitiveness & create new business opportunities

▶ Enable development of new products or services

# PRACE | training

a sustained, high-quality training and education service for the European HPC community

Different levels of training

- Basic, intermediate, advanced HPC
- Parallel programming
- Accelerators
- Performance optimisation

Domain-specific topics

- Simulation software
- Visualisation
- Data intensive computing

10 PRACE **Training Centres**

PRACE **Training Events**: Seasonal Schools, International HPC Summer School, On-demand training events

PRACE Training and Events portal

**Code Vault**
Massive Open Online Courses (**MOOCs**)

**Summer of HPC**
(Programme for undergraduate and postgraduate students)

# PRACE | Events

▶ The 2019 European HPC Summit Week (#EHPCSW2019) will take place in Poznań, Poland from 13 to 17 May 2019

You can also find PRACE at:

▶ ISC, Germany

▶ SC, USA

▶ Various other HPC-related events throughout the year

# THANK YOU FOR YOUR ATTENTION

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