



PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

The Partnership for Advanced Computing in Europe | PRACE

Name of the presenter

Name of the organisation



PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

PRACE | members

Hosting Members

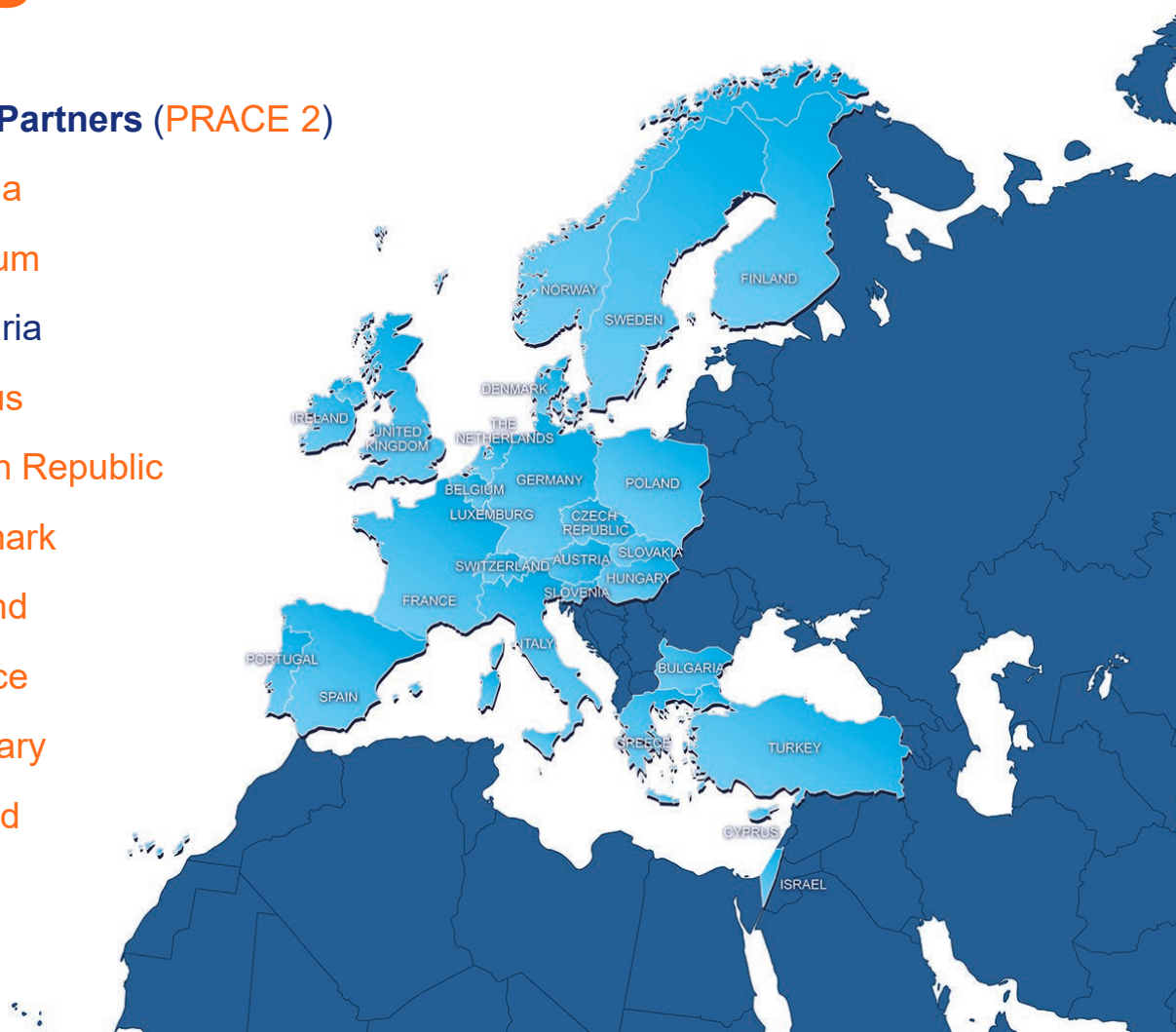
- ▶ France
- ▶ Germany
- ▶ Italy
- ▶ Spain
- ▶ Switzerland
- ▶ Luxembourg
- ▶ Netherlands
- ▶ Poland
- ▶ Portugal
- ▶ Slovakia
- ▶ Slovenia
- ▶ Sweden
- ▶ Turkey
- ▶ United Kingdom

Observers

- ▶ Croatia
- ▶ Romania

General Partners (PRACE 2)

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





PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

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



PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

PRACE | achievements

- ▶ 947 scientific projects enabled
- ▶ >32.5 billion core hours awarded since 2010
- ▶ Of which 64% led by another PI nationality than the HM
- ▶ R&D access to industrial users with >65 companies supported
- ▶ >17 000 people trained through PRACE Training
- ▶ ~220 Petaflops of total peak performance on 7 world-class systems
- ▶ 25 PRACE members, including 5 Hosting Members (France, Germany, Italy, Spain and Switzerland)
- ▶ PRACE is the only e-infrastructure Landmark on the ESFRI Roadmap 2016



PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

PRACE | Tier-0 Systems in 2022



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



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



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

**JUWELS Booster
Module:** Atos/Bull
Sequana
GAUSS @ FZJ, Jülich,
Germany #25 Top 500



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JOLIOT CURIE Rome : Atos/Bull
Sequana XH2000; GENCI @ CEA,
Bruyères-le-Châtel, France #83 Top
500



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

HAWK: HPE Apollo
GAUSS @ HLRS,
Stuttgart, Germany
#30 Top 500



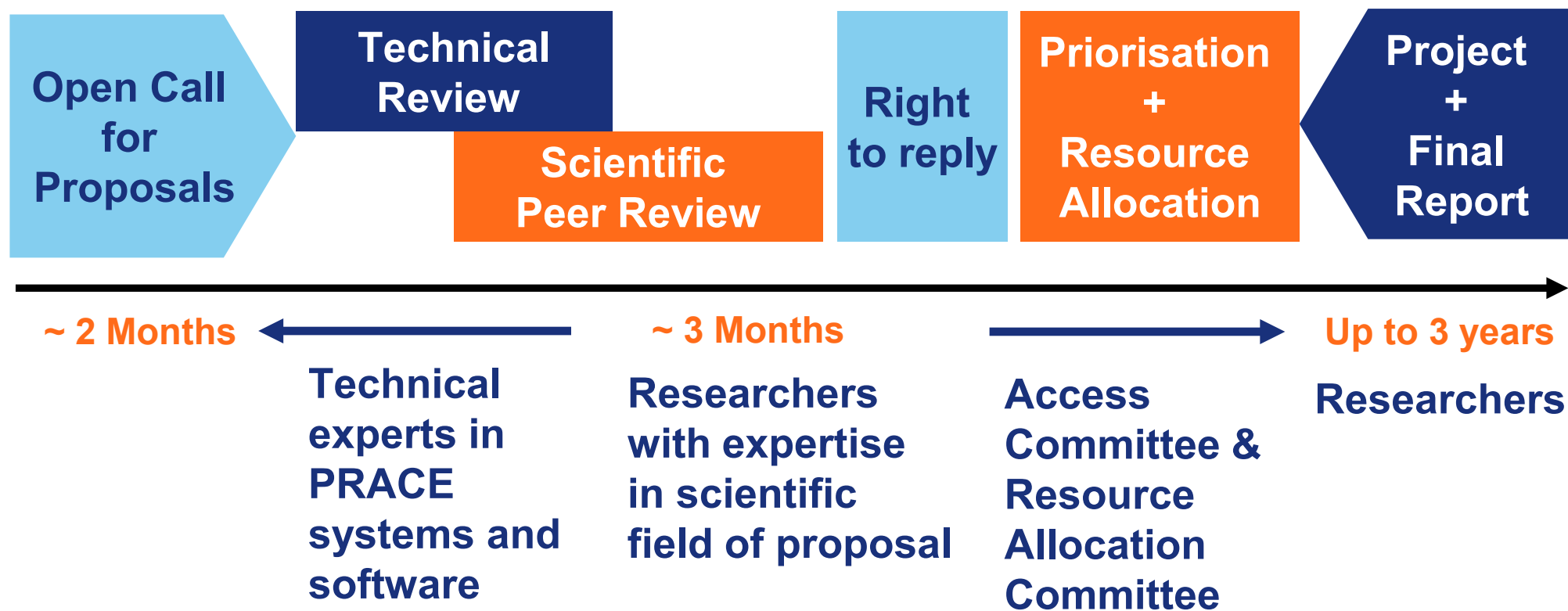
© by Ben Derzian for HLRS

Close to 220 Petaflops
total peak performance



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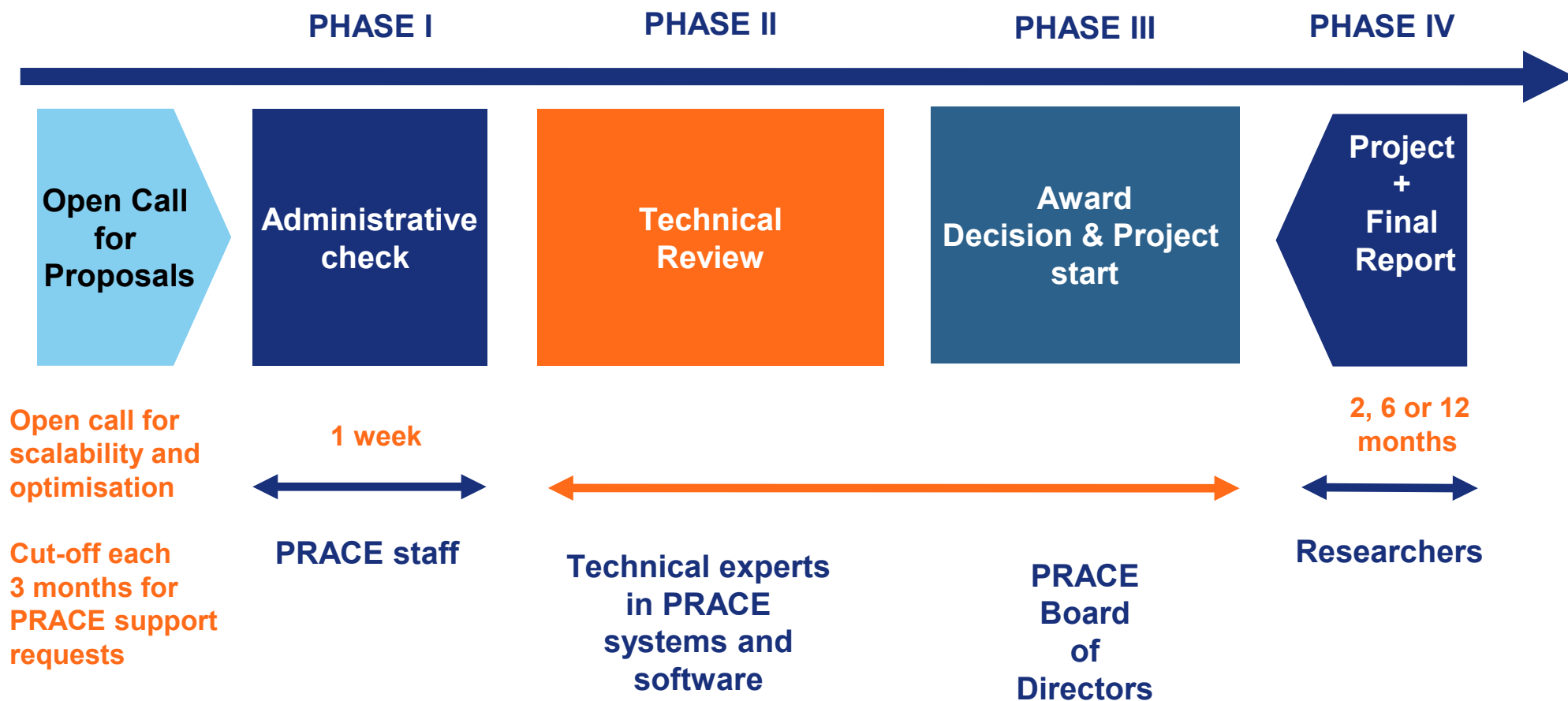
PRACE | project access





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PRACE | preparatory access





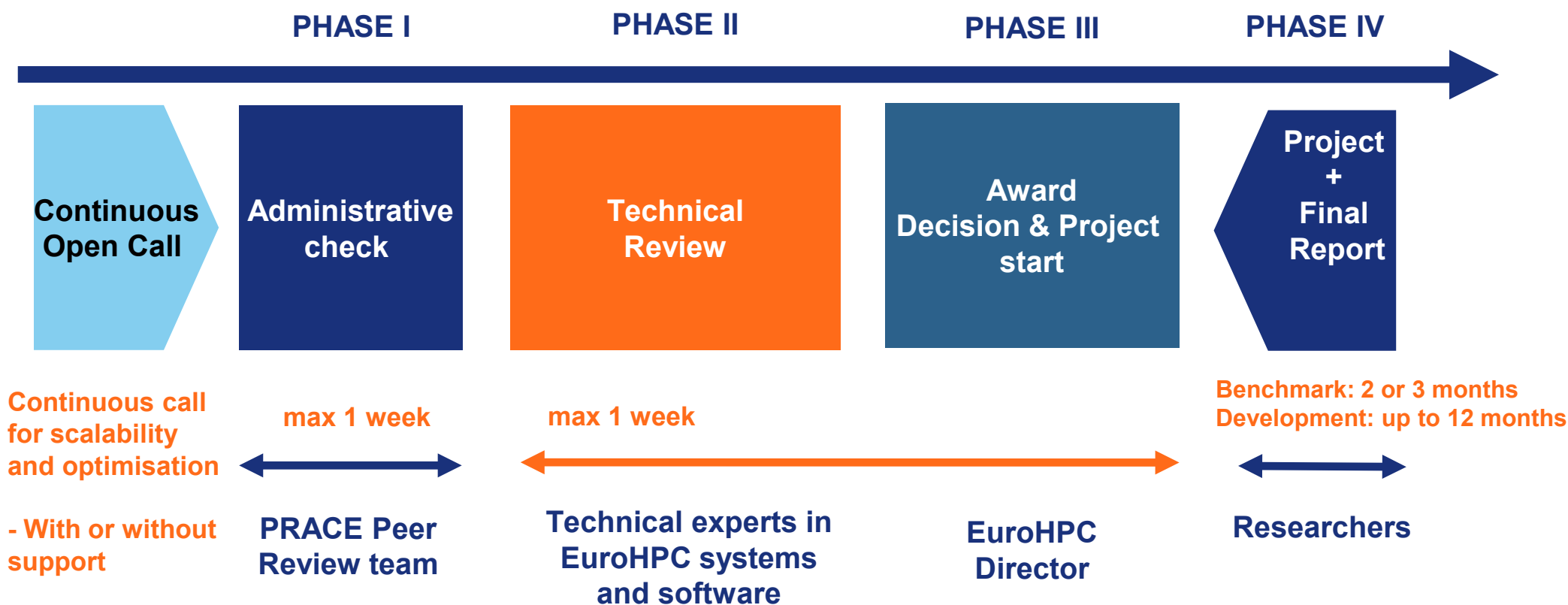
EuroHPC Benchmark & Development Access Calls in collaboration with PRACE

- ▶ Starting April 2021, the Call will be continuously open with monthly cut-off dates:
<https://prace-ri.eu/hpc-access/eurohpc-access/>
- ▶ Proposals from academia, research institutes, and commercial organisations (industry) are welcome
- ▶ The evaluation process will allocate access to resources within maximum 2 weeks after the cut-off date (target an average of 1 week) and includes:
 - ▶ Administrative check by the **PRACE Peer Review Team**
 - ▶ Technical assessment of the relevance and feasibility of the request on the targeted system by experts of the targeted hosting entity
 - ▶ Based on a pre-selection of applications, the Executive Director of the EuroHPC JU takes the decision on the final list of projects that will be granted access to the system(s)
- ▶ Peta-scale systems: Currently the VEGA, Karolina, Discoverer, MeluXina, and LUMI systems are available (status January 2023)



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EuroHPC access modes - Benchmark & Development





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PRACE versus COVID-19

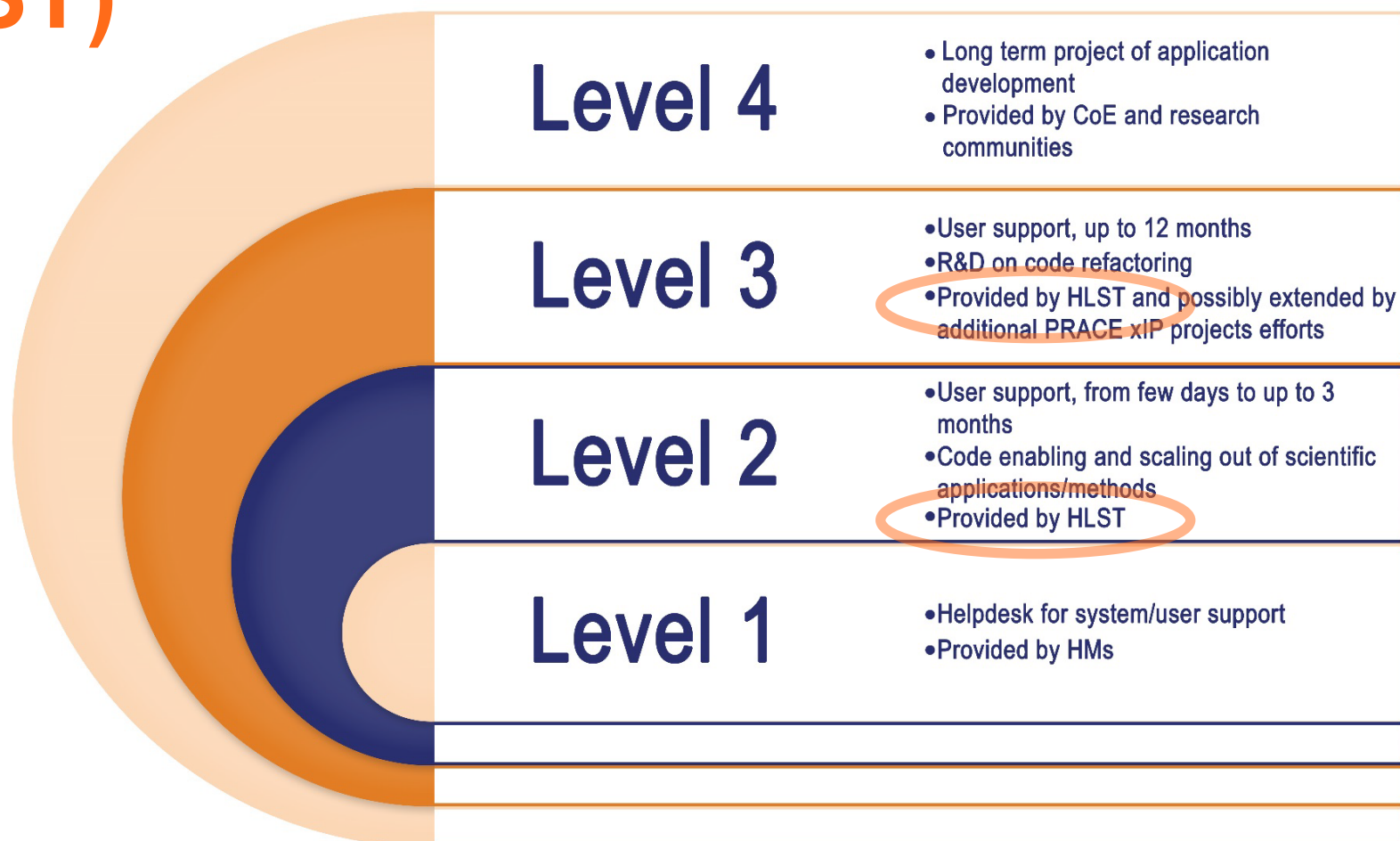
- ▶ PRACE had run a **Fast Track Call for Proposals** for projects that used supercomputers to contribute to the fight against **COVID-19. The Call closed spring 2021**
- ▶ A Scientific Committee established by PRACE had leaded the review process and evaluated proposals within **one week**
- ▶ Selected projects was given access to the **Europe's most powerful supercomputers**
- ▶ More than 30 proposals have been awarded since end of March 2020 with research topics such as:
 - ▶ Bio-simulations to develop therapeutics and/or vaccines
 - ▶ Epidemiologic analysis to understand and forecast the spread of the disease
 - ▶ Biomolecular research to understand the mechanisms of the virus infection
- ▶ PRACE Digest 2020 focusses on projects awarded under the Fast Track Call





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PRACE | high-level support teams (HLST)





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PRACE | SHAPE

**Innovation &
Impact**

- ▶ **SME HPC Adoption Programme in Europe**
 - ▶ Equip European SMEs with expertise to take advantage of the innovation possibilities of HPC
 - ▶ Increasing competitiveness
 - ▶ Enable development of new products or services
 - ▶ Create new business opportunities



SHAPE
SME HPC Adoption Programme in Europe



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PRACE | scientific case

- ▶ First edition in 2012, update in 2018
- ▶ We cannot do it all
 - ▶ Which application domains to focus on?
 - ▶ Which technologies?
- ▶ Eternal struggle: heavenly Science vs mundane Economics
- ▶ Balance between traditional, disruptive and fundamental science

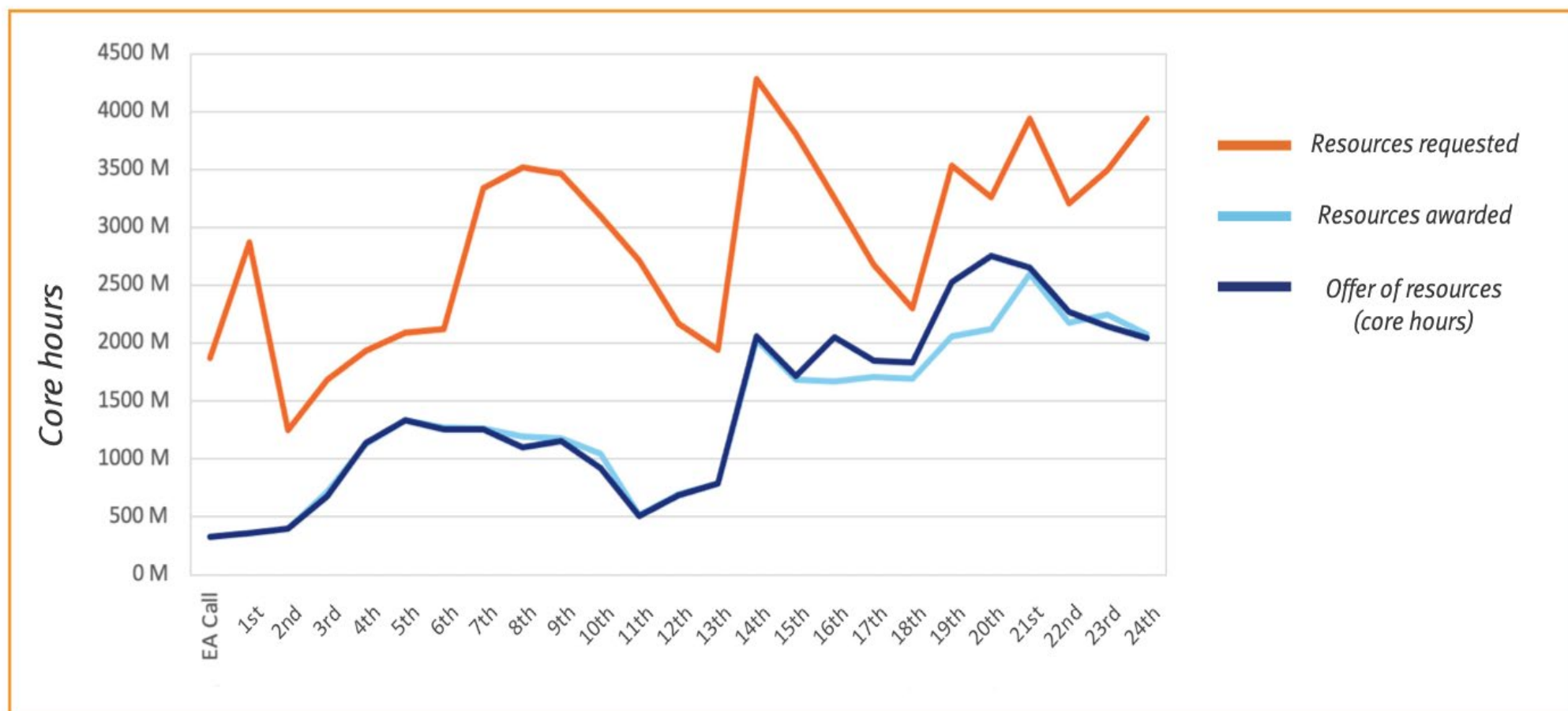




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PRACE | Project Access

Core hours offered and requested in each PRACE call

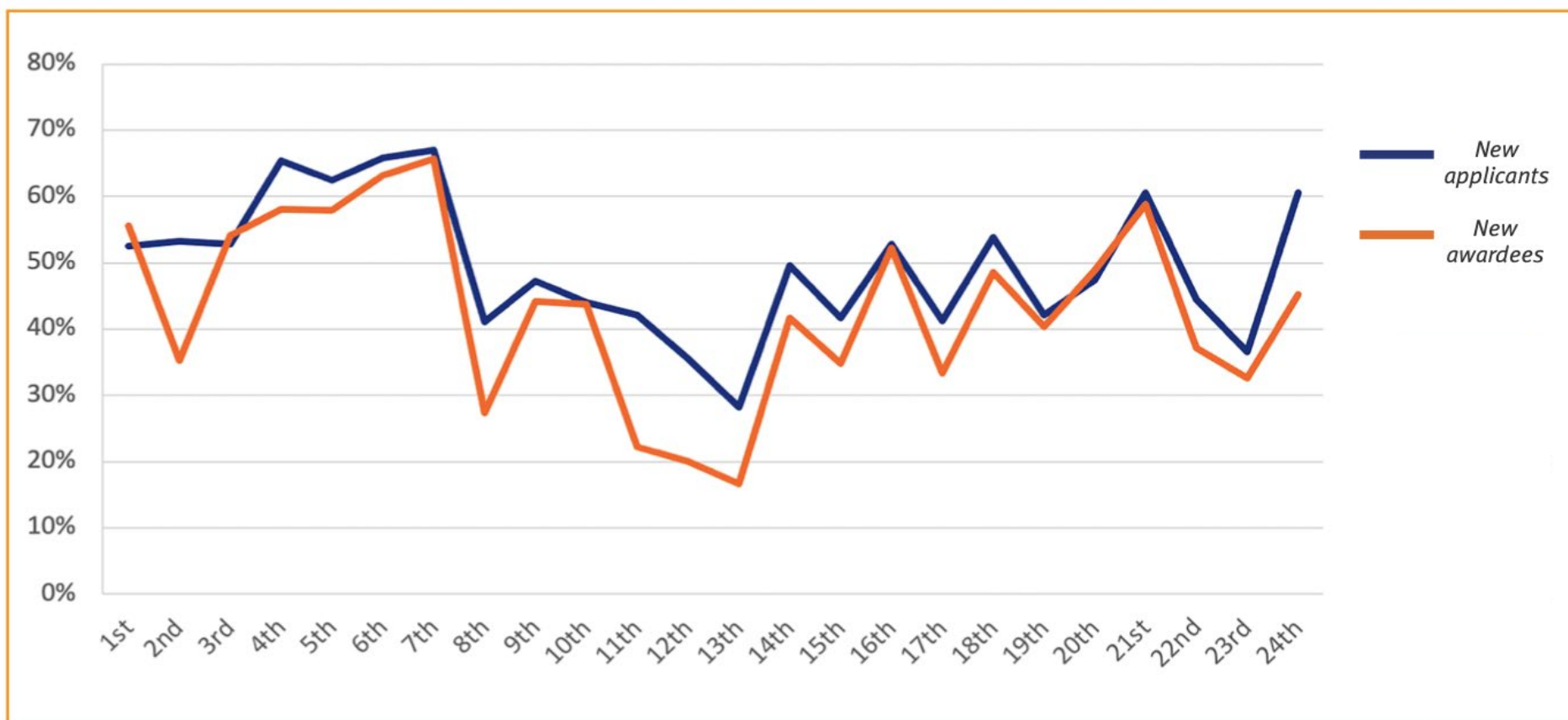




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PRACE | Recurring users

Ratio of new applicants and new awardees in each PRACE call

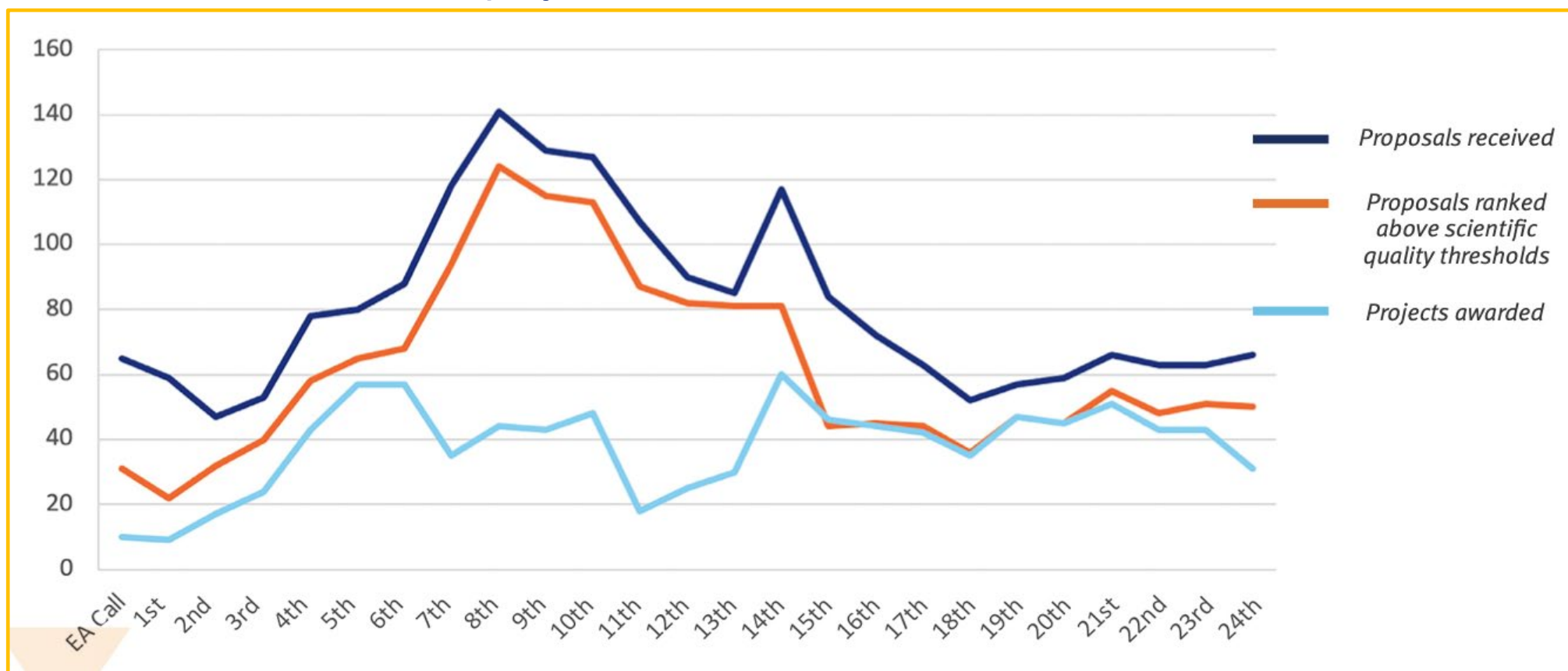




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PRACE | Projects Awarded & Rejected

Total number of applications received, proposals ranked above the scientific excellence threshold, and projects awarded

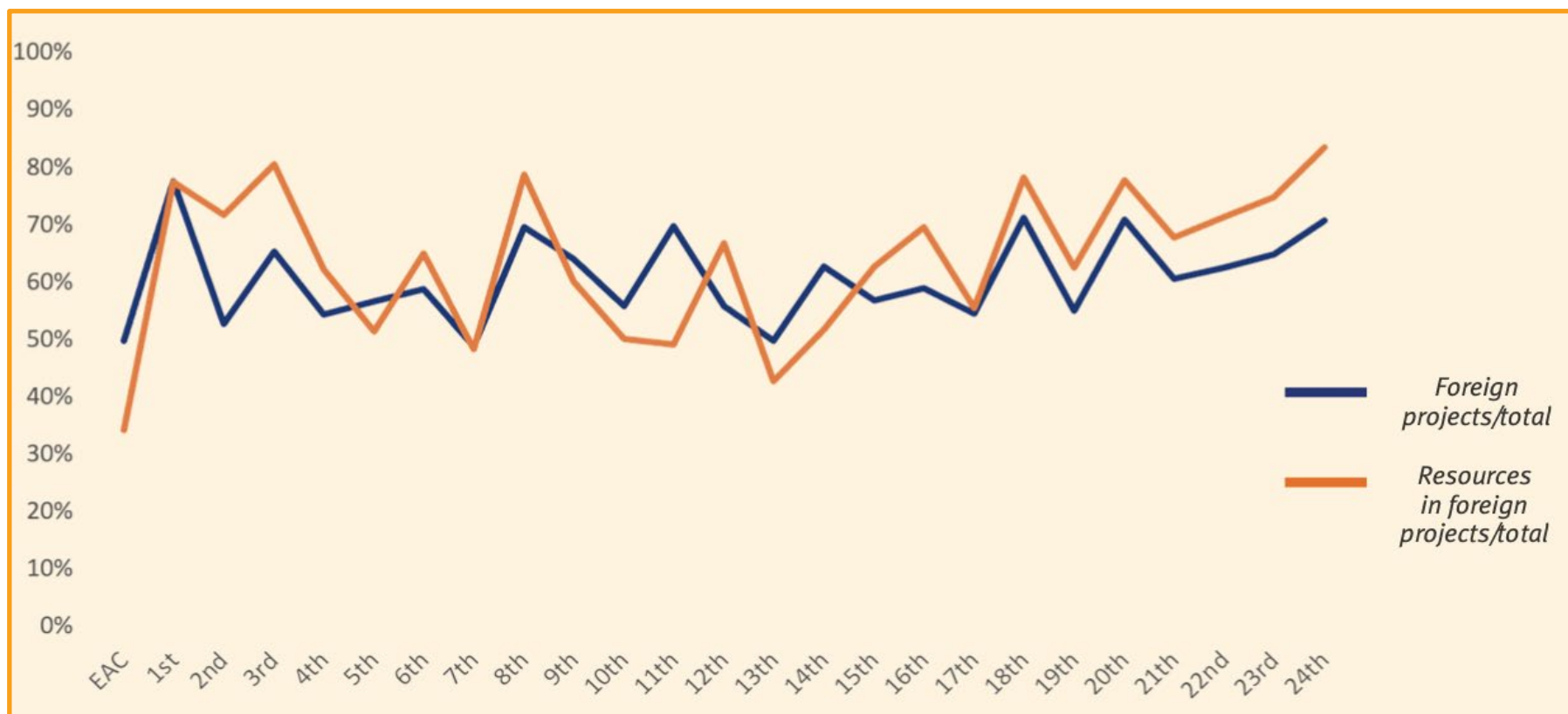




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PRACE | 'foreign' projects

Ratios of awarded 'foreign' projects and resources for awarded 'foreign' projects

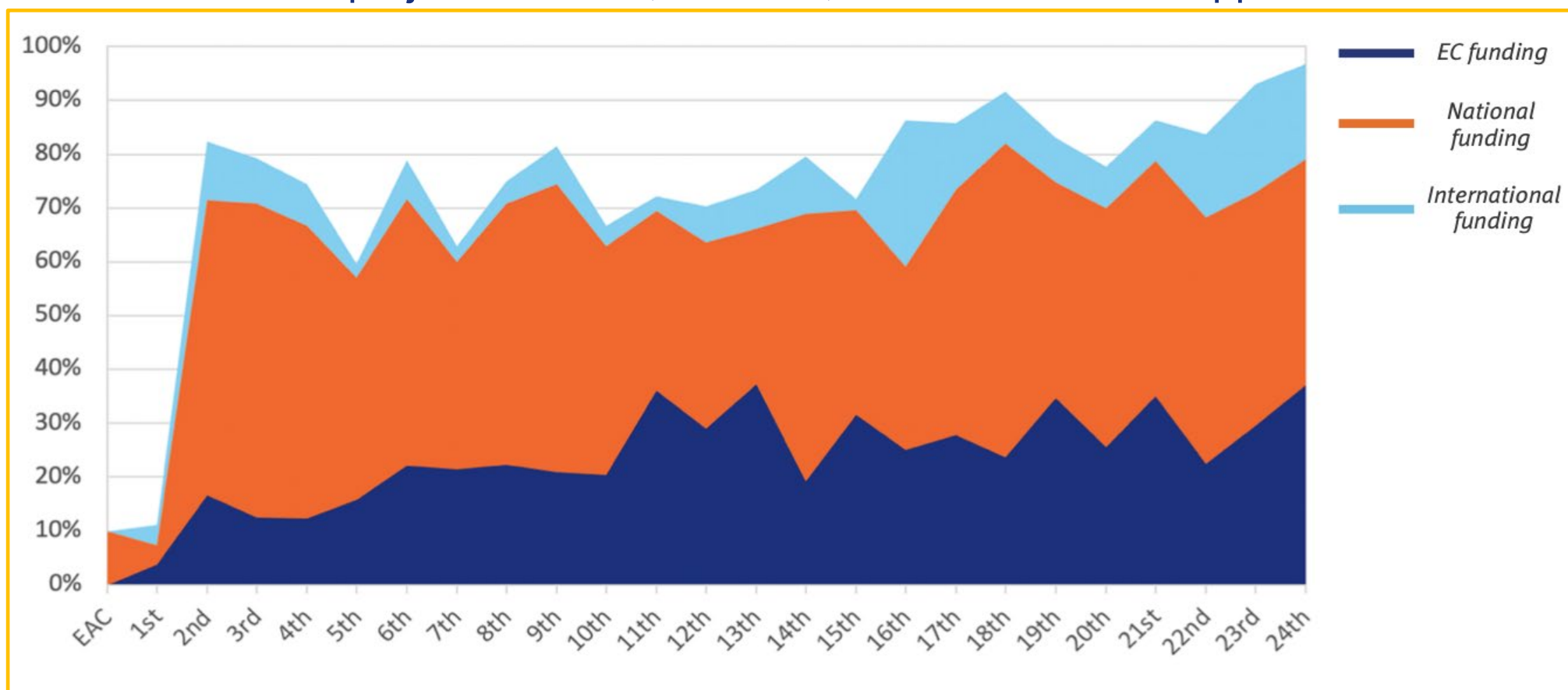




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PRACE | Co-funding

Ratios of awarded projects with EC, National, and International support

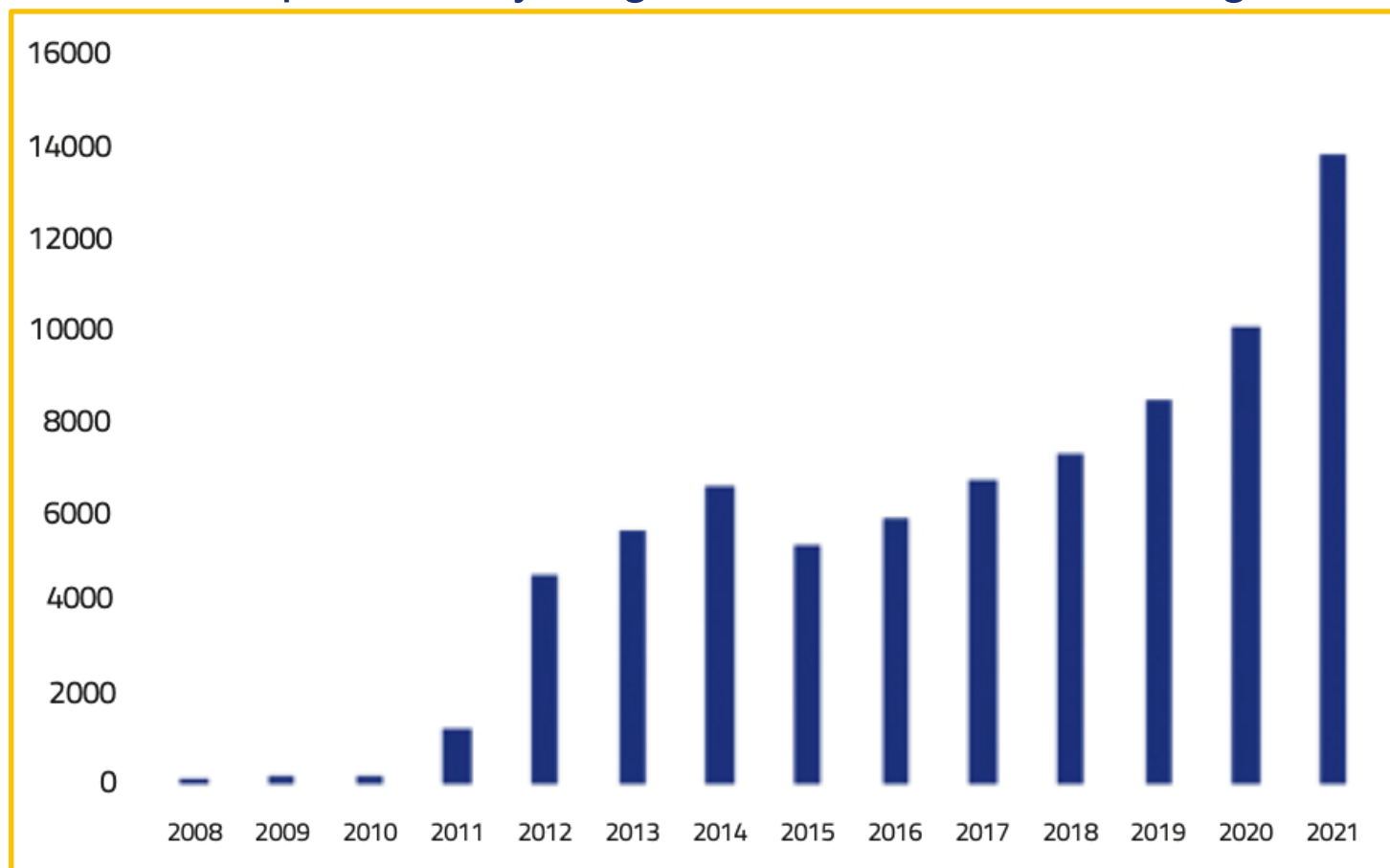




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PRACE | Training

Numbers of person-days registered at PRACE Training Centres between 2008 and 2021

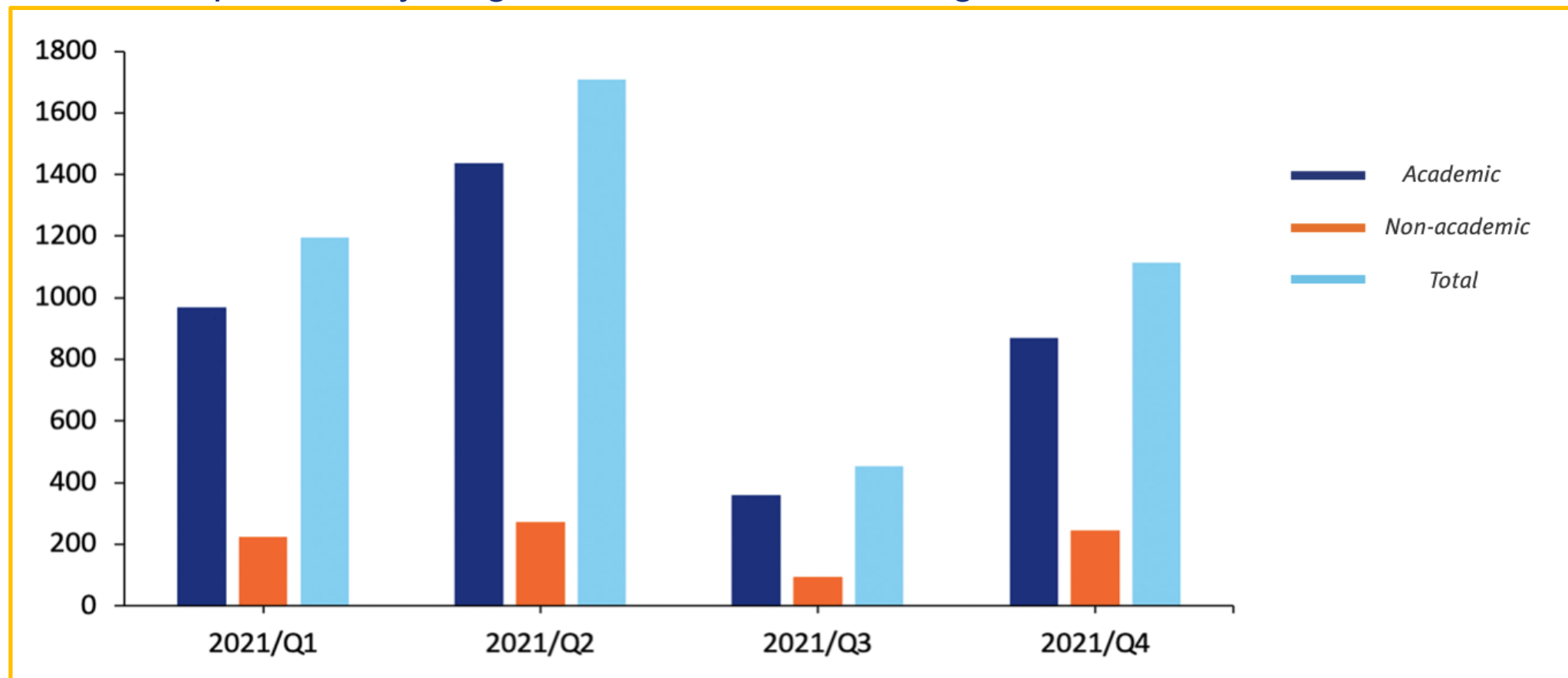




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PRACE | Training

Number of person-days registered at PRACE training in 2021

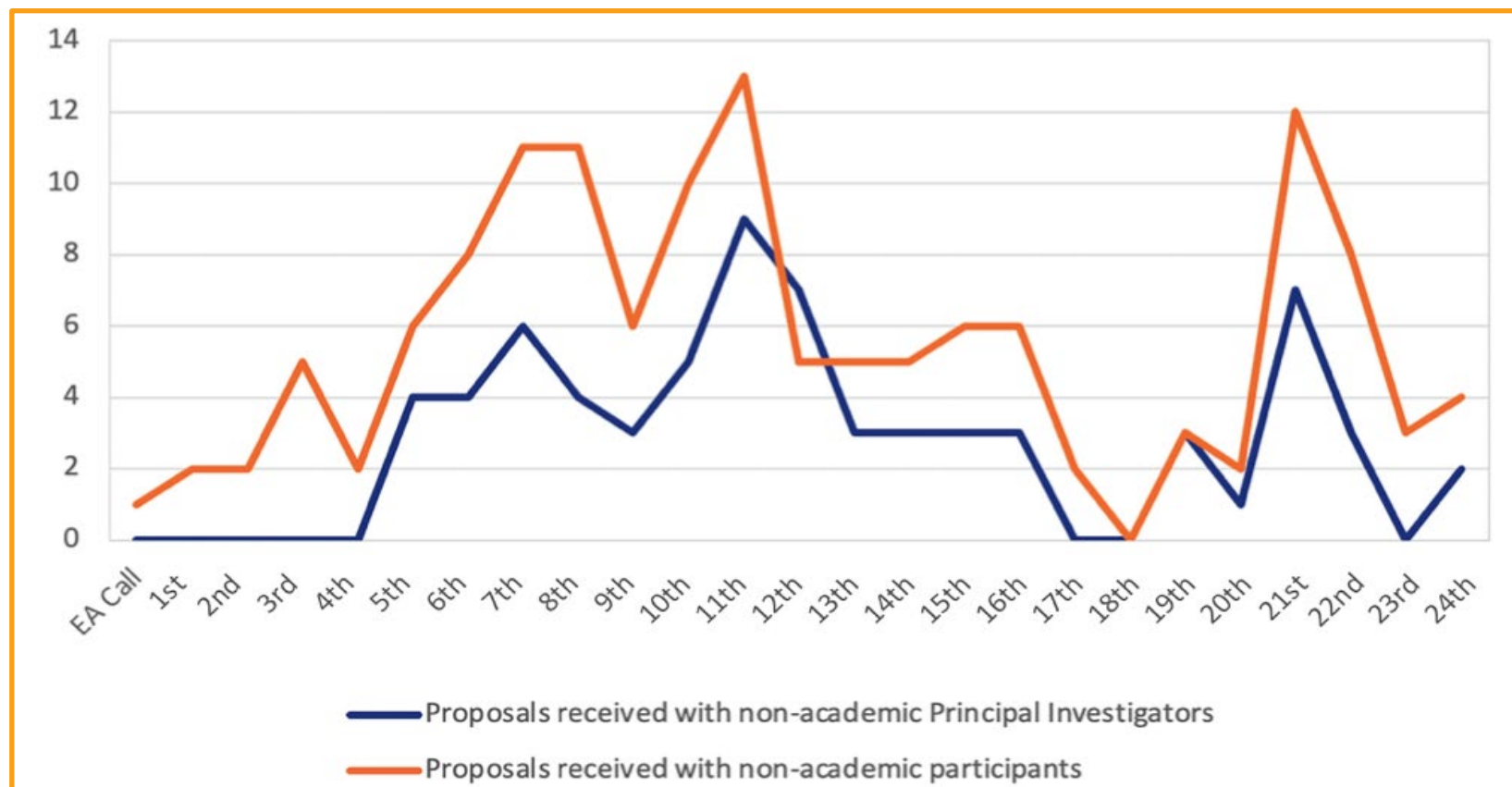




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PRACE | Industry

Industry participation in PRACE

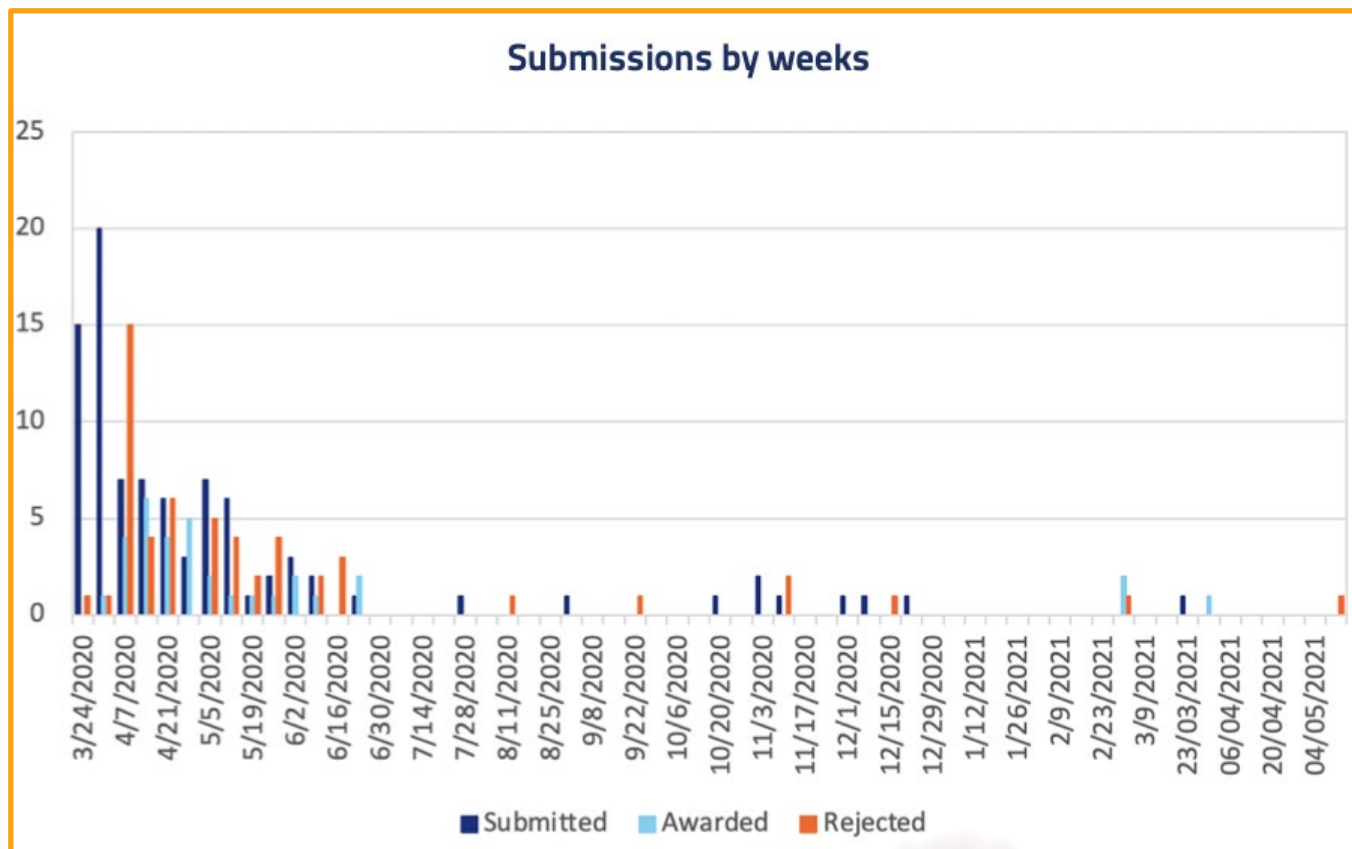




PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

PRACE | Fight against the COVID-19 pandemic – Fast Track

Proposals submitted by week to PRACE to help in the fight against COVID-19





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THANK YOU FOR YOUR ATTENTION

www.prace-ri.eu



Slide Title

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 - ▶ Second level bullets
 - ▶ *Third level bullets*
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Two columns layout

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Three columns layout

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Table to compare data

| | A | B | C |
|--------|----|----|----|
| Data 1 | 10 | 20 | 7 |
| Data 2 | 30 | 15 | 10 |
| Data 3 | 5 | 24 | 16 |