

The Spanish Network for Supercomputing, Data and AI



RED ESPAÑOLA DE
SUPERCOMPUTACIÓN



Infraestructuras
Científicas y Técnicas
Singulares

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**Barcelona
Supercomputing
Center**

Centro Nacional de Supercomputación



Spain National Tripartite Event
Madrid, 19 September 2023

Red Española de Supercomputación Spanish Supercomputing Network



Large Distributed Scientific
Technical Infrastructure (ICTS)
National Competence Center
for HPC, HPDA and AI

Red Española de Supercomputación Spanish Supercomputing Network



14 Spanish Infrastructures
16 supercomputers
9 data centers
Coordinated by BSC

Open to:

- new partners
- new technologies
- new services

Resources

4

Supercomputing
Data Exploitation
Artificial Intelligence

offered to the Spanish scientific community

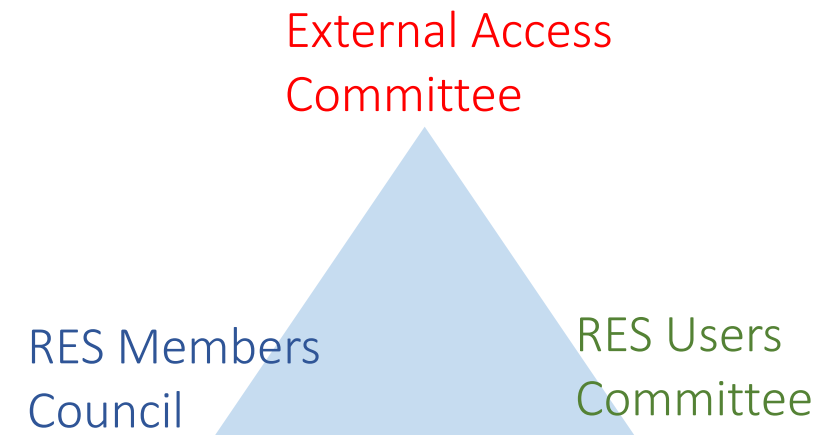
+22 PFlop/s total computing capacity
+180 PB total storage
+1.000 millions CPU hours
+1.000 users per year
+200 scientific publications

Competitive Access

- 3 calls of HPC/AI per year, 1 call of data per year
- External access committee, for reviewing and ranking access requests

Organization of RES as ICTS

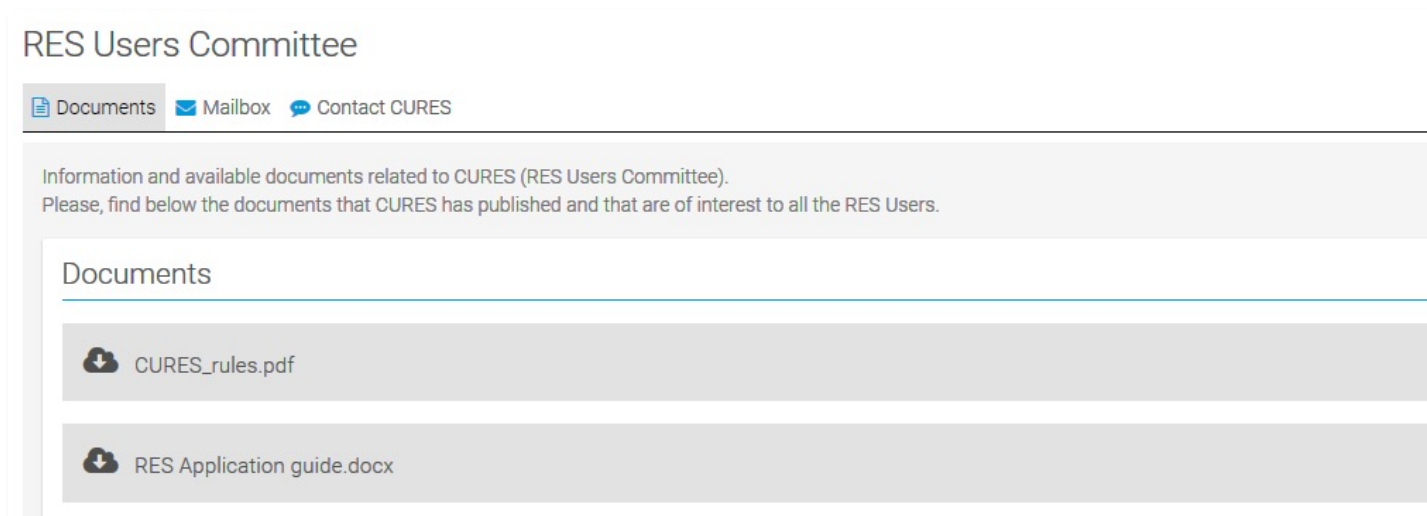
- Each infrastructure which can offer HPC-DATA-AI services (+support) and share the vision of RES, can join the network.
- >20% of capacity offered for RES researchers
- Plan every 3 years with objectives, resources and strategies, reviewed by the Spanish Government
- Members have the possibility to apply to specific calls for ICTS to update infrastructure.



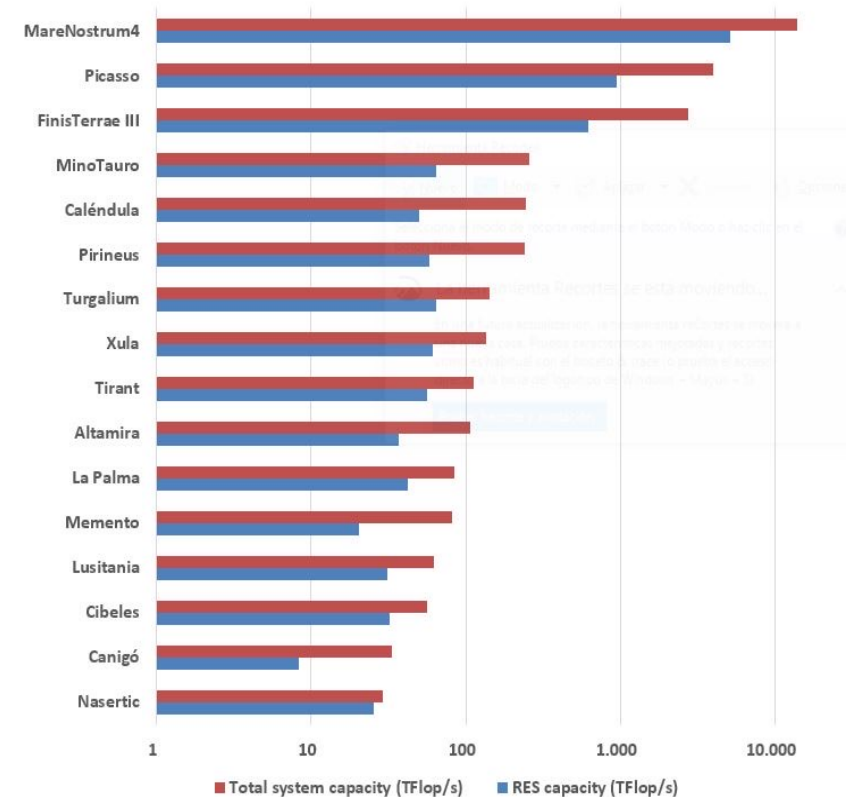
RES Users' Committee

- Aims to provide advice and feedback to RES coordinators:
 - Promotes optimal use of high-performance computing facilities
 - Shares information about users' experiences
 - Voices user concerns

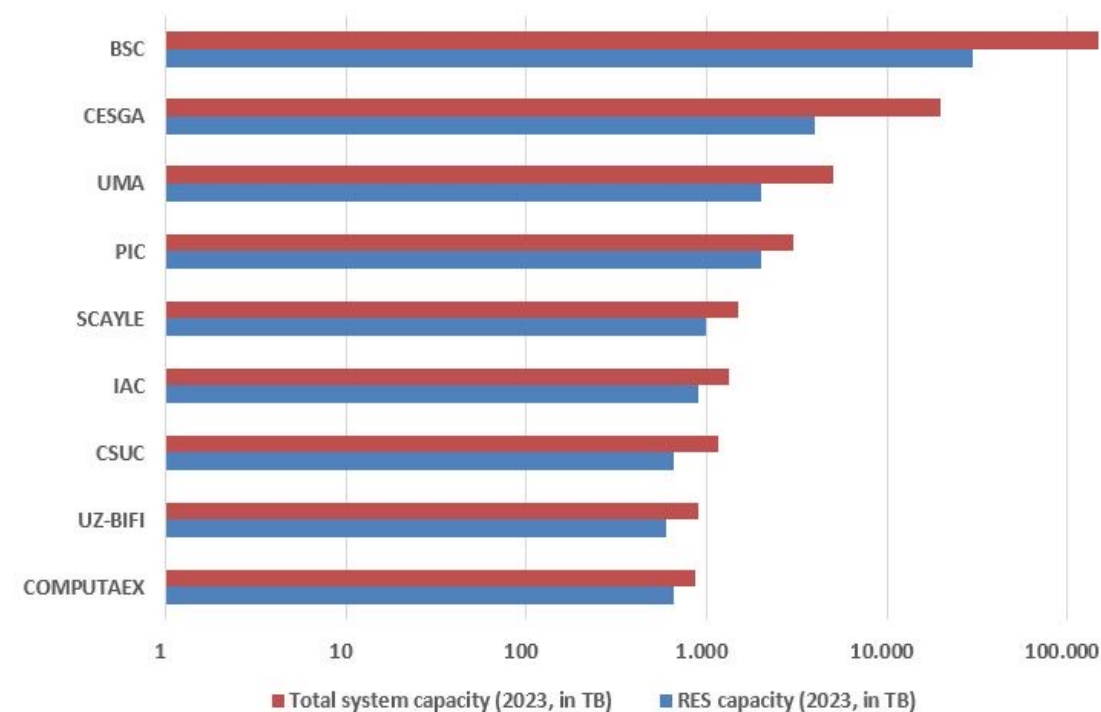
- Contact: RES intranet



- Capacity fully utilized, with 2:1 oversubscription
- Application open to SMEs and industries for Open R&D and innovation
- Possible to book computing resources in advance – for EU projects
- System of calls and access improving with the feedback of the Users Committee
- Contribution to the European ecosystem (Centres of Excellence)



- One call per year for large data projects (3 to 5 years), applying presenting a DMP.
- Storage and computing for data exploitation
- Data management support (DM community)
- Services to Share and reuse valuable datasets
- Training and guidelines



- Since 2023 specific offer of GPUs
- New services providing hardware and software resources designed to support AI projects applied to RD and innovation
- Same Access procedures of HPC, calls adapted to AI projects:
 - Short: test and technical set up
 - Medium/long: specific scientific objectives (model training), validation of models
 - Mentored activities with experts of the centers.



RES Future - MN5



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RES Future - MN5

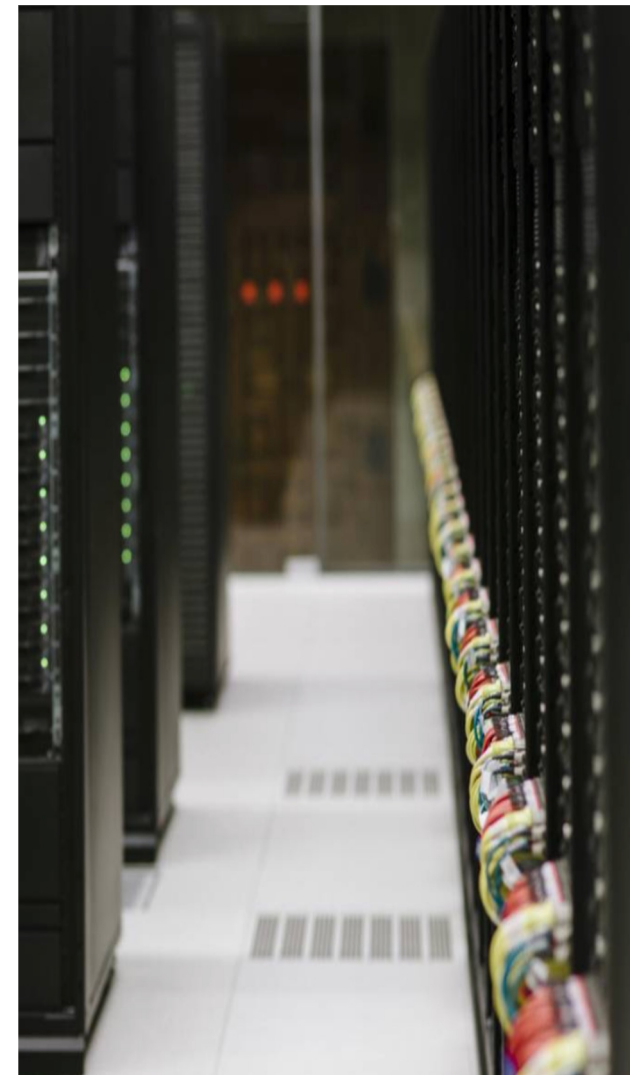


In 2024 it will increase x30 the capacity of the Spanish capacity in HPC - 314 Pflops peak performance

Owners of the technology: Spain, Portugal, Turkey.

Access: EuroHPC + RES + PT calls + Turkey calls + BSC researchers

- **General purpose (GPP)** Intel Sapphire Rapids (45,4 Pflops peak)
- **Accelerated partition (ACC)** NVIDIA Hopper (260 Pflops peak)
- **Storage** 248PB HDD 402PB tape IBM Spectrum Scale FS (1.6 TB/s rw)
- **New technology GPP** - NVIDIA Grace (2,82 Pflops peak)
- **Next Generation** TBC



Access to
internationalization
Programs, projects, etc



EuroHPC
Joint Undertaking



ESFRI
European Strategy Forum
on Research Infrastructures



Access to knowledge
and expertise
Scientific seminars



Access to training and skills
development
Open training courses and
technical workshops

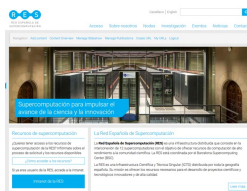


Access to Spanish
supercomputing facilities
Free allocation of computing
hours and data services to
researchers and industry.



Access to European
supercomputing
facilities
Mobility of researchers
and industry staff

Access to networking and
awareness
Annual Users Conference,
RES Twitter and LinkedIn



Access to business innovation
Competence center
DIH, One-stop shop



EuroCC
SPAIN



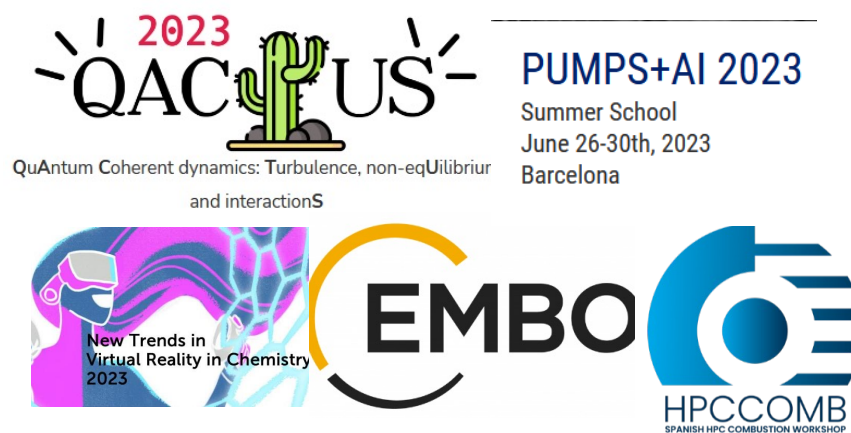
EuroHPC
Joint Undertaking

RES events: Networking, training and sharing knowledge

Annual RES Users Conference



Scientific seminars (sponsored by RES)



Technical training workshops





www.res.es



[Linkedin](#)



Twitter:
[@RES_HPC](#)



applications@res.es
dissemination@res.es



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EXCELENCIA
SEVERO
OCHOA



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THANK YOU!



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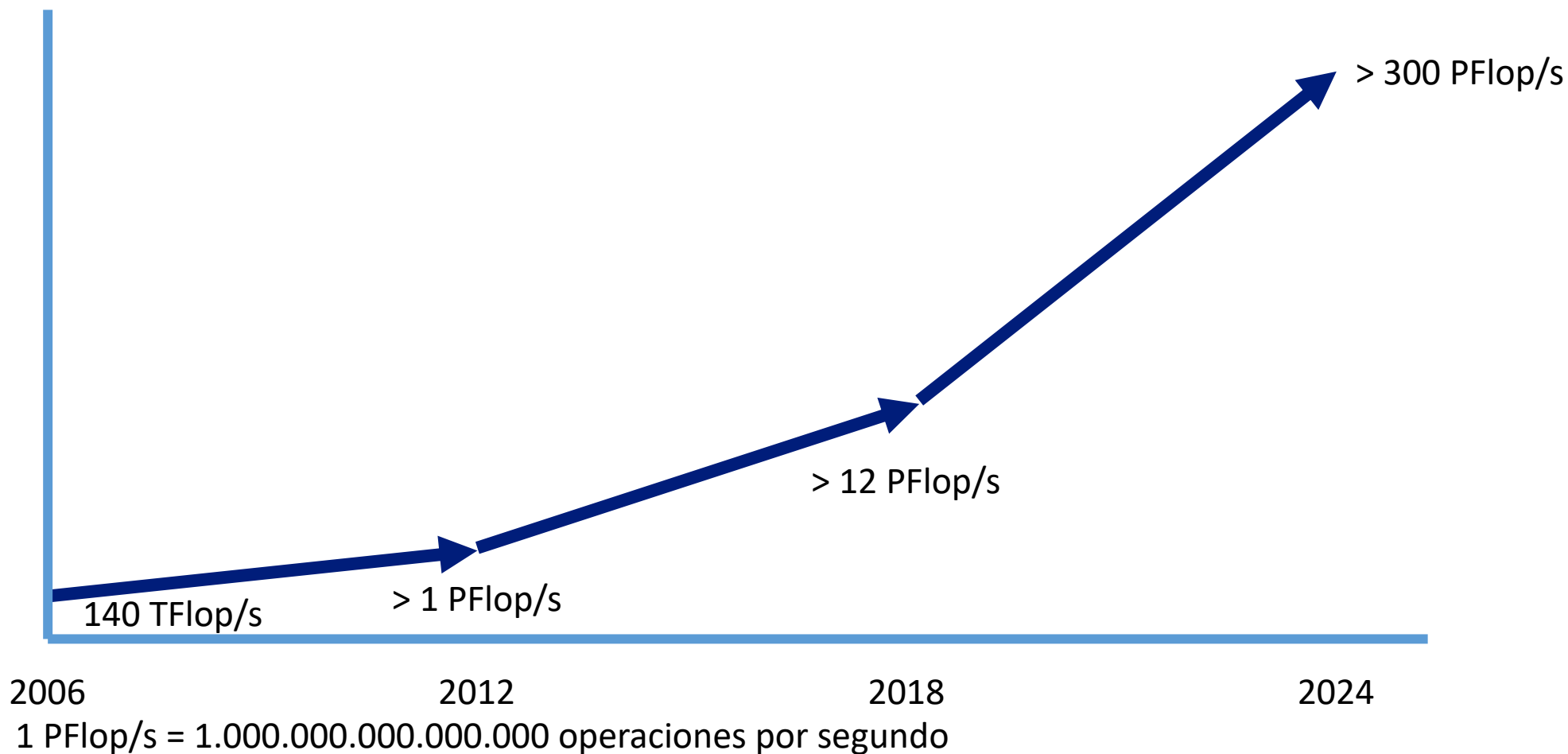
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Extra

RES-HPC computing capacity

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Quantum at BSC

Research – Development - Deployment

- 2 quantum devices
- Training and Knowledge transfer
- National coordination
- Utility for science:
 - Algorithms for complex systems
 - Simulation of quantum systems – 3 quantum emulators (BSC, CESGA, SCAYLE)
 - Integration with HPC for solving certain problems (CPU+GPU+QPU)
- Applications: optimization of functions, possible compromise of cryptographic systems (they are promising)...
- Access protocol as RES and available to all users.
- European Project for hosting a QC with the MN5, towards EuroQCS network (like EuroHPC).