RED ESPAÑOLA DE SUPERCOMPUTACIÓN

Infraestructuras Científicas y Técnicas Singulares

The Spanish Digital Innovation Hub for HPC (esHPC)

- Una iniciativa de la Red Española de Supercomputación (RES) -

Digital Innovation Hubs (DIHs): una aproximación práctica

DIHs en Inteligencia Artificial

10 de octubre 2019

Cámara de Comercio, Palma de Mallorca

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

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RES: HPC Services for Spain

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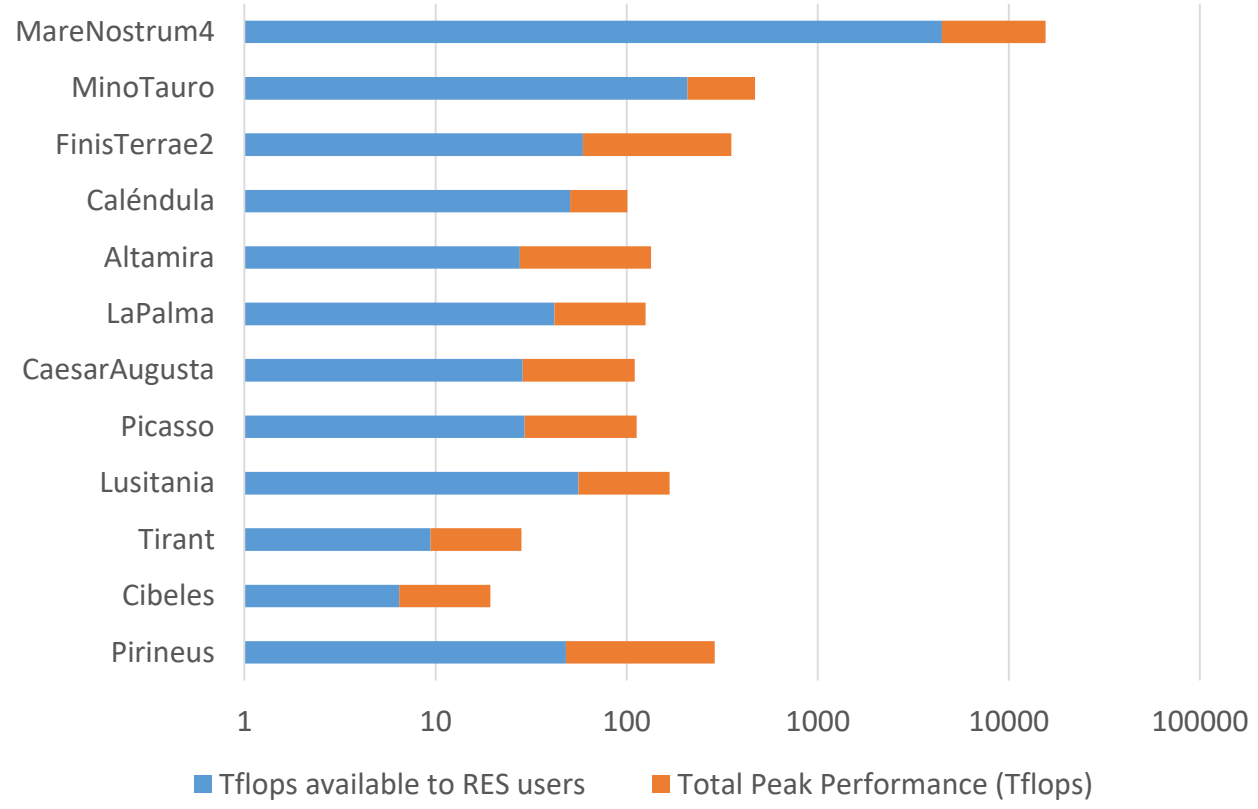
- Created in 2006
- Coord.: Barcelona Supercomputing Center (BSC-CNS)
- Member of Spanish "Unique Scientific and Technical Infrastructures"(ICTS)

UNIVERSIDAD DE MÁLAGA

RES: HPC Services for Spain

RES is made up of **12 interconnected supercomputers**.

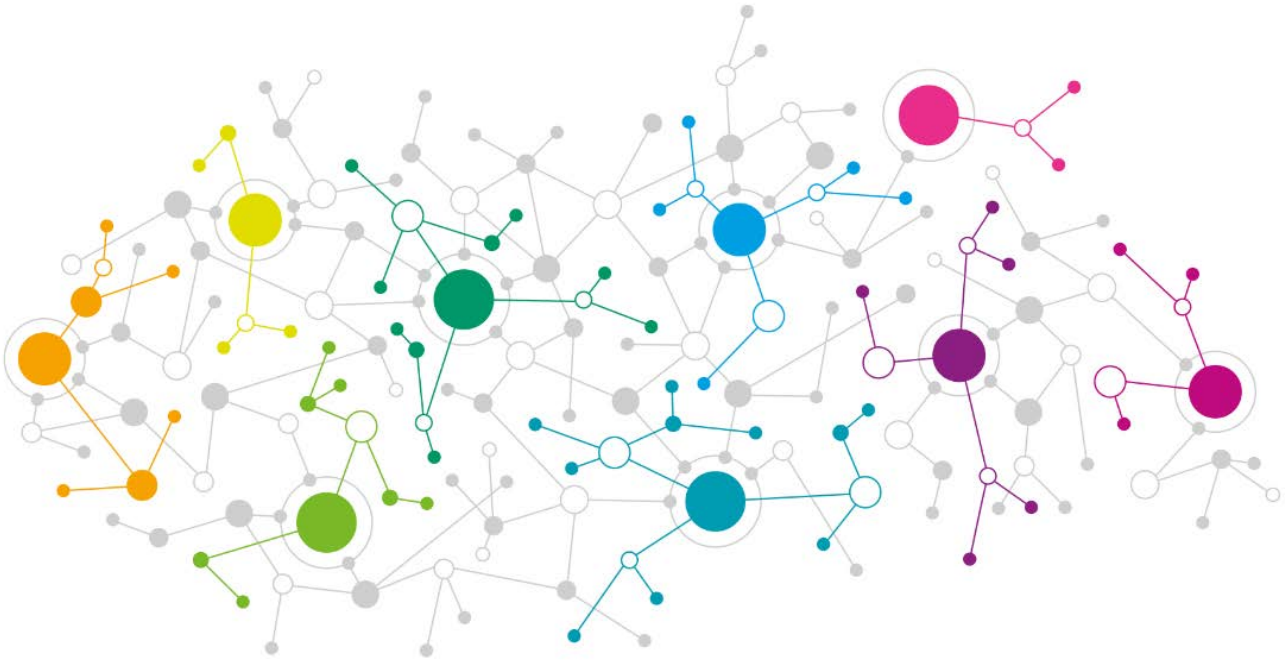








esHPC: “Ecosystem” of ecosystems



- Innovation ecosystem that provides access to services, facilities and expertise
- Multiregional & Multisectorial approach
- Targeted to different types of clients
- Covering wide range of services
- Multi-business model
- Internationalization of SMEs

esHPC RES
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VISION

Spanish Digital Innovation Hub for High Performance Computing (HPC) is an arm of Spanish Supercomputing Network (RES) to become the **ecosystem enabling access, resources, training, projects, and information** about Artificial Intelligence to Spanish industry and especially to SMEs. RES, coordinated by Barcelona Supercomputing Center (BSC), is a distributed infrastructure involving 12 supercomputers working together to offer High Performance Computing resources to the scientific and industry communities.

CHALLENGE

To promote AI solutions for SME via RES network. RES is a Unique Scientific and Technical Infrastructure (ICTS) distributed throughout Spain, which aims to support the development of top-quality cutting-edge research. RES has RESxPyme group, which is focused on promoting AI/HPC solutions for SMEs, giving **access** to SME to R&D projects for the application of AI/HPC to solve company's needs, as well as offering free access to supercomputing during the first 3 years' life for spin off companies.

VALUE PROPOSITION

RES promotes SME are using HPC and AI as an essential part of their business strategy. HPC and for extension AI can help them to use data to optimize production problems, to design new products, and to use AI solutions to create **new sources of business value** to become more competitive and "green".

The RES is a Unique Scientific and Technical Infrastructure in Spain, so the esHPC hub will benefit of its main capacities: a consolidated network of high-quality data and computing infrastructure and expert support staff.

One of the objectives of the RES in the near future is to create a **Data Infrastructure** in Spain and to offer data management services associated to the computing services. Thus, the competences needed for the new data services are totally aligned with the competences needed for the AI services.

The competences of the esHPC which will be fundamental are:

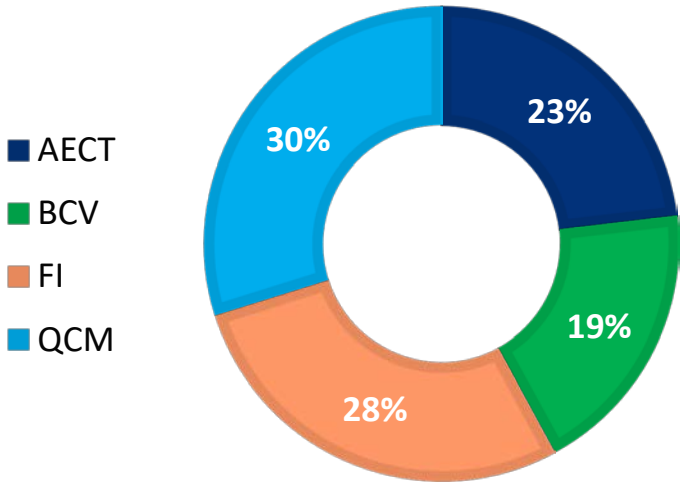
- **optimization of AI models using the HPC resources,**
- **support and advice in simulation, analytics and prediction,**
- **training for industry and businesses and**
- **collaborative research, and**
- **networking.**

esHPC: technology driven

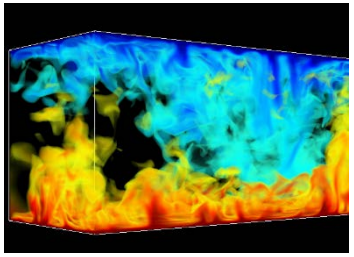
RES: HPC Services for Spain

- **Objective**: coordinate and manage high performance computing services to promote the progress of excellent science and innovation in Spain.
- It offers HPC services for **non-profit, open R&D** purposes.

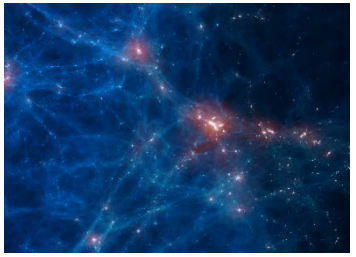
Hours granted per area



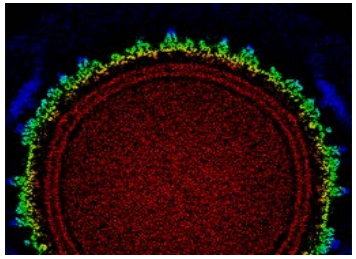
Research areas



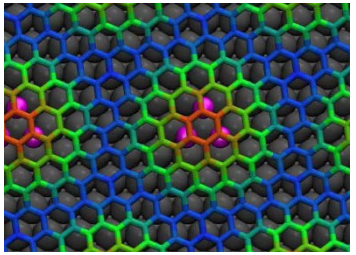
Mathematics, physics and engineering



Astronomy, space and earth sciences



Life and health sciences



Chemistry and materials sciences

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Changes in Access Protocol
Industrial access for Open R&D

- Open R&D projects for industry
- Limited for those activities under public funding
- Requires publications and availability, in open repositories, of data used for simulation and results achieved (same conditions as for universities and public research centers)

Infrastructure on High Performance Computing

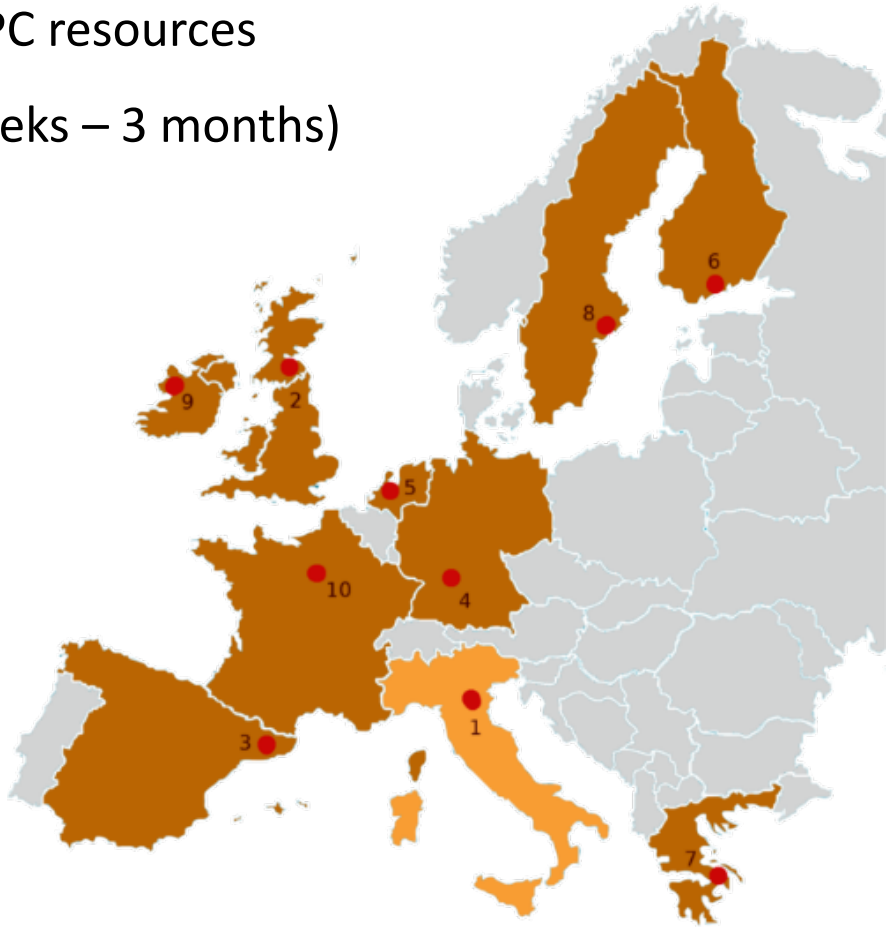
Pan-European Research

HPC Europa 3

Funded by the EC: 2017 - 2021

- ✓ Mobility grants for researchers using HPC resources
- ✓ Short stays to visit scientific hosts (3 weeks – 3 months)
- ✓ Funds for travel and living allowance
- ✓ Access to European HPC facilities

http://www.hpc-europa.eu/



RES events: technical training

These workshops are organized by the RES nodes and aim at providing the knowledge and skills needed to use and manage the supercomputing facilities.

- **Check the agenda in RES website:**
  https://www.res.es/en/events?event_type=technical_training

- **PATC courses in BSC** (PRACE Advanced Training Center):
  https://www.bsc.es/education/training/patc-courses

EuroHPC
Leading the way in the European Supercomputing

The EuroHPC Joint Undertaking is a 1 billion Euro joint initiative between the EU and European countries to develop a World Class Supercomputing Ecosystem in Europe.

EuroHPC
State of play
Next Steps
Benefits of Supercomputing

EuroHPC

EuroHPC will permit the EU and participating countries to coordinate their efforts and share resources with the objective of deploying in Europe a world-class supercomputing infrastructure and a competitive innovation ecosystem in supercomputing technologies, applications and skills.

EURO HPC Strategy

Hosting sites for precursor to exascale machines

Hosting site	Coordinating country	Partners
Barcelona Supercomputing Centre, Barcelona, Spain	Spain	Croatia, Portugal, Turkey
CINECA, Bologna, Italy	Italy	Slovenia
CSC – IT Centre for Science, Kajaani, Finland	Finland	Belgium, Czechia, Denmark, Norway, Poland, Sweden, Switzerland

European Commission - Press release

Digital Single Market: Europe announces eight sites to host world-class supercomputers

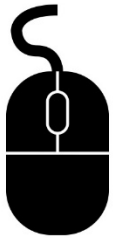
Luxembourg, 7 June 2019

Eight sites for supercomputing centres have been selected across the EU to host the first European supercomputers. They will support Europe's researchers, industry and businesses in developing new applications in a wide range of areas, from designing medicines and new materials to fighting climate change.

In a major step towards making Europe a top supercomputing region globally, the European High-Performance Computing Joint Undertaking - EuroHPC has selected 8 sites for supercomputing centres located in 8 different Member States to host the new high-performance computing machines. The hosting sites will be located in Sofia (Bulgaria), Ostrava (Czechia), Kajaani (Finland), Bologna (Italy), Bissen (Luxembourg), Minho (Portugal), Maribor (Slovenia), and Barcelona (Spain). They will support the development of major applications in domains such as personalised medicine, drug and material design, bio-engineering, weather forecasting, and climate change. In total, 19 of the 28 countries participating in the Joint Undertaking will be part of the consortia operating the centres. Together with EU funds, it represents a total budget of € 840 million. The exact funding arrangements for the new supercomputers will be reflected in hosting agreements that will be signed soon.

Contact us!

Visit our website: www.res.es



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Barcelona Supercomputing Center
Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

Gracias!

RED ESPAÑOLA DE SUPERCOMPUTACIÓN

La intel·ligència artificial a Catalunya

179 EMPRESES

1.358 FACTURACIÓ (M€)

8.483 TREBALLADORS

COM SÓN LES EMPRESES?

92% SÓN PIMES

27% SÓN EXPORTADORES

63% SÓN STARTUPS

UN SECTOR JOVE

EL 71% TENEN MENYS DE 10 ANYS

EMPRESES PER SEGMENT

- Software_ **134**
- Algoritmes_ **19**
- Consultoria_ **19**
- Serveis_ **7**

EXCEL·LÈNCIA CIENTÍFICA

BSC | IIIA-CSIC
CVC | EURECAT
LEITAT

SECTORS AMB MÉS APLICACIONS

- TIC I CIBERSEGURETAT | SALUT
- INDÚSTRIA I AGRICULTURA
- BANCA | SEGURETAT CIUTADANA
- AUTOMOCIÓ | RETAIL | TURISME I OCI

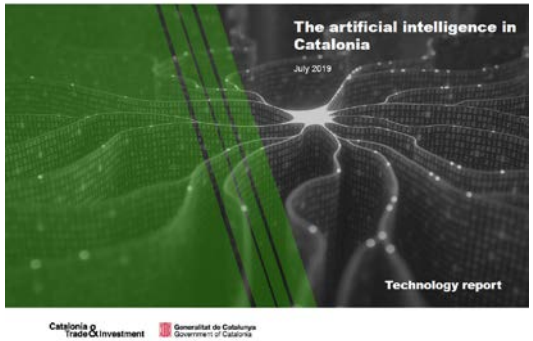
15,7 bilions $

L'impacte de la #IA en el PIB global l'any 2030

LLARG TERMINI

FONT: INFORME "LA INTEL·LIGÈNCIA ARTIFICIAL A CATALUNYA"

Generalitat de Catalunya



- Los hubs de innovación digital funcionan como una **ventana única de capacidades tecnológicas** en la que confluyen todos los recursos que los centros de conocimiento ofertan a las pymes, aportando también apoyo integral para llevar los productos y servicios innovadores al mercado.
- Se trata de una **nueva forma de estructurar el ecosistema de I+D+i**, que permite hacer un mejor uso y aplicación de los recursos existentes, conectar mejor el conocimiento disruptivo y la industria e impulsar la digitalización de las pymes para que sean más competitivas y ganen tamaño.