

Encontro RNCA 2023

07 e 08 de novembro de 2023
UTAD, Vila Real



Exploring EuroCC: collaboration opportunities from NCC Spain

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eurocc@cesga.es

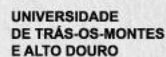
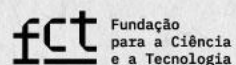
RNCA

REDE NACIONAL DE COMPUTAÇÃO AVANÇADA



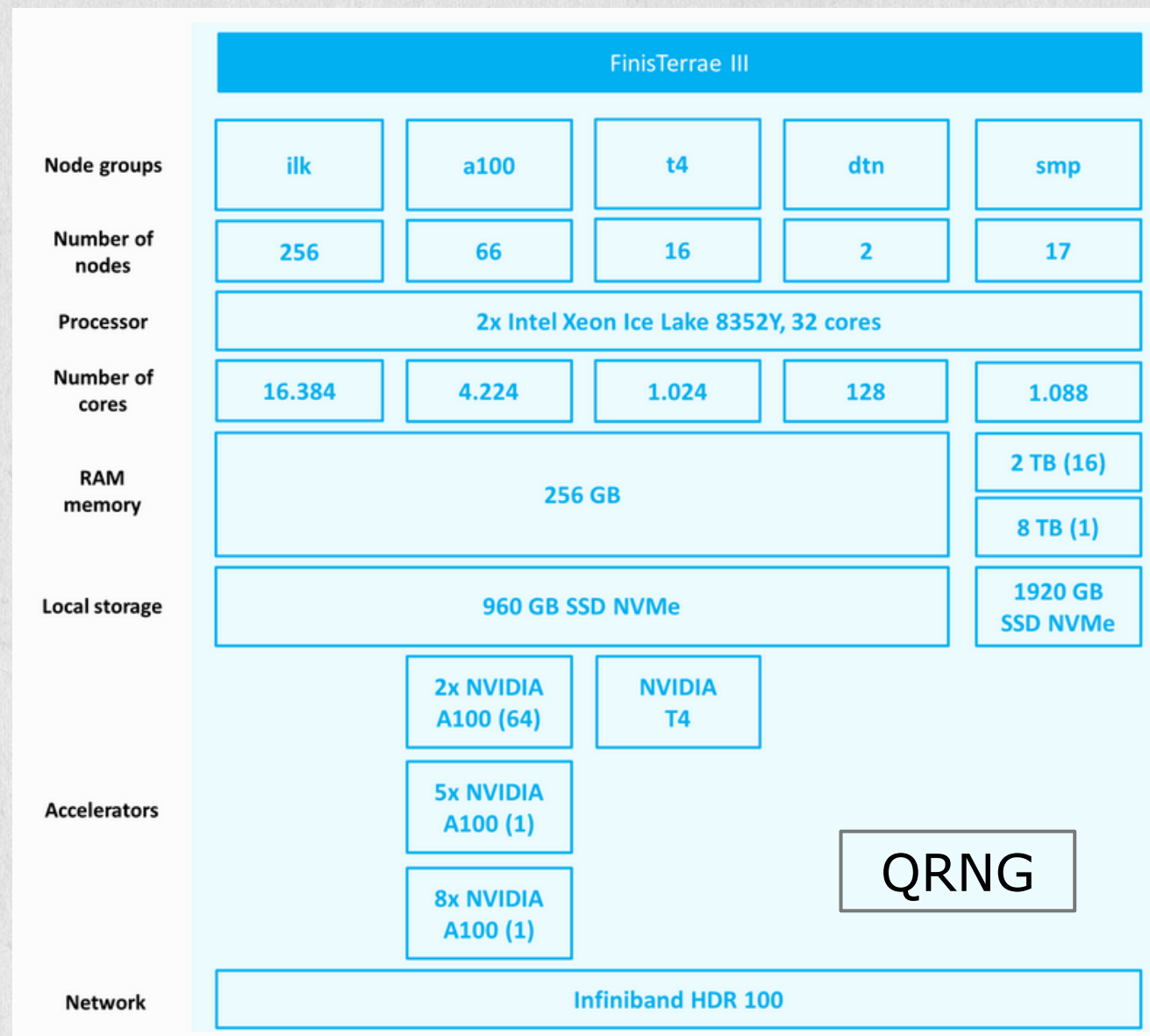
Since 1993:

“Contribute to the advancement of science and technical knowledge, by means of research and application of **high-performance computing and communications**, as well as other information technologies, in collaboration with other institutions, for the benefit of the society”

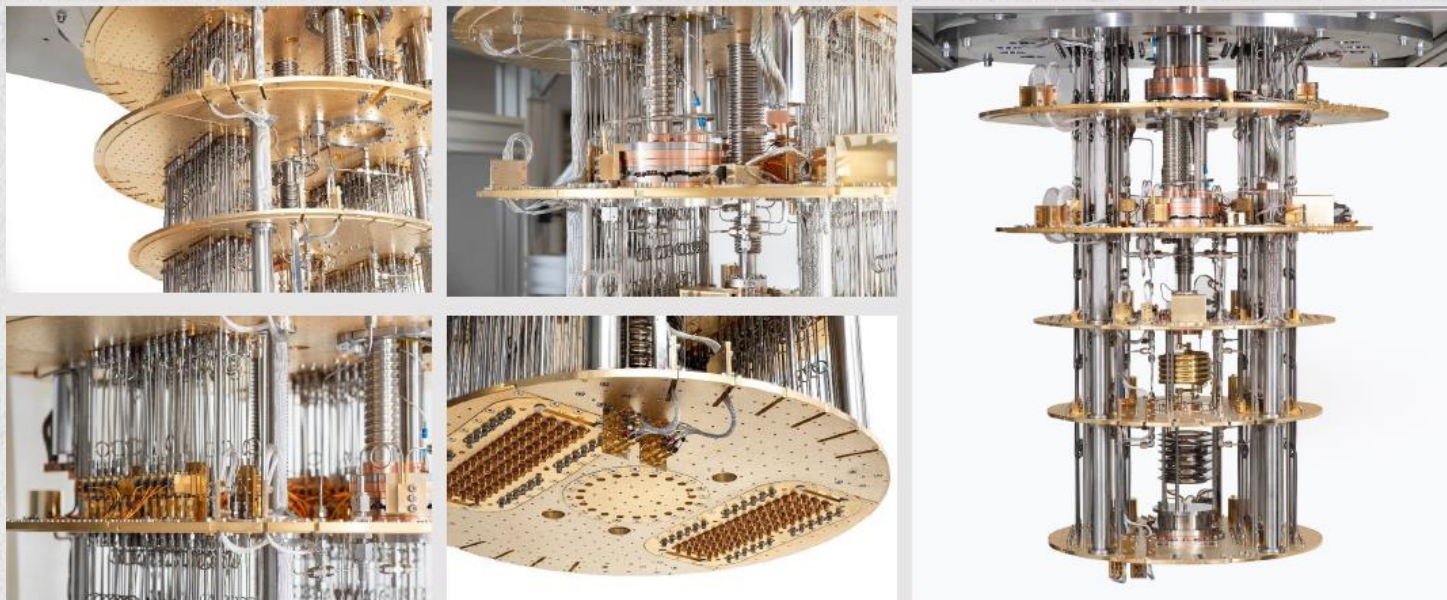


FinisTerra III, with a total computing power of **4,36 PetaFLOPS**, is made up of 357 nodes interconnected via an Infiniband HDR network.

There are 714 latest generation Intel Xeon Ice Lake 8352Y processors with 32 cores at 2.2Ghz (22.848 cores) and 157 GPUs (141 Nvidia A100 and 16 Nvidia T4).



Qmio



Qmio is a **32 qubits** quantum computer located in CESGA (Santiago de Compostela). The technology of Qmio's QPU is based on coaxmon superconducting qubits which is based on superconductor circuits whose power supply is perpendicular to the QPU.

A iniciativa do Polo de Tecnoloxías Cuánticas de Galicia conta con financiamento de:

Fondos REACT EU



AXENCIA
GALEGA DE
INNOVACIÓN



UNIÓN EUROPEA



Xacobeo 21-22



Centro de Supercomputación de Galicia

Despregamento dunha infraestrutura baseada en tecnoloxías cuánticas da información que permita impulsar a I+D+i en Galicia.

Apoiar a transición cara a unha economía dixital.

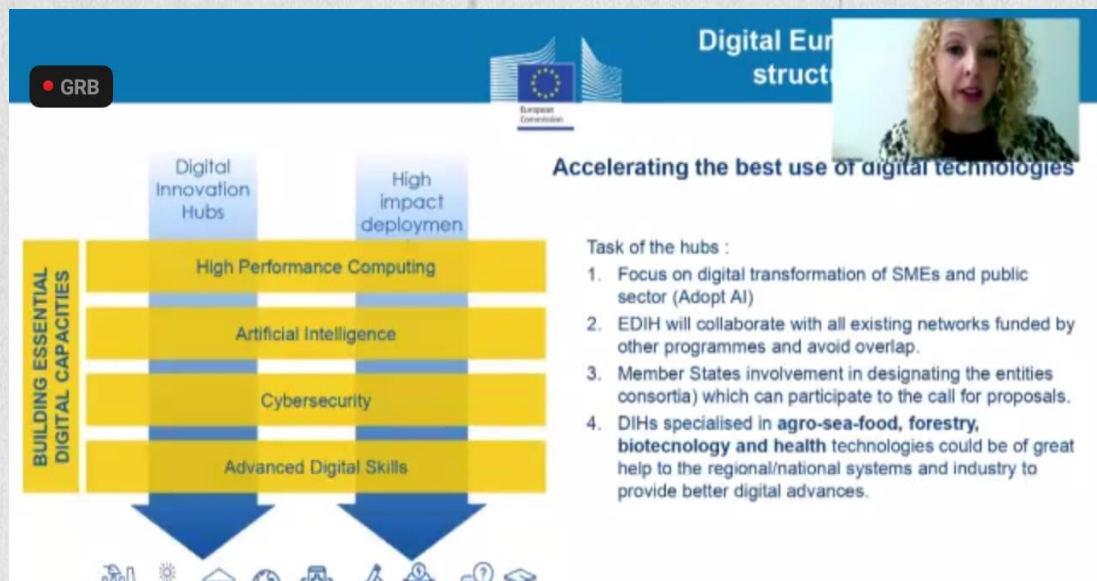
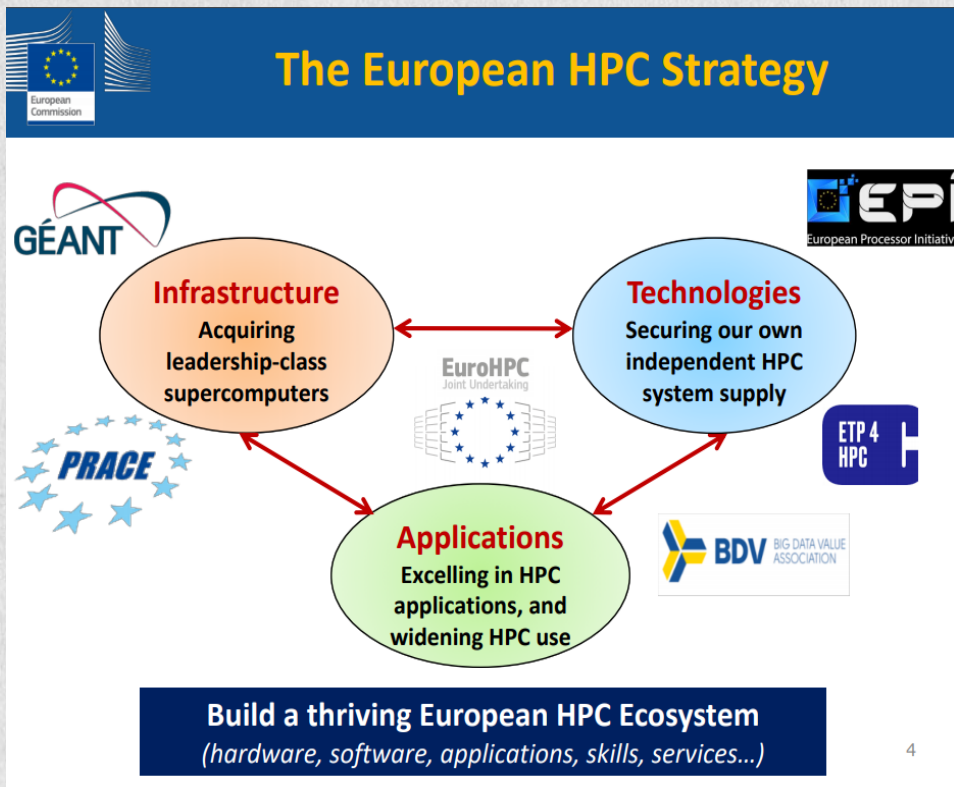
Operación financiada pola Unión Europea, a través do FONDO EUROPEO DE DESENVOLVEMENTO REXIONAL (FEDER), como parte da resposta da Unión á pandemia da COVID-19.

PROGRAMA OPERATIVO
FEDER GALICIA
2014-2020

Unha maneira de facer Europa

European context

DIGITAL EUROPE PROGRAMME

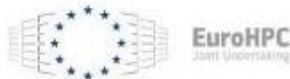


European context

#EuroHPC Joint Undertaking

The European High Performance Computing Joint Undertaking (EuroHPC JU) will pool European resources to develop top-of-the range exascale supercomputers for processing big data, based on competitive European technology.

Member countries are Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and Turkey.



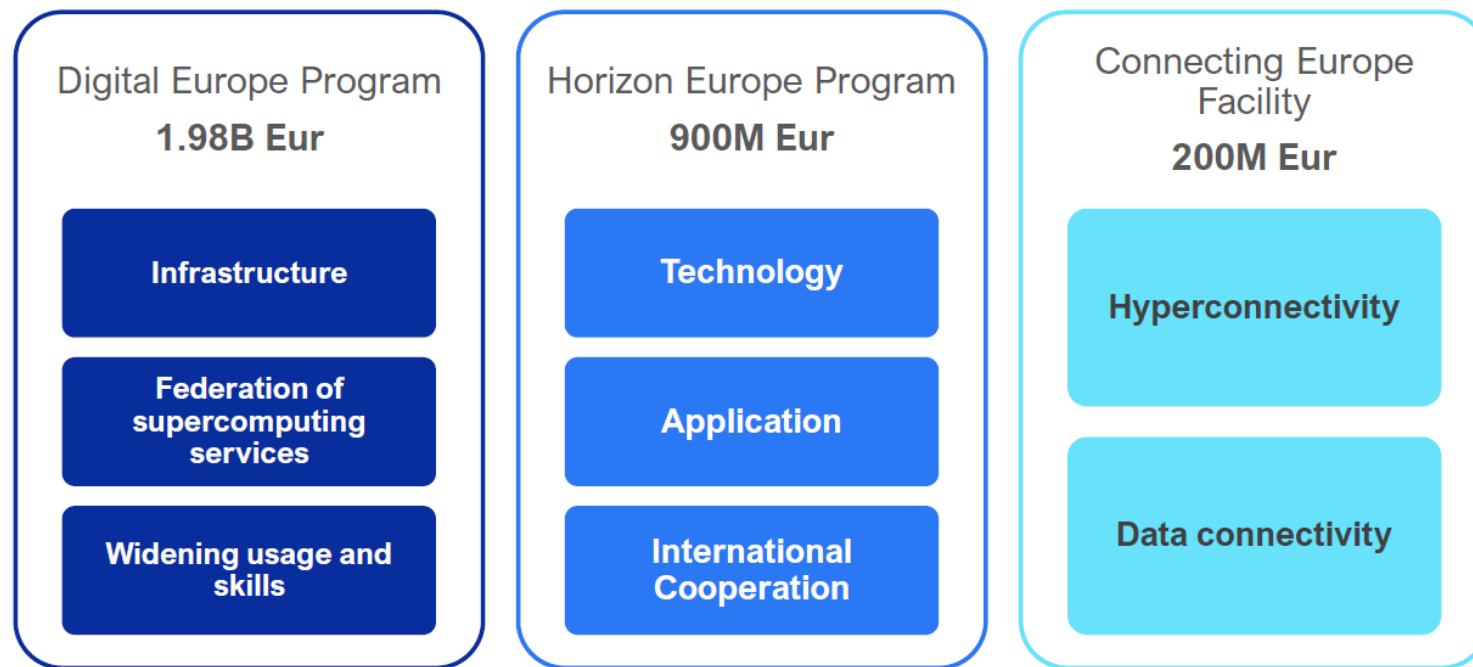
The EuroHPC JU allows the European Union and the EuroHPC JU participating countries to coordinate their efforts and pool their resources to make Europe a world **leader in supercomputing**.

This boosts Europe's scientific excellence and industrial strength, support the digital transformation of its economy while ensuring its technological sovereignty.

The EuroHPC JU was created in **2018**.

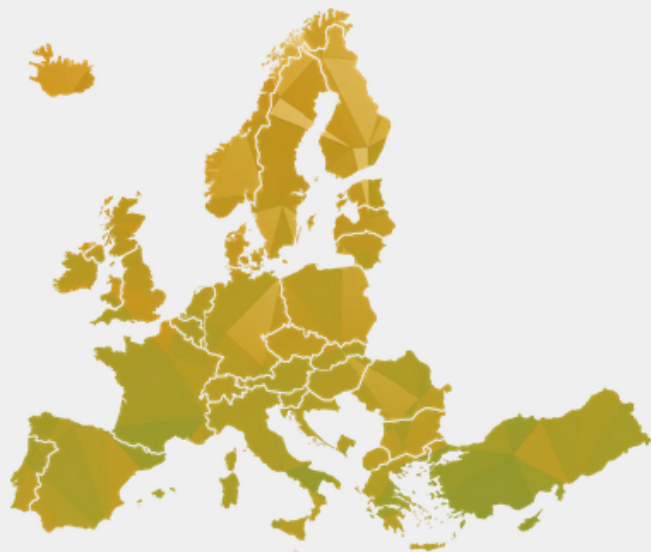
European context

LEVEL AND SOURCES OF EU FUNDING 2021-2027



*Member states to match this with national contributions

EuroCC – National Competence Centres



The National Competence Centres (NCCs) are the **central points of contact** for HPC and related technologies in their country.

Their missions are to:

- Develop and display a comprehensive and transparent map of **HPC competences and institutions** in their country
- Act as a **gateway for industry and academia** to providers with suitable expertise or relevant projects, may that be national or international
- Collect **HPC training offers** in their country and display them in a central place together with international training offers collected by other NCCs
- Foster the **industrial uptake of HPC**

2025



NCC Spain











Our focus



Academia

For the advancement of strategic research



Industry

For the development of innovative solutions, cost reduction and process optimization



Public Administration

For better data management, analysis and visualization

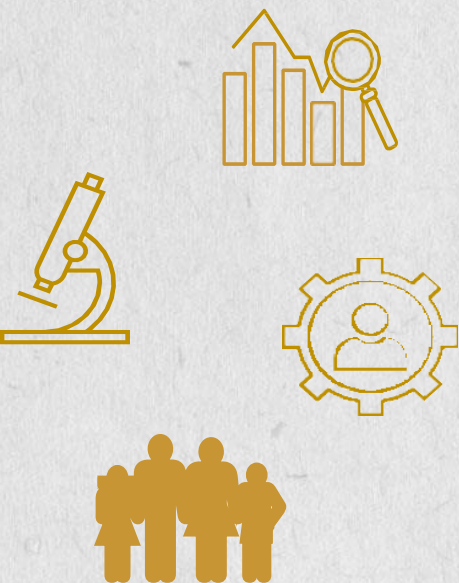


General population

For awareness and future (much needed) careers



RNCA
REDE NACIONAL DE COMPUTAÇÃO AVANÇADA



EuroCC
SPAIN RES



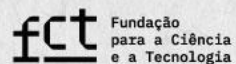
RED ESPAÑOLA DE
SUPERCOMPUTACIÓN



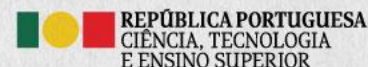
DIHGIGAL



ChEESA



UNIVERSIDADE
DE TRÁS-OS-MONTES
E ALTO DOURO



Some past and current activities:

Training and skills development

Competences and services

Awareness creation and communication



Training mapping Training materials Course 'Introduction to supercomputing'

Objetivos

- Adquirir conocimientos sobre el mundo de los supercomputadores.
- Lograr competencias básicas para la utilización eficiente y sencilla de grandes supercomputadores.
- Obtener información sobre los recursos de supercomputación accesibles para las empresas, tanto a nivel nacional como internacional.

Contenido

- ¿Qué es la supercomputación?
- Los computadores paralelos
- Arquitectura de un cluster
- Acceso a supercomputadores
- Utilización de un cluster

Metodología

Actividad	Duración	Impartición
Videotutorial	1 hora	Asíncrona
Hands-on	2 horas	Síncrona
Proyecto	4 horas	Asíncrona

Knowledge database



The screenshot shows the 'Directorio de Información de Computación' website. The page title is 'Directorio de información de computación' and it includes a search bar and a list of categories. The main content area lists various topics related to high-performance computing and supercomputing.

Directorio de información de computación


Bienvenido al directorio de información de computación del centro de competencia español, EuroCC Spain. En este directorio, encontrarás una breve introducción a términos y temas asociados a computación de alto rendimiento o High Performance Computing (HPC), análisis de datos e inteligencia artificial. A su vez, se asocian enlaces y videos que profundizan en los términos. El directorio esta disponible en formato pdf, html y epub.

El directorio se ha elaborado para usuarios tanto principiante como experto en estos temas. Para un conocimiento más profundo, puede escribirnos a eurocc at res.es.

Contenidos

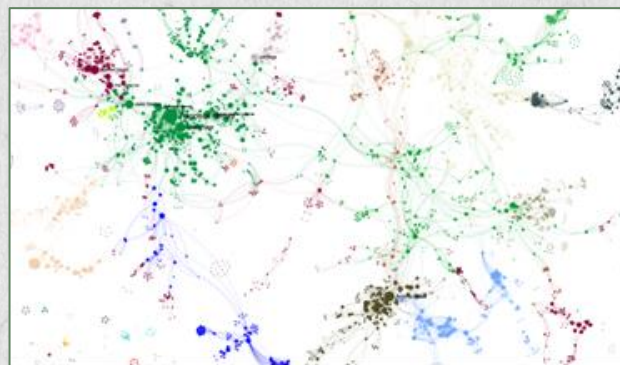
- Computación de alto rendimiento o High-Performance Computing (HPC)
 - Gestor de colas/trabajos
 - Programación paralela
 - Paradigmas de programación
 - Compiladores
 - Buenas prácticas
 - Control de versiones
- Software
- Análisis de datos
 - Big Data
- Inteligencia artificial
- Visualización
- Acceso a superordenadores en España
 - Centros españoles
 - Convocatorias en España

Competences and services

SERVICE CATALOGUE 

<p>HARDWARE</p> <p>Computational platform</p> <ul style="list-style-type: none"> • HPC • HTC/Cloud • Big Data • GPU • Visualization <p>Massive storage</p> <ul style="list-style-type: none"> • High performance • High capacity disk • Tape 	<p>SOFTWARE</p> <p>Applications</p> <ul style="list-style-type: none"> • In-house • Commercial • Open <p>App access <small>[see catalogue]</small></p> <p>App Installation</p>	<p>TECHNICAL SUPPORT</p> <p>Basic</p> <p>Advanced</p> <ul style="list-style-type: none"> • Algorithm, program and architecture development • Code porting and program optimization • User software development 	<p>CONSULTANCY</p> <p>Consultancy HPC/HPDA/AI/BD</p> <p>Basic / Advanced</p> <ul style="list-style-type: none"> • Search and selection of algorithms, programs and architectures • Analysis and design of user-friendly and productive work environments • Design and development of R&D projects • Initial consultancy on business development <p>Training</p> <ul style="list-style-type: none"> • general / technical • on-site / online • standard / tailored
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Expert mapping



EuroCC Spain TESTBED

Acceso gratuito a recursos de computación de altas prestaciones y asesoramiento personalizado

<p>¿PARA QUIÉN?</p> <p>Empresas y administraciones españolas, y entidades dependientes</p>	<p>¿PARA QUÉ?</p> <p>Actividades de I+D+i, tales como pruebas de concepto, ensayos de escalabilidad, evaluación de aplicaciones informáticas, o proyectos piloto, entre otras</p>
<p>¿QUÉ OFRECEMOS?</p> <p>Hasta 50K horas de cómputo y 40 horas de atención personalizada</p>	<p>¿CUÁNDO Y CÓMO?</p> <p>Recepción de solicitudes ininterrumpida, enviando el formulario a eurocc-testbed@cesga.es</p>

Awareness creation and comm.



Dynamization sessions



Somos investigadoras

Events (CDTI, DIHs...)



Success stories

<p>02 septiembre 2021</p> <p>Diseño de nuevos fármacos mediante técnicas de simulación MD y docking en el campo de la química computacional</p>	<p>02 septiembre 2021</p> <p>Optimización de extracción de humos mediante simulación</p>	<p>02 septiembre 2021</p> <p>Visualización remota de modelos mediante VNC</p>
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Social media, videos

Our numbers



54 Training activities

172 Entities surveyed about competences in HPC

190 Interactions with industry (SMEs and big industry)

9 EuroCC Spain testbed

Contact



<https://eurocc-spain.res.es/>



eurocc@res.es



[EuroCC SpainRES](#)



[@EuroCC SpainRES](#)

Thanks!



Co-funded by
the European Union



EuroHPC
Joint Undertaking

Funded by the European Union This work has received funding from the European High Performance Computing Joint Undertaking and Germany, Bulgaria, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, France, Netherlands, Belgium, Luxembourg, Slovakia, Norway, Türkiye Republic of North Macedonia, Iceland, Montenegro, Serbia under grant agreement No 101101903