BSC also provides access to its supercomputing infrastructures for European researchers from a wide range of disciplines.

In addition, the centre supports and trains the scientific community in the use of supercomputing technologies.

Making new waves in the HPC (r)evolution

Barcelona Supercomputing Center

BSC is the leader in supercomputing in Spain and a reference in this field internationally.

BSC’s multidisciplinary team, formed of more than 500 experts and professionals, perform excellent, internationally-competitive research in Computer Sciences, Life Sciences, Earth Sciences and Engineering.
MareNostrum Supercomputer

MareNostrum 4, hosted by Barcelona Supercomputing Center, is entirely aimed at research and innovation and its computer architecture has been called 'the most diverse and interesting in the world' by international experts.

Total performance: 13.7 petaflops

- General Purpose, for BSC workload: 11.15 petaflops
- 3,456 nodes
- 48 SKL cores 96/384 GB, 2.1GHz
- 32 flos per cycle/core

Three Emerging Technologies for evaluation of 2020 Exascale Systems

1: Power9 + Volta GPUs
   1.6 petaflops
2: ARM v8 64-bit
   0.5 petaflops
3: To be determined
   0.5 petaflops

14 PB of GPFS Elastic Storage System

OPA Full-Fat tree and Ethernet network

SUSE Operating System

Research at BSC

BSC performs state-of-the-art scientific research. It is organised into four departments, whose missions are as follows:

Computer sciences
Influencing the way machines are built, programmed and used: computer and system architecture, programming models and performance tools, resource management, Big Data and Artificial Intelligence

Life sciences
Understanding living organisms by means of theoretical and computational methods (molecular modeling, genomics, proteomics)

Earth sciences
Developing and implementing global and regional models and data solutions for air quality and climate forecasting

Engineering
Developing scientific and engineering software to efficiently exploit supercomputing capabilities

Big Data infrastructures
BSC has big data infrastructure with a total capacity of 24.6 Petabytes of storage for scientific data.

20 years innovating programming models
Holistic computer architecture research
Artificial Intelligence
Performance Analytics: from data to insight
HPC applications for science and engineering
Cutting edge computing for climate prediction
Addressing the challenges of personalised medicine