

Cineca: site update



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Cineca in a nutshell

Cineca is a no-profit consortium composed by 70 italian universities, research institutions and the ministry of research.

Cineca provides IT services and it is the largest italian supercomputing facility

Cineca headquarters are in Bologna (selected for the new ECMWF datacenter) and it has offices in Rome and Milan.



SCAI department at Cineca

Being the italian HPC reference and staying competitive in the world

2286
active users

12
in the top500 ranking

1140
projects supported

860M
core hours consumed

- Directly involved in:
 - 31 EU research projects
 - 40 research agreements with relevant national institutions
 - 12 applied research projects with industrial partners

SCAI mission

To support Italian researchers to face global scientific challenges

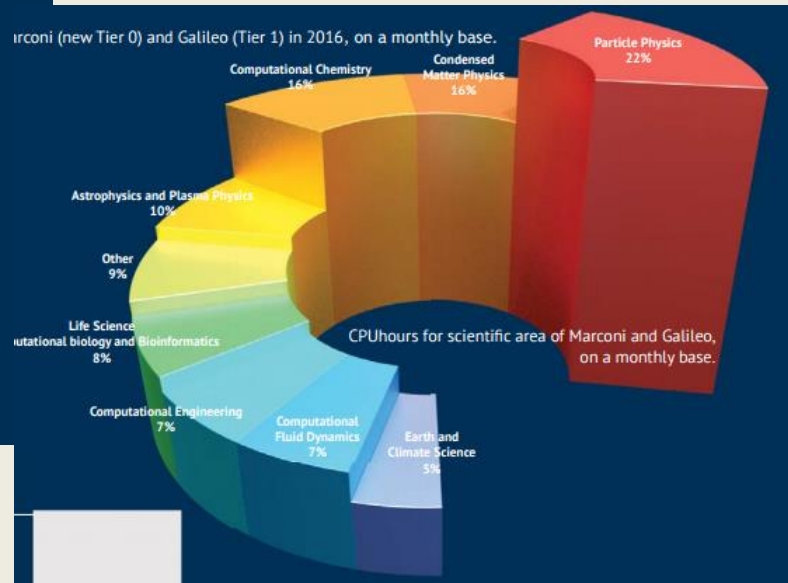
- Computational Chemistry
- Computational Fluid Dynamics
- Condensed Matter Physics
- Computational Engineering
- Astrophysics and Plasma Physics
- Earth and Climate Science
- Life Science

The backbone

- Cultural heritage
- Bioinformatics
- Industry4.0

Big data and Machine Learning

Marconi (new Tier 0) and Galileo (Tier 1) in 2016, on a monthly base.



The Cineca ecosystem

Cineca acts as a hub for innovation and research contributing to many scientific and R&D projects on Italian and European basis.

In particular, Cineca is a PRACE hosting member and a member of EUDAT.



MARCONI

Marconi is the new Tier-0 system that replaced the FERMI BG/Q.

Marconi is planned in two technological stages in a 5 years programme with the objective to reach a 50 Pflop/s system by the year 2019-2020.

Marconi is a Lenovo NextScale system equipped with Intel Xeon and Intel Xeon Phi processors with an Intel OmniPath network.

The first stage of MARCONI is made of 3 different partitions (A1, A2 and A3) whose installation started in 2016.

Marconi is part of the infrastructure provided by Cineca to the EUROFUSION project



MARCONI A1 : Intel Broadwell

- Started in april 2016 and opened to the production in july 2016
- 1512 compute nodes
- 2 sockets E-2697v4 (18 cores) @2.30 GHz
- 128GB RAM per node
- TPP: 2 PFlop/s



MARCONI A2: Intel KNL

- Opened to production at the end of 2016
- 3600 compute nodes
- Intel Xeon Phi 7250 (68 cores) @1.40 GHz
- 128GB RAM per node
- Default configuration: Cache/Quadrant
- TPP: 11 PFlop/s



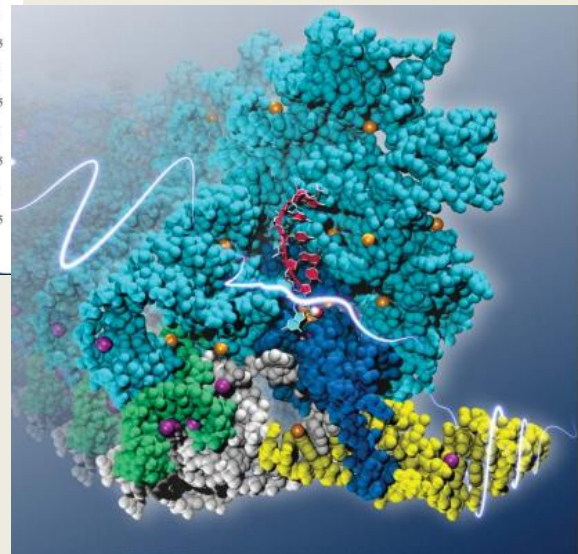
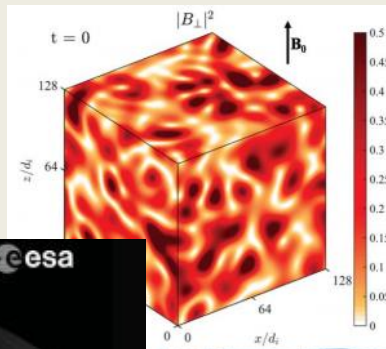
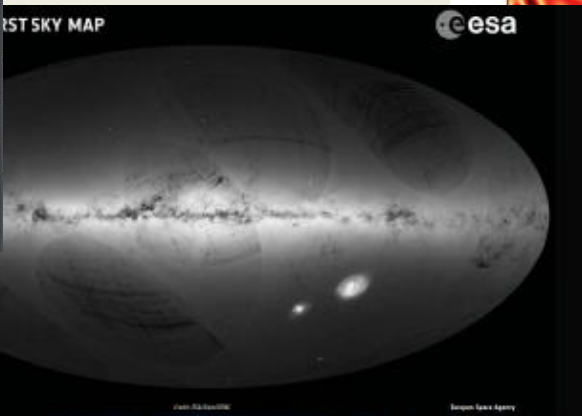
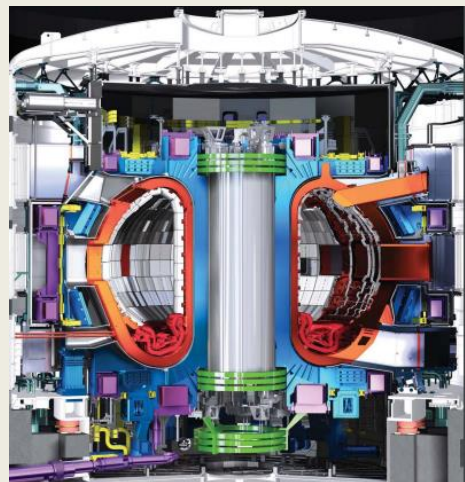
MARCONI's outlook

In 2017 MARCONI will evolve with the installation of the A3 partition and the final configuration will have:

- **3024 Intel Skylake nodes (approx. 120960 cores)**
- **3600 Intel Knights Landing (approx. 244800 cores)**
- **Peak performance: about 20 PFlop/s**
- **Internal network: Intel OPA**

In 2019 we expect the convergence of the HPDA infrastructure and the HPC infrastructure towards the target of 50 PFlop/s

Thanks for your attention



You can download the Cineca annual report 2016 from: <https://goo.gl/0zSwQ9>