THE CRESCO HPC ENVIRONMENT

ENEA DTE–ICT, Department for Computer Science Development and Information Technology

F. Ambrosino, G. Aprea, T. Bastianelli, R. Bertini, I. Bellagamba, G. Bracco, L. Bucci, F. Buonocore, M. Caporicci, M. Caiazzo, B. Calosso, M. Celino, M. Chinnici, A. Colavincenzo, A. Cucurullo, P. D'Angelo, D. De Chiara, M. De Rosa, D. Di Mattia, S. Ferriani, G. Ferro, C. Ferrelli, A. Funel, G. Furini, D. Giammattei, M. Galli, G. Giovanetti, S. Giusepponi, R. Guadagni, G. Guarnieri, M. Gusso, F. Iannone, M. Marano, A. Mariano, G. Mencuccini, S. Migliori, M. Mongelli, P. Ornelli, S. Pagnutti, F. Palombi, S. Pecoraro, A. Perozziello, S. Pierattini, S. Podda, G. Ponti, A. Quintiliani, G. Santomauro, A. Scalise, F. Simoni, D. Visparelli
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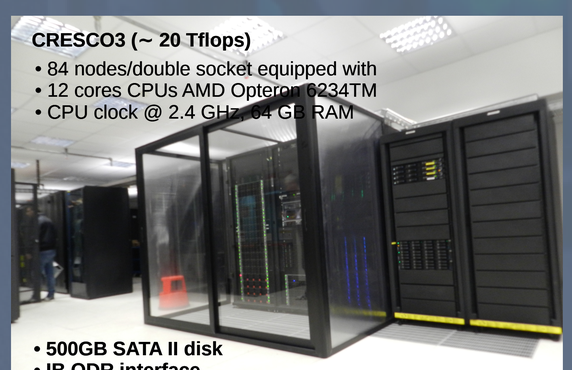
HPC Clusters

CRESCO (Computational RESearch facilities for COmplex systems) is the system of distributed HPC clusters supporting the ENEA scientific computing. CRESCO is integrated in the ENEAGRID infrastructure. It serves a national community of applied researchers working in collaboration with academic and industrial partners. For info, see

http://www.cresco.enea.it
http://www.eneagrid.enea.it

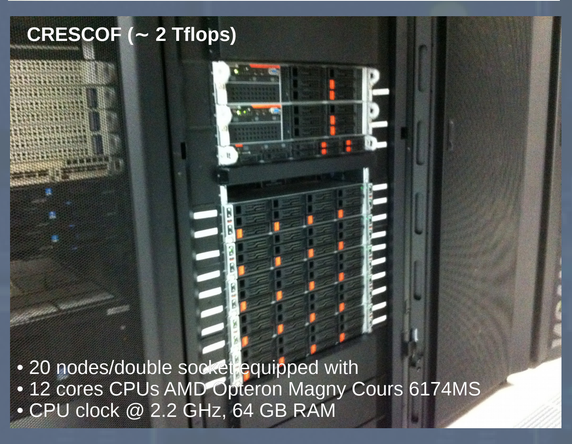
CRESCO3 (~ 20 Tflops)

- 84 nodes/double socket equipped with
- 12 cores CPUs AMD Opteron 6234TM
- CPU clock @ 2.4 GHz, 64 GB RAM



- **500GB SATA II disk**
- **IB QDR interface**
- **2 GEthernet interfaces**

CRESCOF (~ 2 Tflops)



- 20 nodes/double socket equipped with
- 12 cores CPUs AMD Opteron Magny Cours 6174MS
- CPU clock @ 2.2 GHz, 64 GB RAM

CRESCO4 (~ 100 Tflops)

- **304 nodes/double socket equipped with**
- **16 cores CPUs Intel E5-2670TM**
- **CPU clock @ 2.6 GHz, 64 GB RAM**

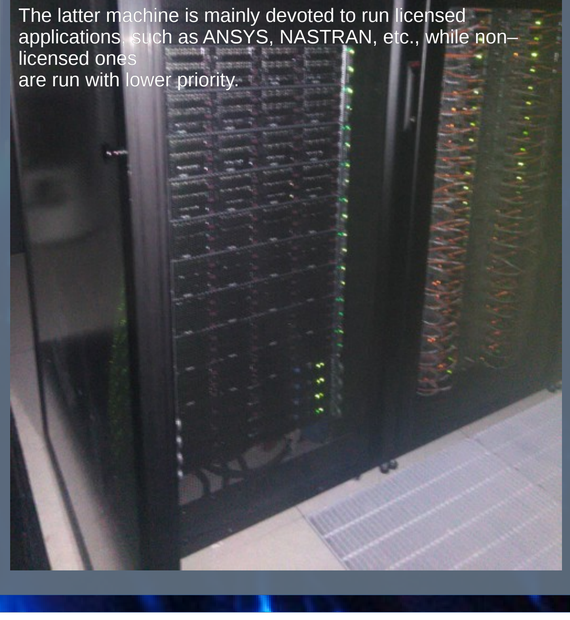
CRESCO4 Special Section (~ 17 Tflops)

- **5 nodes w/ large RAM**
  - **768 GB, 2 × 6 cores CPUs Intel E5-2643v2TM (Ivy Bridge)**
  - **CPU clock @ 3.5 GHz**
- **4 nodes Intel PHI & Nvidia K40M**
  - **64 GB, dual Intel E5-2680v2TM**
  - **5 PHI 5110P (60 cores,1TFlops) boards**
  - **3 Nnvidia K40M (1.43 TFlops) boards**

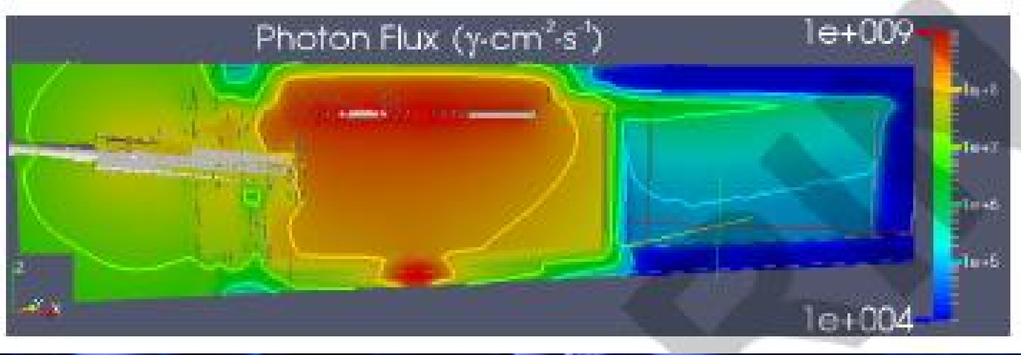
CRESCO5 (~ 25 Tflops)

- 40 nodes/double socket equipped with
- 16 cores CPUs Intel E5-2630v3TM
- CPU clock @ 2.4 GHz, 64 GB RAM

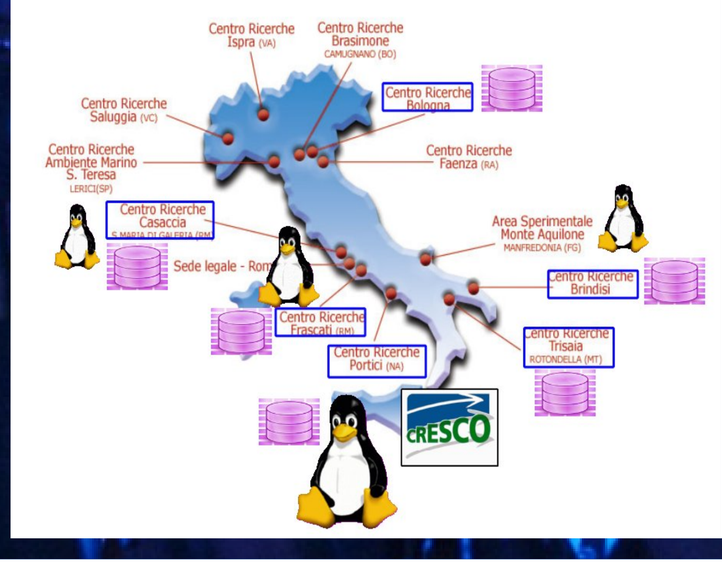
The latter machine is mainly devoted to run licensed applications, such as ANSYS, NASTRAN, etc., while non–licensed ones
are run with lower priority.

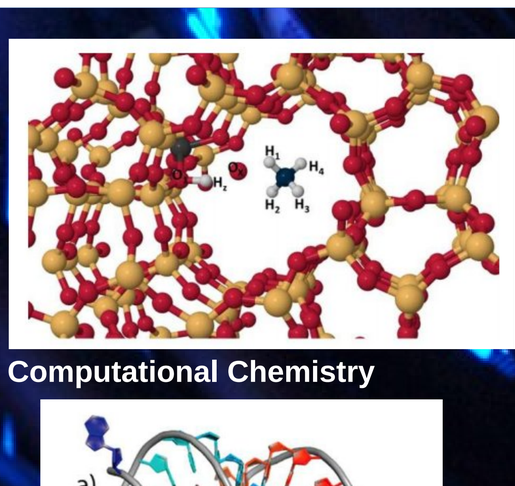


Main applications

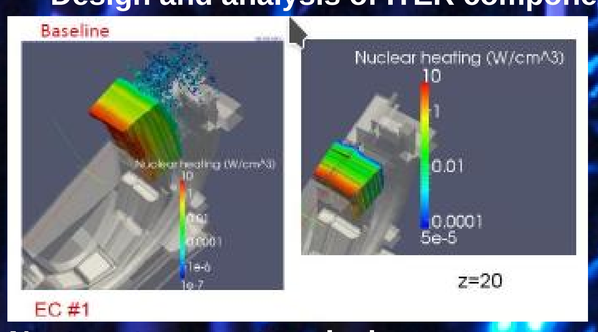


Design and analysis of ITER components

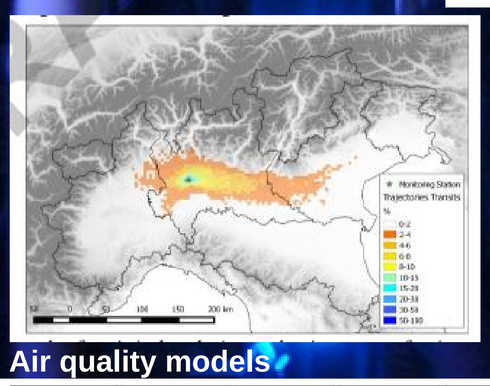




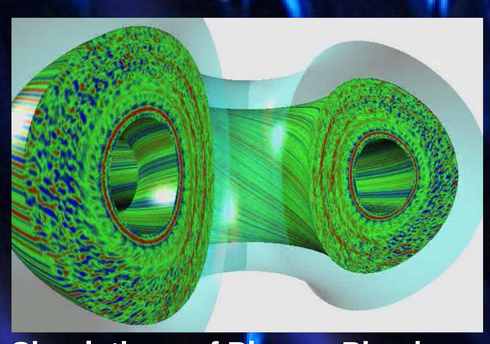
Computational Chemistry



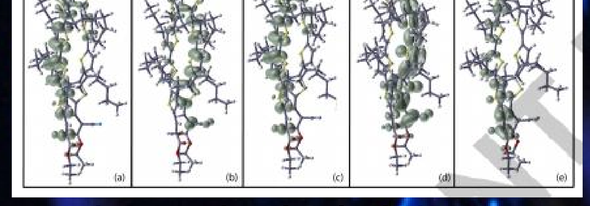
Neutron transport analysis



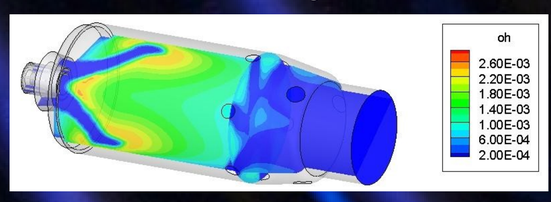
Air quality models



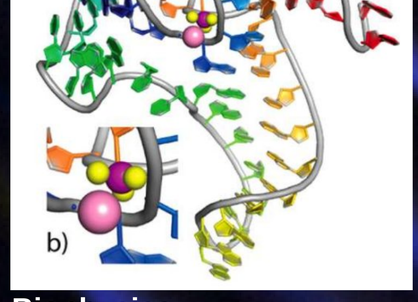
Simulations of Plasma Physics



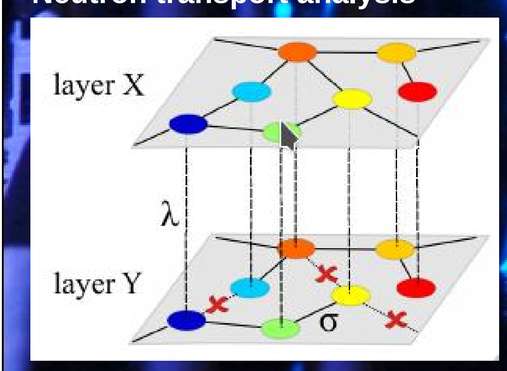
Density Functional Calculations



Computational Fluid Dynamics



Biophysics



Processes on Complex Networks

Projects & Collaborations

EUROfusion
CINECA Consorzio Interuniversitario
ETP 4 HPC — EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING
COBRA
EoCoE
eXtreme