

# White Papers and Best Practice Guides: Support for Efficiency



THE PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

The Partnership for Advanced Computing in Europe (PRACE) makes seven world-class high-performance computing systems available for researchers from member countries: “Curie” in France, “Marconi” in Italy, “Hazel Hen”, “JUQUEEN” and “SuperMUC” in Germany, “MareNostrum” in Spain and “Piz Daint” in Switzerland. The seven supercomputers differ in architecture and performance. This is a significant benefit to scientists conducting computer-aided research as the PRACE allocation process for computing time ensures researchers can work with the supercomputer that is best suited to solving their problem.



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## ▶ White Papers

To enable the European HPC community to make optimum use of the different architectures, PRACE offers a variety of training programmes and documentation. This includes a series of White Papers, available on the PRACE website and are on the “OpenAire” website under “zenodo”, the open repository for all research outputs. These White Papers cover more than 20 topics, including: **application scalability** in the fields of Quantum Molecular Dynamics (QMD), classical MD, Computational Fluid Dynamics, Earth Sciences, Astrophysics, Finite Elements, Fusion, Life Sciences, Particle Physics and Mathematics. To deal with code optimisation the section on **scalable algorithms** offers publications addressing different problems. Moreover, publications on **parallel programming interfaces, performance application, I/O problems, meshing** and **visualisation** can be also found.

In addition to the other topics, White Papers published as part of the SME HPC Adoption Programme in Europe (SHAPE) provide support for small- and medium-sized businesses. SHAPE provides these enterprises access to the PRACE supercomputer infrastructure, so they can overcome various engineering challenges in the production of latest technologies aided by computer simulations, for example in fluid dynamics and aerodynamics.

## ▶ Best Practice Guides

The Best Practice Guides on the PRACE website offers supercomputer users with useful information on the various computer architectures available in PRACE. This includes technical details and instructions on optimal use of the systems, such as optimal porting of applications (e.g.: choice of numerical libraries and compiler options), architecture-specific optimisation and petascaling techniques, optimal system environment. (e.g.: tuneable system parameters, job placement and optimised system libraries), debuggers, performance analysis tools and programming environments.

### White Papers

On the PRACE website

[www.prace-ri.eu/white-papers](http://www.prace-ri.eu/white-papers)

On OpenAire

[www.zenodo.org/communities/prace/?page=1&size=20](http://www.zenodo.org/communities/prace/?page=1&size=20)

### Best Practice Guides

[www.prace-ri.eu/best-practice-guides](http://www.prace-ri.eu/best-practice-guides)

### Specifications of the Computer Systems Available in PRACE

[www.prace-ri.eu/prace-resources](http://www.prace-ri.eu/prace-resources)

### Training Programmes and Documentation

[www.prace-ri.eu/training-and-documentation](http://www.prace-ri.eu/training-and-documentation)

### SHAPE

[www.prace-ri.eu/shape](http://www.prace-ri.eu/shape)



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