Preface

The natural mission of Computational Science is to tackle all sorts of human problems and to work out *intelligent* automata aimed at alleviating the burden of working out suitable tools for solving complex problems. For this reason Computational Science, though originating from the need to solve the most challenging problems in science and engineering (computational science is the key player in the fight to gain fundamental advances in astronomy, biology, chemistry, environmental science, physics and several other scientific and engineering disciplines) is increasingly turning its attention to all fields of human activity.

In all activities, in fact, intensive computation, information handling, knowledge synthesis, the use of ad-hoc devices, etc. increasingly need to be exploited and coordinated regardless of the location of both the users and the (various and heterogeneous) computing platforms. As a result the key to understanding the explosive growth of this discipline lies in two adjectives that more and more appropriately refer to Computational Science and its applications: interoperable and ubiquitous. Numerous examples of ubiquitous and interoperable tools and applications are given in the present four LNCS volumes containing the contributions delivered at the 2004 International Conference on Computational Science and its Applications (ICCSA 2004) held in Assisi, Italy, May 14–17, 2004.

To emphasize this particular connotation of modern Computational Science the conference was preceded by a tutorial on Grid Computing (May 13–14) concertedly organized with the COST D23 Action (METACHEM: Metalaboratories for Complex Computational Applications in Chemistry) of the European Coordination Initiative COST in Chemistry and the Project *Enabling Platforms for High-Performance Computational Grids Oriented to Scalable Virtual Organization* of the Ministry of Science and Education of Italy.

The volumes consist of 460 peer reviewed papers given as oral contributions at the conference. The conference included 8 presentations from keynote speakers, 15 workshops and 3 technical sessions. Thanks are due to most of the workshop organizers and the Program Committee members, who took care of the unexpected exceptional load of reviewing work (either carrying it out by themselves or distributing it to experts in the various fields).

Special thanks are due to Noelia Faginas Lago for handling all the necessary secretarial work. Thanks are also due to the young collaborators of the High Performance Computing and the Computational Dynamics and Kinetics research groups of the Department of Mathematics and Computer Science and of the Department of Chemistry of the University of Perugia. Thanks are, obviously,

due as well to the sponsors for supporting the conference with their financial and organizational help.

May 2004   Antonio Laganà
                                                          on behalf of the co-editors:
                                                               Marina L. Gavrilova
                                                                      Vipin Kumar
                                                                   Youngsong Mun
                                                                C.J. Kenneth Tan
                                                                 Osvaldo Gervasi

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