PROCEEDINGS OF
THE 2012 INTERNATIONAL CONFERENCE ON
GRID COMPUTING & APPLICATIONS

GCA'12

Editors

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WORLDCOMP'12
July 16-19, 2012
Las Vegas Nevada, USA
www.world-academy-of-science.org

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This volume contains papers presented at The 2012 International Conference on Grid Computing & Applications (GCA'12). Their inclusion in this publication does not necessarily constitute endorsements by editors or by the publisher.

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ISBN: 1-60132-215-1
Printed in the United States of America

CSREA Press
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Foreword

It gives us great pleasure to introduce this collection of papers to be presented at the 2012 International Conference on Grid Computing and Applications (GCA'12), July 16 through 19, 2012, at Monte Carlo Resort, Las Vegas, USA.

The Academic Co-Sponsors, Corporate Co-Sponsors, Co-Sponsors At-Large and Organizers of this year's conference include (separated by semicolons):
Bioinformatics & Computational Biology Program, George Mason University, Virginia, USA; Biomedical Cybernetics Laboratory, HST of Harvard University and MIT, USA; Minnesota Supercomputing Institute, University of Minnesota, USA; Center for Cyber Defense, NCAT, USA; Argonne's Leadership Computing Facility of Argonne National Laboratory, Illinois, USA; The Center for Advanced Studies in Identity Sciences (CASIS: NC A&T, Carnegie Mellon, Clemson, UNC Wilmington), USA; Knowledge Management & Intelligent System Center (KMIS) of University of Siegen, Germany; Intelligent Cyberspace Engineering Lab., ICEL, Texas A&M University, Commerce, Texas, USA;UMIT, Institute of Bioinformatics and Translational Research, Austria; Hawkeye Radiology Informatics, Department of Radiology, College of Medicine, University of Iowa, Iowa, USA;The International Council on Medical and Care Compunetics, Europe; US Chapter of World Academy of Science (http://www.world-academy-of-science.org/); Supercomputer Software Department (SSD), Institute of Computational Mathematics & Mathematical Geophysics, Russian Academy of Sciences, Russia; International Society of Intelligent Biological Medicine, USA; NDSU-CIIT Green Computing and Communications Laboratory, USA; Medical Image HPC & Informatics Lab (MiHi Lab), University of Iowa, Iowa, USA; High Performance Computing for Nanotechnology, USA; Manx Telecom, Europe; Computer Science Research, Education, and Applications Press; World Academy of Biomedical Sciences and Technologies; HoIP Telecom, Europe; Super Micro Computer, Inc., San Jose, California, USA; Intel Corporation; Hodges Health, UK; and OMG ™ . In addition, a number of university faculty members and their staff (names appear below and also on the cover of the proceedings), several publishers of computer science and computer engineering books and journals, chapters and/or task forces of computer science associations/organizations from 6 countries, and developers of high-performance machines and systems provided significant help in organizing the conference as well as providing some resources.

An important mission of WORLDCOMP (a federated congress to which this conference is affiliated with) includes "Providing a unique platform for a diverse community of constituents composed of scholars, researchers, developers, educators, and practitioners. The Congress makes concerted effort to reach out to participants affiliated with diverse entities (such as: universities, institutions, corporations, government agencies, and research centers/labs) from all over the world. The congress also attempts to connect participants from institutions that have **teaching** as their main mission with those who are affiliated with institutions that have **research** as their main mission. The congress uses a quota system to achieve its institution and geography diversity objectives."

The program committee would like to thank all those who submitted papers for consideration. About 75% of the submissions were from outside the United States. Each paper was peer-reviewed by two experts in the field for originality, significance, clarity, impact, and soundness. In cases of contradictory recommendations, a member of the conference program committee was charged to make the final decision; often, this involved seeking help from additional referees by using a double-blinded review process. In addition, papers whose authors included a member of the conference program committee were evaluated using the double-blinded review process. The only exception to the above evaluation process was for papers that were submitted directly to chairs/organizers of approved sessions/workshops; in these cases, the chairs/organizers were responsible for the evaluation of such submissions. The overall paper acceptance rate for regular papers was 26%; 32% of the remaining papers were accepted as poster papers (at the time of this writing, we had not yet received the acceptance rate for a few individual tracks.)

We are very grateful to the many colleagues who helped in organizing the conference. In particular, we would like to thank the members of the GCA'12 Program Committee who we hope will offer their help

again in organizing the next year's conference (GCA'13). The GCA'12 Program Committee members were:

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- *Prof. Jeff Zadeh, Collegiate Professor and Program Chair, University of Maryland, University College Europe, Germany; University of Maryland, USA*

We express our gratitude to keynote, invited, and individual conference/tracks and tutorial speakers - the list of speakers appears on the conference web site. We would also like to thank the followings: UCMSS (Universal Conference Management Systems & Support, California, USA) for managing all aspects of the conference; Dr. Tim Field of APC for managing the printing of the proceedings; and the staff of Monte Carlo Resort in Las Vegas for the professional service they provided. Last but not least, we would like to thank the Co-Editors of GCA'12: Prof. Hamid R. Arabnia, Prof. George A. Gravvanis, and Ashu M. G. Solo.

We present the proceedings of GCA'12.

Steering Committee, GCA 2012
http://www.world-academy-of-science.org/worldcomp12/ws

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