

# Preface

This volume contains the Proceedings of the international HPCN Europe 2001 event that was held in Amsterdam, The Netherlands, June 25 – 27, 2001. HPCN (High Performance Computing and Networking) Europe was organized for the first time in 1993 in Amsterdam as the result of several initiatives in Europe, the United States, and Japan. HPCN Europe events were then held in Munich (1994), Milan (1995), Brussels (1996), Vienna (1997), at Amsterdam RAI in 1998/9, and then at the University of Amsterdam, Watergraafsmeer, in 2000 and 2001.

HPCN 2001 is a conference and multi-workshop event. At the conference there will be 3 conference tracks presenting 56 selected papers in the following areas: Web/Grid Applications of HPCN, End User Applications of HPCN, Computational Science, Computer Science, as well as 2 poster sessions with 30 presentations.

Three renowned speakers will present the HPCN 2001 keynote lectures: Giovanni Aloisio (U. of Lecce, Italy), speaking on Grid applications in Earth Observing, Paul Messina (Caltech, California, USA), speaking on using terascale Grids in science, and Jose Moreira (IBM, New York, USA) on performance and prospects for Java.

Since research in HPCN is progressing rapidly, newly emerging domains of this field and their present and possible future applications are covered by five thematic workshops. Over 20 well-known experts from Europe and the United States participated in the organization of the workshops and have agreed to present invited lectures demonstrating the current trends in their fields of interest.

The workshop “Demonstrations of the Grid” featured a few significant speakers, and each presented a live demonstration of high-performance computing and networking, together with explanation. The associated workshop on “Scheduling Grid Resources” covered practical aspects of getting work done on these powerful resources. The workshop “Java in High Performance Computing” covered ways of using this developer-friendly language for high-performance computing. After the first full release of the human genome a few months before, the “Bioinformatics” workshop is especially apt, and we expect this segment of computing to take up more space in the next HPCN. The workshop on “Monte-Carlo Numerical Methods” was an informative exchange on developments in this burgeoning field.

The papers included in the Proceedings reflect the multidisciplinary character and broad spectrum of the field. We thank all contributors for their cooperation. Due to the high quality of almost 200 submitted contributions the selection of papers for oral and poster presentation was not simple. We are very grateful to the reviewers for their efforts in evaluating so many papers in a very short time.

The best conference papers will be published in a special issue of the journal, Future Generation Computer Systems.

The drawing up of an interesting program for the Conference would not be possible without invaluable suggestions and contributions of the members of the HPCN 2001 Program Committee. We highly appreciate the personal effort of the members of the local organizing committee and the conference secretariat. Special thanks to Berry van Halderen and Lodewijk Bos who prepared these proceedings. We would like to express our sincere thanks to Berry van Halderen for setting up the paper submission engine, and Anne Frenkel and Joost Bijlmer for creating the web pages.

The organizers acknowledge the help of the Dutch HPCN foundation, the Dutch Organization for Scientific Research, the University of Amsterdam, Hewlett-Packard Corporation, Cosinus Computing bv, and the council of the city of Amsterdam for supporting the event. Finally we thank all the attendees and contributors to the conference who made this conference and multi-workshop a high quality event!

May 2001

Bob Hertzberger  
Alfons Hoekstra  
Roy Williams

# Organization

## Event Chairman:

L.O. Hertzberger, University of Amsterdam, The Netherlands

## Scientific Organization:

Roy Williams, California Institute of Technology, U.S.A.  
Conference Chair

Alfons Hoekstra, University of Amsterdam, The Netherlands  
Conference Co-chair

## Program Committee

Alfons Hoekstra (Section Computational Science, University of Amsterdam, The Netherlands)

Hamideh Afsarmanesh (University of Amsterdam, The Netherlands)

Giovanni Aloisio (University of Lecce, Italy)

Anne Trefethen (NAG, U.K.)

Alexander Bogdanov (Institute for High Performance Computing and Databases, St. Petersburg, Russia)

Marian Bubak (Institute of Computer Science and ACC CYFRONET, AGH, Cracow, Poland)

Luis Camarinha-Matos (New University of Lisbon, Portugal)

Bastien Chopard (Department of Computer Science, University of Geneva, Switzerland)

Marco Danelutto (Department of Computer Science, University of Pisa, Italy)

Vincenzo DeFlorio (Kath. University Leuven, Belgium)

Denis Caromel (I.N.R.I.A. Sophia Antipolis, University of Nice, France)

Jack Dongarra (University of Tennessee, U.S.A.)

Iain Duff (Rutherford Appleton Laboratory DRAL, U.K.)

Alfred Geiger (University of Stuttgart, Germany)

Wolfgang Gentzsch (Sun Microsystems Inc., Germany)

George K. Thiruvathukal (Loyola University, Chicago, and Northwestern University, Evanston, IL, U.S.A.)

Vladimir Getov (University of Westminster, London, U.K.)

Luc Giraud (CERFACS, France)

Gregor von Laszewski (Argonne National Laboratory, France)

Ralph Gruber (Polytechnic Federal School of Lausanne, Switzerland)

Tony Hey (University of Southampton, U.K.)

Ladislav Hluchy (Institute of Informatics, Slovak Academy of Sciences, SK)

Marty Humphrey (University of Virginia, U.S.A.)  
Jean Louis Pazat (IRISA, France)  
Jose Moreira (IBM T. J. Watson Research Center, U.S.A.)  
Peter Kacsuk (KFKI-MSZKI Research Institute, Hungary)  
Heather Liddell (Queen Mary, University of London, U.K.)  
Bob Madahar (BAE SYSTEMS Advanced Technology Centres, U.K.)  
Tomas Margalef (Universitat Autònoma de Barcelona, Spain)  
Michael Philippsen (University of Karlsruhe, Germany)  
Jarek Nabrzyski (PSNC, Poland)  
Wolfgang Nagel (TU Dresden, Germany)  
Omer Rana (University of Cardiff, U.K.)  
Phil Hatcher (University of New Hampshire, U.K.)  
Jeff Reeve (University of Southampton, U.K.)  
Alexander Reinefeld (ZIB Berlin, Germany)  
Dirk Roose (K.U.Leuven, Belgium)  
Guiseppe Serazzi (Politecnico di Milano, Italy)  
Sia Zadeh (Sun Microsystems, U.S.A.)  
Peter Sloot (University of Amsterdam, The Netherlands)  
C.J.Kenneth Tan (The Queen's University of Belfast, U.K.)  
David Taniar (Monash University, Australia)  
Vladimir Getov (University of Westminster, London, U.K.)  
Henk van der Vorst (Universiteit Utrecht, The Netherlands)  
Roy Williams (California Institute of Technology, U.S.A.)

## Referees

Hamideh Afsarmanesh	Miroslav Dobrucky
Dick van Albada	Jack Dongarra
Giovanni Aloisio	Iain Duff
Shaun Arnold	Uwe Fladrich
Adam Belloum	Anne Frenkel
Ammar Benabdelkader	Cesar Garita
Alexander Bogdanov	Alfred Geiger
Holger Brunst	Wolfgang Gentzsch
Marian Bubak	Vladimir Getov
Massimo Cafaro	Nguyen T. Giang
Luis Camarinha-Matos	Luc Giraud
Denis Caromel	Ralph Gruber
Bastien Chopard	Phil Hatcher
Paolo Cremonesi	Tony Hey
Marco Danelutto	Ladislav Hluchy
Vincenzo De Florio	Alfons Hoekstra
Vijay Dialani	Fabrice Huet

Marty Humphrey  
 Astalos Jan  
 Peter Kacsuk  
 Ersin Kaletas  
 C.J. Kenneth Tan  
 Gregor von Laszewski  
 Heather Liddell  
 Bob Madahar  
 Danelutto Marco  
 Tomas Margalef  
 Jose Moreira  
 Lorenzo Muttoni  
 Jarek Nabrzyski  
 Wolfgang Nagel  
 Juri Papay  
 Jean Louis Pazat  
 Michael Philippsen  
 Andy Pimentel  
 Norbert Podhorszki  
 Omer Rana  
 Jeff Reeve  
 Alexander Reinefeld

Dirk Roose  
 Florian Schintke  
 Claudia Schmidt  
 Stephan Seidl  
 Miquel Angel Senar  
 Guiseppe Serazzi  
 Jens Simon  
 Peter Sloot  
 Geoffrey Stoker  
 David Taniar  
 George K. Thiruvathukal  
 Anne Trefethen  
 Julien Vayssiere  
 Tran D. Viet  
 Dialani Vijay  
 Henk van der Vorst  
 Roy Williams  
 Manuela Winkler  
 Sia Zadeh  
 Nemeth Zsolt

## Workshop Chairs:

Demonstrations of the GRID

Peter Kacsuk; Roy Williams

Java in High Performance Computing

Vladimir Getov; George K. Thiruvathukal

Monte Carlo Numerical Methods

C.J. Kenneth Tan; Vassil Alexandrov

Scheduling GRID Resources

Marian Bubak

BioInformatics

Harmen Bussenaker

**Local Organization:**

Lodewijk Bos, MC-Consultancy

Rutger Hamelynck and Marinella Vermaas, Conference Office, University  
of Amsterdam

Anne Frenkel, Berry van Halderen, Joost Bijlmer, Jacqueline van der  
Velde, University of Amsterdam