Preface

ADBIS 2001 continued the series of Eastern European Conferences on Advances in Databases and Information Systems. It took place in Vilnius, the capital of Lithuania.

The ADBIS series already has established some reputation as a scientific event of high quality serving as an internationally highly visible showcase for research achievements in the field of databases and information systems in the Eastern and Central European region as well as a forum for communication and exchange with and among researchers from this very area. The topics of the conference were related to the European Commission's initiative "eEurope – Information Society for All". They represent research areas that will greatly influence the functionality, usability, and acceptability of future information products and services. The conference sought to bring together all major players (experienced researchers, young researchers, representatives from industry), to discuss the state of the art and practical solutions, and to initiate promising future research. In order to ensure the active participation of representatives from industry the conference provided special industrial sessions.

The theme of ADBIS 2001 was set with invited talks given by renowned scientists covering important aspects of this wide field of research: Web access, processes and services in e-commerce, and content management.

The call for papers attracted 82 submissions from 30 countries. In a rigorous reviewing process the international program committee selected 25 papers for long presentation and inclusion in these proceedings. All these papers have been reviewed by at least three reviewers who evaluated their originality, significance, relevance, and presentation and found their quality suitable for international publication.

Topically, the accepted papers span a wide spectrum of the database and information systems field: from query optimization and transaction processing via design methods to application oriented topics like XML and data on the web.

Furthermore, the program featured two tutorials, presentations of short papers with challenging novel ideas at an early stage, experience reports, and industrial papers on the application of databases and information systems.

We would like to express our thanks and acknowledgement to all the people who contributed to ADBIS 2001:

- the authors, who submitted papers to the conference,
- the reviewers and the international program committee who made this conference possible by voluntarily giving of their time and expertise fto ensure the quality of the scientific program
- the sponsors of ADBIS 2001 who supported the organization of the conference and permitted the participation in particular of young scientists from Eastern countries
- all the good spirits and helpful hands of the local organization committee

– Mr. Günter Millahn (Brandenburg University of Technology at Cottbus) for maintaining the conference server
– the Springer-Verlag for publishing these proceedings and Mr. Alfred Hofmann for the effective support in producing these proceedings
– and last but not least we thank the steering committee and, in particular, its chairman, Leonid Kalinichenko, for their advice and guidance.

Finally, we hope that all who contributed to this event see this volume as a reward and as representation of scientific spirit and technical progress communicating exciting ideas and achievements.

June 2001   Albertas Caplinskas and Johann Eder

Conference Organization

The ADBIS 2001 Conference on Advances in Databases and Information Systems was organized by the Vilnius Gediminas Technical University, the Institute of Mathematics and Informatics, Vilnius, and the Lithuanian Computer Society in cooperation with the ACM Sigmod Moscow Chapter and the Lithuanian Law University.

General Chair

Edmundas Zavadskas (Vilnius Gediminas Technical University, Lithuania)

Program Committee Co-chairs

Albertas Caplinskas (Institute of Mathematics and Informatics, Lithuania)
Johann Eder (University of Klagenfurt, Austria)

Program Committee

Suad Alagic (Wichita State University, USA)
Leopoldo Bertosi (Pontificia Universidad Catoloca de Chile, Chile)
Juris Borzovs (Riga Information Technology Institute, Latvia)
Omran A. Bukhres (Purdue University, USA)
Wojciech Cellary (Poznan University of Economics, Poland)
Bohdan Czejdo (Loyola University, USA)
Hans-Dieter Ehrich (Braunschweig Technical University, Germany)
Heinz Frank (University of Klagenfurt, Austria)
Remigijus Gustas (University of Karlstad, Sweden)
Tomas Hruska (Brno Technical University, Slovakia)
Yoshiharu Ishikawa (University of Tsukuba, Japan)
Leonid Kalinichenko (Institute for Problems of Informatics,
    Russian Academy of Sciences, Russia)
Wolfgang Klas (Ulm University, Germany)
Matthias Klusch (German Research Center for Artificial Intelligence GmbH,
    Germany)
Mikhail R. Kogalovsky (Market Economy Institute,
    Russian Academy of Sciences, Russia)
Kalle Lyytinen (University of Jyvaskyla, Finland)
Yanis Manolopoulos (Aristotle University, Greece)
Michail Matskin (Norwegian University of Science and Technology, Norway)
Tomaz Mohoric (Lublijana University, Slovenia)
Tadeusz Morzy (Poznan University of Technology, Poland)
Pavol Navrat (Slovak University of Technology, Slovakia)

Nikolay N. Nikitchenko (Kiev University, Ukraine)
Boris Novikov (University of St.- Peterburg, Russia)
Maria Orlowska (The University of Queensland, Australia)
Euthimios Panagos (voicemate, Inc, USA)
Bronius Paradauskas (Kaunas University of Technology, Lithuania)
Oscar Pastor Lopez (Universidad Politecnica de Valencia, Spain)
Jaan Penjam (Tallinn Technical University, Estonia)
Günther Pernul (University of Essen, Germany)
Jaroslav Pokorny (Charles University, Czech Republic)
Henrikas Pranevichius (Kaunas University of Technology, Lithuania)
Colette Rolland (University of PARIS-1 Pantheon/Sorbonne, France)
Klaus-Dieter Schewe (Technical University Clausthal, Germany)
Timothy K. Shih (Tamkang University, Taiwan)
Julius Stuller (Institute of Computer Science, Academy of Sciences
    of the Czech Republic, Czech Republic)
Kazimierz Subieta (Polish Academy of Science, Poland)
Bernhard Thalheim (Cottbus Technical University, Germany)
Aphrodite Tsalgatidou (University of Athens, Greece)
Enn Tyugu (Royal Institute of Technology, Sweden)
Gottfried Vossen (University of Münster, Germany)
Benkt Wangler (Stockholm University, Sweden)
Tatjana Welzer Druzoviec (Maribor University, Slovenia)
Viacheslav Wolfengagen (Moscow Engineering Physics Institute, Russia)
Vladimir I. Zadorozhny (University of Maryland, USA)
Alexandr Vasil'evich Zamulin (Institute of Informatics Systems,
    Russian Academy of Sciences, Russia)

Additional Referees

Dmitry Briukhov
Marjan Druzovec
Gintautas Dzemyda
Dale Dzemydiene
Vicente Pelechano Ferragud
Chris A. Freyberg
Antonio Grau
Saulius Gudas
Joanna Jozefowska
Dimitrios Katsaros
Christian Koncilia
Antanas Lipeika
Audrone Lupeikiene
Olivera Marjanovic
Saulius Maskeliunas

Karl Neumann
Emilio Insfran
Pelozo Costas Petrou
Ralf Pinger
Torsten Priebe
Shazia Sadiq
George Samaras
Srinivasan T. Sikkupparbathyam
Cezary Sobaniec
Eva Söderström
Jerzy Stefanowski
Matias Strand
Eleni Tousidou
Costas Vassilakis
Robert Wrembel
Jian Yang

Organizing Committee

Chair

Olegas Vasilecas (Vilnius Gediminas Technical University, Lithuania)

Vice-Chairs

Algimantas Ciucelis (Vilnius Gediminas Technical University, Lithuania)
Alfredas Otas (Lithuanian Computer Society, Lithuania)
Rimantas Petrauskas (Lithuanian Law University, Lithuania)

Members

Petras Adomenas (Vilnius Gediminas Technical University, Lithuania)
Danute Burokiene (Institute of Mathematics and Informatics, Lithuania)
Dale Dzemydiene (Institute of Mathematics and Informatics, Lithuania)
Milda Garmute (Vilnius Gediminas Technical University, Lithuania)
Audrius Klevas (Vilnius Gediminas Technical University, Lithuania)
Kristina Lapin (Vilnius University, Lithuania)
Audrone Lupeikiene (Institute of Mathematics and Informatics, Lithuania)
Saulius Maskeliunas (Institute of Mathematics and Informatics, Lithuania)
Guenter Millahn (Brandenburg University of Technology at Cottbus, Germany)
Arunas Ribikauskas (Vilnius Gediminas Technical University, Lithuania)
Danute Vanseviciene (Institute of Mathematics and Informatics, Lithuania)
Aldona Zaldokiene (Institute of Mathematics and Informatics, Lithuania)

ADBIS Steering Committee

Chair

Leonid Kalinichenko (Russia)

Members

Andras Benczur (Hungary)   Rainer Manthey (Germany)
Radu Bercaru (Romania)   Tadeusz Morzy (Poland)
Albertas Caplinskas (Lithuania)   Pavol Navrat (Slovakia)
Johann Eder (Austria)   Boris Novikov (Russia)
Janis Eiduks (Latvia)   Jaroslav Pokorny (Czech Republic)
Hele-Mai Haav (Estonia)   Boris Rachev (Bulgaria)
Mirjana Ivanovic (Yugoslavia)   Anatoly Stogny (Ukraine)
Mikhail Kogalovsky (Russia)   Tatjana Welzer (Slovenia)
Yannis Manopoulos (Greece)   Viacheslav Wolfengagen (Russia)

Sponsoring Institutions

European Commission, Research DG, Human Potential Programme,
    High-level Scientific Conferences (subject to contract)
Lithuanian Science and Studies State Foundation
Microsoft Research Ltd.