Lecture Notes in Computer Science 2455

Edited by G. Goos, J. Hartmanis, and J. van Leeuwen

Springer
Berlin
Heidelberg
New York
Barcelona
Hong Kong
London
Milan
Paris
Tokyo

Kurt Bauknecht A Min Tjoa
Gerald Quirchmayr (Eds.)

E-Commerce and Web Technologies

Third International Conference, EC-Web 2002
Aix-en-Provence, France, September 2-6, 2002
Proceedings

Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Kurt Bauknecht,
IFI, University of Zurich
Winterthurer Straße 190, 8057 Zürich, Switzerland
E-mail: baukn@ifi.unizh.ch

A Min Tjoa
Institute of Software Technology and Interactive Systems
Vienna University of Technology, Favoritenstraße 9-11/188
1040 Vienna, Austria
E-mail: tjoa@ifs.tuwien.ac.at

Gerald Quirchmayr
Institute of Computer Science and Business Informatics
University of Vienna, Liebiggasse 4, 1010 Vienna, Austria
E-mail: Gerald.Quirchmayr@univie.ac.at

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

E-commerce and web technologies : third international conference ;
proceedings / EC Web 2002, Aix-en-Provence, France, September 2 - 6,
2002. Kurt Bauknecht ... (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ;
Hong Kong ; London ; Milan ; Paris ; Tokyo : Springer, 2002
(Lecture notes in computer science ; Vol. 2455)
ISBN 3-540-44137-9

CR Subject Classification (1998): C.2, K.4.4, H.4, H.3, K.6, J.1, J.4

ISSN 0302-9743
ISBN 3-540-44137-9 Springer-Verlag Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag Berlin Heidelberg New York
a member of BertelsmannSpringer Science+Business Media GmbH

http://www.springer.de

© Springer-Verlag Berlin Heidelberg 2002
Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin, Stefan Sossna e. K.
Printed on acid-free paper SPIN: 10871152 06/3142 5 4 3 2 1 0

Preface

The Third International Conference on E-commerce and Web Technology (EC-Web 2002) was held in conjunction with the DEXA 02 in Aix-en-Provence, France. This conference, first held in Greenwich, United Kingdom in 2000, is now in its third year and is very well established. As in the two previous years, it served as a forum bringing together researchers from academia and commercial developers from industry to discuss the current state of the art in E-commerce and web technology. Inspirations and new ideas emerged from intensive discussions during formal sessions and social events.

Keynote addresses, research presentations, and discussions during the conference helped to further develop the exchange of ideas among the researchers, developers, and practitioners who attended.

The conference attracted more than 100 submissions and each paper was reviewed by at least three program committee members. The program committee selected 40 papers for presentation and publication, a task which was not easy due to the high quality of the submitted papers.

We would like to express our thanks to our colleagues who helped to put together the technical program: the program committee members and external reviewers for their timely and rigorous reviews of the papers, and the organizing committee for their help in the administrative work and support. We owe special thanks to Gabriela Wagner and Maria Schweikert for always being available when their helping hand was needed.

Finally, we would like to thank all the authors who submitted papers, authors who presented papers, and the participants who together made this conference an intellectually stimulating event through their active contributions.

We had a successful conference and hope that you enjoyed the hospitality of Aix-en-Provence.

September 2002

A Min Tjoa (TU Wien, Austria)
Gerald Quirchmayr (Universität Wien, Austria
and University of South Australia)

Program Committee

General Chair
Kurt Bauknecht, University of Zurich, Switzerland

Program Chairs
Gerald Quirchmayr, University of South Australia
A Min Tjoa, Vienna University of Technology, Austria

Program Committee
Karl Aberer, EPFL Lausanne, Switzerland
Antonio Badia, University of Louisville, USA
Chaitan Baru, University of California San Diego, USA
Bharat Bhargava, Purdue University, USA
Anjali Bhargava, TRW, USA
Sourav Saha Bhowmick, Nanyang Technological University, Singapore
Martin Bichler, IBM T.J. Watson Research Center, USA
Walter Brenner, University of Essen, Germany
Stephane Bressan, National University of Singapore, Singapore
Wojciech Cellary, The Poznan University of Economics, Poland
Roger Clarke, The Australian National University, Australia
Asuman Dogac, Middle East Technical University, Turkey
Eduardo Fernandez, Florida Atlantic University, USA
Elena Ferrari, University of Milano, Italy
Farshad Fotouhi, Wayne State University, USA
Yongjian, Fu, University of Missouri-Rolla, USA
Chanan Glezer, Ben Gurion University, Beer Sheva, Israel
Rüdiger Grimm, Technical University Ilmenau, Germany
Kamalakar Karlapalem, HKUST, China
Hiroyuki Kitagawa, University of Tsukuba, Japan
Wolfgang Koenig, University of Frankfurt, Germany
Vijay Kumar, University of Missouri-Kansas City, USA
Karl Kurbel, Europe University Frankfurt (Oder), Germany
Winfried Lamersdorf, University of Hamburg, Germany
George Lausen, University of Freiburg, Germany
Alberto Leander, Federal University of Minas Gerais, Brazil
Juhnyoung Lee, IBM T. J. Watson Research Center, USA
Ronald M. Lee, Erasmus University, The Netherlands
Tan Kian Lee, National University of Singapore, Singapore
Qing Li, City University of Hong Kong, Chin
Ee Peng Lim, Nanyang Technological University, Singapore
Huan Liu, Arizona State University, USA
Heinrich C. Mayr, University of Klagenfurt, Austria
Michael Merz, Ponton GmbH, Germany

Bamshad Mobasher, DePaul University, USA
Mukesh Mohania, Western Michigan University, USA
Gustaf Neumann, Vienna University of Economics and BA, Austria
Wee-Keong Ng, Nanyang Technological University, Singapore
Rolf Oppliger, eSECURITY Technologies, Switzerland
Stefano Paraboschi, Politecnico di Milano, Italy
Osacar Pastor, Universidad Politecnica de Valencia, Spain
Evangelia Pitoura, University of Ionia, Greece
Gerald Quirchmayr, University of South Australia, Australia
Kai Rannenberg, Microsoft Research Cambridge, UK
P. Krishna Reddy, University of Tokyo, Japan
Alexander Roehm, University of Essen, Germany
Elke A. Rudensteiner, Worcester Polytechnic Institute, USA
Tomas Sabol, University of Technology Kosice, Slovakia
N. L. Sarda, Indian Institute of Technology, Bombay, India
Bernd Schneider, University of Muenster, Germany,
Peter Scheuermann, Northwestern University, USA
Stephanie Teufel, Université de Fribourg, Switzerland
Paul Timmers, European Commission DG XIII, Belgium
A Min Tjoa, Vienna University of Technology, Austria
Aphrodite Tsalgatidou, University of Athens, Greece
Krishnamurthy Vidyasankar, Memorial University of Newfoundland, Canada
Hans Weigand, Tilburg University, The Netherlands
Hannes Werthner, University of Trento, Italy
Andrew B. Whinston, University of Texas, USA
Vladimir Zwass, Fairleigh Dickinson University, USA

External Reviewers

Anya Sotiropoulou
George Lepouras
Thomi Pilioura
Torsten Priebe
Torsten Schlichting
Fredj Dridi
Holger Grabow
Markus Hütten
Natwar Modani
Biplav Srivastava
Manish Bhide
Fabien Petitcolas
Heiko Rossnagel
LIAU Chu Yee
Altigran Soares da Silva
Paulo Braz Golgher
Wagner Meira Junior
Edleno Silva de Moura
Radek Vigralek
L. Braubach
D. Fahrenholtz
A. Pokahr
C. Zirpins
Joan Fons
Silvia Abrahao
Yan Wang
Ruediger Zarnekow
Zoran Despotovic
Wojciech Wiza
Jarogniew Rykowski
Thomas Schlienger
Andreas Erat
Martin Steinert

Table of Contents

Invited Talk

Enabling Virtual Enterprises: A Case for Multi-disciplinary Research 1
I.T. Hawryszkiewycz; University of Technology, Sydney

Auction and Negotiation Technology

Increasing Realized Revenue in a Web Based Dutch Auction 7
Ravi Kothari, Mukesh Mohania, Yahiko Kambayashi; India, Japan

Strategies and Behaviours of Agents in Multi-phased Negotiations 17
Samir Aknine; France

A New Approach to the Design of Electronic Exchanges 27
S. Kameshwaran, Y. Narahari; India

Winner Determination Algorithms for Electronic Auctions: A Framework Design 37
Martin Bichler, Jayant Kalagnanam, Ho Soo Lee, Juhnyoung Lee; USA

Applications

A Web-Based E-commerce Facilitator Intermediary for Small and Medium Enterprises: A B2B/B2C Hybrid Proposal 47
F.J. García, A.B. Gil, N. Moreno, B. Curto; Spain

Extended Decision Making in Tourism Information Systems 57
Franz Pühretmair, Hildegard Rumetshofer, Erwin Schaumlechner; Austria

Identifying Arbitrage Opportunities in E-markets 67
John Debenham; Australia

Architecture

An Architecture for Building User-Driven Web Tasks via Web Services ... 77
Jin Lu, Lihui Chen; Singapore

Efficient XML Data Management: An Analysis 87
Ullas Nambiar, Zoé Lacroix, Stéphane Bressan, Mong Li Lee, Ying Guang Li; USA

Commercial Tools for the Development of Personalized Web Applications: A Survey 99
Andrea Maurino, Piero Fraternali; Italy

Agents

An Agent-Based Hierarchical Clustering Approach for E-commerce Environments 109
F. Buccafurri, D. Rosaci, G.M.L. Sarnè, D. Ursino; Italy

A Multi-agent Approach to SACReD Transactions for E-commerce Applications 119
M. Younas, N.H. Shah, K.-M. Chao; UK

A Parallel Dispatch Model with Secure and Robust Routes for Mobile Agents 129
Yan Wang, Kian-Lee Tan, Xiaolin Pang; Singapore

An Agent-Based Framework for Monitoring Service Contracts 139
Helmut Kneer, Henrik Stormer, Harald Häuschen, Burkhard Stiller; Switzerland

Web Query Processing

Constraint Search for Comparing Multiple-Incentive Merchandises 152
Masayuki Kozawa, Mizuho Iwaihara, Yahiko Kambayashi; Japan

XML Query Processing Using Signature and DTD 162
Sangwon Park, Yoonra Choi, Hyoung-Joo Kim; Korea

Modelling and Predicting Web Page Accesses Using Burrell's Model 172
Devanshu Dhyani, Sourav S. Bhowmick, Wee Keong Ng; Singapore

Invited Talk

Metamodelling Platforms 182
Dimitris Karagiannis, Harald Kühn; Austria

Web Data Integration

Homogeneous EDI between Heterogeneous Web-Based Tourism Information Systems 183
Wolfram Wöß, Anton Dunzendorfer; Austria

A Model for XML Schema Integration 193
Kalpdrum Passi, Louise Lane, Sanjay Madria, Bipin C. Sakamuri, Mukesh Mohania, Sourav Bhowmick; Canada, USA, India, Singapore

Security and Privacy I

XML-Based Distributed Access Control System 203
Javier López, Antonio Maña, Mariemma I. Yagüe; Spain

Transactional Security for a Distributed Reputation Management System 214
Dietrich Fahrenholtz, Winfried Lamersdorf; Germany

Practical Mobile Digital Signatures 224
Antonio Maña, Sonia Matamoros; Spain

Secure Client Agent Environment (SCAE) for World Wide Web 234
Richard Au, Ming Yao, Mark Looi, Paul Ashley; Australia, USA

Recommender Systems

User Preference Mining through Collaborative Filtering and Content Based Filtering in Recommender System 244
SuJeong Ko, JungHyun Lee; Korea

An Improved Recommendation Algorithm in Collaborative Filtering 254
Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, Sung-Bong Yang; Korea

Series of Dynamic Targeted Recommendations 262
Natwar Modani, Parul A. Mittal, Amit A. Nanavati, Biplav Srivastava; India

Emerging Standards

A Study of Content Conversion between eBook Standards 273
Seung-Kyu Ko, Won-Sung Sohn, Kyong-Ho Lee, Soon-Bum Lim, Yoon-Chul Choy; Korea, USA

Web-Based System Configuration and Performance Evaluation Using a Knowledge-Based Methodology 284
Mara Nikolaidou, Dimosthenis Anagnostopoulos; Greece

Mapping UML Web Navigation Stereotypes to XML Data Skeletons 294
Georg Sonneck, Renate Motschnig, Thomas Mueck; Austria

KAON – Towards a Large Scale Semantic Web 304
Erol Bozsak, Marc Ehrig, Siegfried Handschuh, Andreas Hotho, Alexander Maedche, Boris Motik, Daniel Oberle, Christoph Schmitz, Steffen Staab, Ljiljana Stojanovic, Nenad Stojanovic, Rudi Studer, Gerd Stumme, York Sure, Julien Tane, Raphael Volz, Valentin Zacharias; Germany

Security and Privacy II

Privacy Protection through Unlinkability of Customer Activities in Business Processes Using Mobile Agents 314
Matthias Enzmann, Thomas Kunz, Markus Schneider; Germany

Secure Electronic Copyright Distribution with Public Key Based Traitor Tracing 324
Hyung-Woo Lee, Sung-Min Lee, Im-Yeong Lee; Korea

Watermark Embedding Mechanism Using Modulus-Based for Intellectual Property Protection on Image Data 333
Shiuh-Jeng Wang, Kai-Sheng Yang; Taiwan

A Juridical Validation of a Contract Signing Protocol 343
Josep Lluís Ferrer-Gomila, Apol·lònia Martínez-Nadal, Magdalena Payeras-Capellà, Llorenç Huguet-Rotger; Spain

Business Models

Designing Business Processes in E-commerce Applications 353
Hans Albrecht Schmid, Gustavo Rossi; Germany, Argentinia

A Generic SLA Semantic Model for the Execution Management of E-business Outsourcing Contracts 363
Christopher Ward, Melissa J. Buco, Rong N. Chang, Laura Z. Luan; USA

E-payment

A Formal and Executable Specification of the Internet Open Trading Protocol 377
Chun Ouyang, Lars Michael Kristensen, Jonathan Billington; Australia

Using EMV Cards to Protect E-commerce Transactions 388
Vorapranee Khu-Smith, Chris J. Mitchell; UK

Standardized Payment Procedures as Key Enabling Factor for Mobile Commerce 400
Nina Kreyer, Key Pousttchi, Klaus Turowski; Germany

Position Paper

Some Thoughts on Research Perspectives in E-business 410
A Min Tjoa, Gerald Quirchmayr; Austria, Australia

Author Index 413