

Lecture Notes in Computer Science

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

2722

Springer

Berlin

Heidelberg

New York

Hong Kong

London

Milan

Paris

Tokyo

Juan Manuel Cueva Lovelle
Bernardo Martín González Rodríguez
Luis Joyanes Aguilar
Jose Emilio Labra Gayo
María del Puerto Paule Ruiz (Eds.)

Web Engineering

International Conference, ICWE 2003
Oviedo, Spain, July 14-18, 2003
Proceedings



Springer

Series Editors

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

Volume Editors

Juan Manuel Cueva Lovelle
Bernardo Martín González Rodríguez
Jose Emilio Labra Gayo
María del Puerto Paule Ruiz
University of Oviedo, Department of Computer Science
C/Calvo Sotelo S/N, 33007 Oviedo, Spain
E-mail: {cueva, martin, labra}@lsi.uniovi.es
paule@pinon.ccu.uniovi.es
Luis Joyanes Aguilar
Universidad Pontificia de Salamanca, Campus de Madrid
Departamento de Lenguajes, Sistemas Informáticos e Ingeniería del Software
Paseo Juan XXIII, 3, 28040 Madrid, Spain
E-mail: joyanes@retemail.es

Cataloging-in-Publication Data applied for

A catalog record for this book is available from the Library of Congress

Bibliographic information published by Die Deutsche Bibliothek
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliographie;
detailed bibliographic data is available in the Internet at <<http://dnb.ddb.de>>.

CR Subject Classification (1998): D.2, C.2, I.2.11, H.4, H.2, H.3, H.5, K.4, K.6

ISSN 0302-9743

ISBN 3-540-40522-4 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 2003
Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin GmbH
Printed on acid-free paper SPIN: 10928981 06/3142 5 4 3 2 1 0

Preface

In the last decade, we have seen tremendous successes in World Wide Web and Internet technologies. Traditional development techniques had to be adapted to this new situation, and at the same time new techniques emerged. Many research teams began to investigate different ways to adapt classic – but still effective – software engineering design and development techniques to the Web and Web engineering emerged as a new research field that relates several subject areas, including agents, e-commerce, e-learning, human-computer interaction, mobile technologies, security, quality and testing, the Semantic Web, etc.

The International Conference on Web Engineering (ICWE) continued the tradition of earlier conferences with the aim of bringing together researchers and practitioners in these areas, trying to offer a good environment where people with different backgrounds could exchange their insights in this area.

The success of this conference generated an incredible amount of work for the Program Committee members and the External Reviewers, lead by the Program Committee chairs Oscar Pastor López, Luis Olsina Santos and Martín González Rodríguez. We are immensely grateful for the effort they put into the process of selecting the very best papers. There were 190 papers submitted, with 25 papers accepted (13%) as long papers. A large number of papers describing ongoing research were included as short papers or posters. Unfortunately, we were forced to reject many good papers. Paper selection is always a difficult task.

We want to thank all the members of the Object-Oriented Technologies Laboratory of the University of Oviedo (<http://www.ootlab.uniovi.es>) for their daily support and encouragement for this enterprise. The School of Computer Science Engineering of Oviedo gave its full support to the conference and we want to take this opportunity to congratulate it on its 20th anniversary celebration. In fact, this conference was part of that celebration. We also want to acknowledge the Department of Software Engineering research group at the Pontifical University of Salamanca, Madrid Campus, for its support in the organization and other practical matters. Thanks also to the Department of Computer Science of the University of Oviedo. We are also very grateful to Steven Furnell and Dieter Fensel for agreeing to deliver keynote lectures at the conference.

May 2003

Juan Manuel Cueva L.
B. Martín González R.
Luis Joyanes A.
Jose Emilio Labra G.
María del Puerto Paule R.

Organization

Organizing Committee

Organizing Committee Chairs	Luis Joyanes A. (Pontifical Univ. of Salamanca, Madrid) Juan Manuel Cueva L. (Univ. of Oviedo)
Co-ordinator	B. Martín González Rodríguez (Univ. of Oviedo)
Management	Daniel Gayo A. (Univ. of Oviedo) Jose M. Redondo (Univ. of Oviedo) Jose M. Morales (Univ. of Oviedo) T.H. Sagastegui (Univ. of Oviedo) M.E. Alva (Univ. of Oviedo)
Sponsorship	M. de los Ángeles Díaz F. (Univ. of Oviedo) Alberto M. Fernández (Univ. of Oviedo) M. Cándida Luengo (Univ. of Oviedo) Agustín Cernuda (Univ. of Oviedo)
Networks and Communications	Benjamín López P. (Univ. of Oviedo) Néstor García F. (Univ. of Oviedo) Luis Vinuesa (Univ. of Oviedo) J. Arturo Pérez (Univ. of Oviedo)
Paper Submission	David Tuñón F. (Univ. of Oviedo)
Graphic Design	Marcos González G. (Univ. of Oviedo) Aitor de la Puente S. (Univ. of Oviedo)
Call for Papers	Juan Ramón Pérez P. (Univ. of Oviedo) Francisco Ortín S. (Univ. of Oviedo)
Publication	Jose E. Labra G. (Univ. of Oviedo) M. del Puerto Paule R. (Univ. of Oviedo) Oscar San Juan (Pontifical Univ. of Salamanca, Madrid) Javier Parra (Pontifical Univ. of Salamanca, Madrid) Juan Manuel Lombardo (Pontifical Univ. of Salamanca, Madrid) Salvador Sánchez A. (Pontifical Univ. of Salamanca, Madrid)
Finance	Darío Álvarez G. (Univ. of Oviedo) Aquilino A. Juan F. (Univ. of Oviedo) Lourdes Tajés M. (Univ. of Oviedo)
Logistics	Fernando Álvarez G. (Univ. of Oviedo) A. Belén Martínez P. (Univ. of Oviedo) M. del Carmen Suárez T. (Univ. of Oviedo) Raúl Izquierdo (Univ. of Oviedo) Almudena García (Univ. of Oviedo)

Keynote Speakers

Steven Furnell (Univ. of Plymouth, UK)

Dieter Fensel (Leopold Franzens Universität Innsbruck, Austria)

Program Committee

Program Committee Chairs

Oscar Pastor L. (Polytechnic Univ. of Valencia, Spain)

Luis Olsina S. (National Univ. of La Pampa, Argentina)

Martín González R. (Univ. of Oviedo, Spain)

Tutorials

Jose E. Labra G. (Univ. of Oviedo)

Mar Escribano (Pontifical Univ. of Salamanca, Madrid)

César F. Acebal (Univ. of Oviedo)

Program Committee

Gustavo Rossi (National Univ. of La Plata, Argentina)

Juan Manuel Cueva L. (Univ. of Oviedo, Spain)

Daniel Schwabe (PUC Rio, Brazil)

Luisa Mich (Trento Univ., Italy)

Ana Regina Cavalcanti da Rocha, (UFRJ, Brazil)

Symeon Retalis (Cyprus Univ., Cyprus)

Daniel German (Victoria Univ., Canada)

Manuel Pérez Cota (Univ. of Vigo, Spain)

João Falcão e Cunha (Porto Univ., Portugal)

San Murugesan (Southern Cross Univ., Australia)

Luis Joyanes Aguilar (Pontifical Univ. of Salamanca, Spain)

Julio Abascal (Univ. of the Basque Country, Spain)

Jaelson Castro (Federal Univ. of Pernambuco, Brazil)

Jürgen Hauser (Deutsche Telekom, Germany)

Fernando Sánchez (Extremadura Univ., Spain)

George Fernandez (RMIT Univ., Australia)

Yogesh Deshpande (Univ. of Western Sydney, Macarthur, Australia)

Mario Piattini (Castilla-La Mancha Univ., Spain)

Paul Dowland (Univ. of Plymouth, UK)

Martin Gaedke (Univ. of Karlsruhe, Germany)

Antonio Vallecillo (Univ. of Malaga, Spain)

Fernando Orejas (Polytechnic Univ. of Catalonia, Spain)

Miguel Katrib (Univ. of La Habana, Cuba)
 Ramon Puigjaner (Univ. of the Balearic Islands, Spain)
 Steven Furnell (Univ. of Plymouth, UK)
 Dieter Fensel (Leopold Franzens Universität Innsbruck, Austria)
 Jesús Lorés (Univ. of Lleida, Spain)
 Analía Amandi (National Univ. of Centro de la Pcia, Argentina)
 Enrico Motta (Knowledge Media Institute, The Open Univ., UK)
 Juan Manuel Corchado (Univ. of Salamanca, Spain)
 Frank van Harmelen (Vrije Universiteit Amsterdam, The Netherlands)
 Carole Goble (Univ. of Manchester, UK)
 Daniel Riesco (San Luis National Univ., Argentina)
 Gaston Mousques (ORT, Uruguay)
 Asunción Gómez Pérez (Polytechnic Univ. of Madrid, Spain)
 Bebo White (Stanford Linear Accelerator Center, USA)
 Franca Garzotto (Polytechnic Institute of Milan, Italy)
 Arno Scharl (Vienna Univ. of Economics and Business Administration, Austria)
 Marcelo Visconti (Technical Univ. Federico Santa María, Chile)
 Ricardo Orosco (UADE, Argentina)
 Kathia Marçal de Oliveira (Catholic Univ. of Brasilia, Brazil)
 Emilia Mendes (Univ. of Auckland, New Zealand)
 Riccardo Rizzo (Institute for Educational and Training Technologies of Palermo, Italy)
 Nora Koch (Ludwig-Maximilians-Universität München, Germany)
 José Carlos Ramalho (Univ. of Minho, Portugal)

Special Reviewers

Ana Pont (Polytechnic Univ. of Valencia, Spain)
 Jose A. Gil (Polytechnic Univ. of Valencia, Spain)
 Carlos Guerrero (Univ. of the Balearic Islands, Spain)
 Ivana Carla Miaton (Univ. of Trento, Italy)
 Sean Bechhofer (Univ. of Manchester, UK)
 Martin Džbor (Knowledge Media Institute, The Open Univ., UK)
 Dnyanesh Rajpathak (Knowledge Media Institute, The Open Univ., UK)
 Liliana Cabral (Knowledge Media Institute, The Open Univ., UK)
 Daniela Godoy (ISISTAN Research Institute, UNICE, Argentina)
 Silvia Schiaffino (ISISTAN Research Institute, UNICE, Argentina)
 Alejandro Zunino (ISISTAN Research Institute, UNICE, Argentina)
 Adolfo Lozano (Univ. of Extremadura, Spain)
 Roberto Rodríguez (Univ. of Extremadura, Spain)
 Julia González (Univ. of Extremadura, Spain)
 Emma Tonkin (Univ. of Karlsruhe, Germany)
 Nuno Nunes (Univ. of Porto, Portugal)
 José Magalhães Cruz (Univ. of Porto, Portugal)

Horst Treiblmaier (Vienna Univ. of Economics and Business Administration, Austria)

Myriam Arrue Rekondo (Univ. of the Basque Country, Spain)

David del Río Angulo (Univ. of the Basque Country, Spain)

Sergio Escribano de Paula (Univ. of the Basque Country, Spain)

Jorge Tomás Guerra (Univ. of the Basque Country, Spain)

Daniel Gayo Avello (Univ. of Oviedo, Spain)

María del Puerto Paule Ruíz (Univ. of Oviedo, Spain)

Juan Ramón Pérez Pérez (Univ. of Oviedo, Spain)

Darío Álvarez Gutierrez (Univ. of Oviedo, Spain)

María de los A. Martín (National Univ. of La Pampa, Argentina)

Federico Kovak (National Univ. of La Pampa, Argentina)

Carlos Maffrand (National Univ. of La Pampa, Argentina)

Guillermo Lafuente (National Univ. of La Pampa, Argentina)

Guillermo Covella (National Univ. of La Pampa, Argentina)

Table of Contents

Invited Papers

Semantic Web Services: A Communication Infrastructure for E-work and E-commerce	1
<i>Dieter Fensel</i>	
Cybercrime: Vandalizing the Information Society	8
<i>Steven Furnell</i>	

Agents on the Web

Agent-Based Web Engineering	17
<i>J.M. Corchado, R. Laza, L. Borrajo, J.C. Yañez A. de Luis, M. Gonzalez-Bedia</i>	
Assisting Database Users in a Web Environment	26
<i>Silvia Schiaffino, Analía Amandi</i>	
The PSI3 Agent Recommender System	30
<i>Jorge J. Gómez-Sanz, Juan Pavón, Aureo Díaz-Carrasco</i>	
Mob: A Scripting Language for Mobile Agents Based on a Process Calculus	40
<i>Hervé Paulino, Luís Lopes, Fernando Silva</i>	
Putting Together Web Services and Compositional Software Agents	44
<i>Mercedes Amor, Lidia Fuentes, José María Troya</i>	
Mobile Agents Markup Language	54
<i>Roberto Carlos Cascos Fernández, Jesús Arturo Pérez Díaz</i>	
Building Wrapper Agents for the Deep Web	58
<i>Vicente Luque Centeno, Luis Sánchez Fernández, Carlos Delgado Kloos, Peter T. Breuer, Fernando Paniagua Martín</i>	
Agent-Based Privilege Negotiation for E-commerce on World Wide Web ..	68
<i>Richard Au, Ming Yao, Mark Looi</i>	

E-commerce

An Automated Negotiation Model for M-commerce Using Mobile Agents	72
<i>Fernando Menezes Matos, Edmundo R.M. Madeira</i>	

A Fully Anonymous Electronic Payment Scheme for B2B	76
<i>Josep Lluís Ferrer-Gomila, Magdalena Payeras-Capellà, Llorenç Huguet-Rotger</i>	
An Efficient Anonymous Scheme for Secure Micropayments	80
<i>Magdalena Payeras-Capellà, Josep Lluís Ferrer-Gomila, Llorenç Huguet-Rotger</i>	
User Parameter Tunning for VoD Service Users	84
<i>A. Echavarren, C. Zubieta, J. Villadangos, M. Prieto</i>	

E-learning

IOWA: Intuitive-Use Oriented Webtool for the Creation of Adapted Contents (in an E-learning Environment)	86
<i>Sergio Ocio Barriales, María del Puerto Paule Ruiz, Martín González Rodríguez, Juan Ramón Pérez Pérez, David Tuñón Fernández</i>	
Reaching Agreements through Fuzzy Counter-Offers	90
<i>Javier Carbo, Jose M. Molina, Jorge Dávila</i>	
A Dynamic Replication Service for XML-Documents to E-commerce	94
<i>A. Córdoba, J.J. Astrain, J.E. Armendariz, J. Villadangos</i>	
Planning: An Intermediate Solution to the Problems in Design.....	98
<i>José Bravo, Manuel Ortega, Miguel A. Redondo, Crescencio Bravo</i>	
Organizing Problem Solving Activities for Synchronous Collaborative Learning of Design Domains	108
<i>Crescencio Bravo, Miguel A. Redondo, Manuel Ortega, José Bravo</i>	
Feijoo.net: An Approach to Personalized E-learning Using Learning Styles	112
<i>María del Puerto Paule Ruiz, Sergio Ocio Barriales, Juan Ramón Pérez Pérez, Martín González Rodríguez</i>	
A Collaborative E-learning Component for the IDEFIX Project.....	116
<i>T. Hernán Sagástegui Ch., José E. Labra G., Juan Manuel Cueva L., José M. Morales G., María E. Alva O., Eduardo Valdés, Cecilia García</i>	
Engineering a Future for Web-Based Learning Objects	120
<i>Permanand Mohan, Christopher Brooks</i>	
Adaptation and Generation in a Web-Based Tutor for Linear Programming	124
<i>E. Millán, E. García-Hervás, E. Guzmán, A. Rueda, J.L. Pérez-de-la-Cruz</i>	

A “Development Web Environment” for Learning Programming Languages	128
<i>Juan Ramón Pérez Pérez, María del Puerto Paule Ruiz, Martín González Rodríguez</i>	
Adaptive Collaborative Web-Based Courses	130
<i>Rosa M. Carro, Alvaro Ortigosa, Johann Schlichter</i>	
An Educational Component Based Framework for Web ITS Development	134
<i>Mónica Trella, Ricardo Conejo, Eduardo Guzmán, David Bueno</i>	
Adaptive Interaction Multi-agent Systems in E-learning/E-teaching on the Web	144
<i>Antonio Fernández-Caballero, Víctor López-Jaquero, Francisco Montero, Pascual González</i>	
Platform of Virtual Training for Work	154
<i>José N. Pérez, Edward P. Guillén, Nubia X. Sepúlveda, Carlos O. Ramos</i>	
An Object-Oriented Dialog System for Use in Computer-Aided Teaching	158
<i>Irene Luque Ruiz, Gonzalo Cerruela García, Miguel Ángel Gómez-Nieto</i>	
Adaptable Contents Visualization (VIC)	167
<i>Raúl Fernández González, M. del Puerto Paule Ruiz, Juan Ramón Pérez Pérez, Martín González Rodríguez, Marcos González Gallego</i>	

Human-Computer Interaction

XbotML: A Markup Language for Human Computer Interaction via Chatterbots	171
<i>André M.M. Neves, Flávia A. Barros</i>	
Modelling Interacting Web Usability Criteria through Fuzzy Measures . . .	182
<i>Miguel-Angel Sicilia, Elena García</i>	
A Concept-Based Approach for the Design of Web Usability Evaluation Questionnaires	186
<i>Elena García, Miguel-Angel Sicilia, León A. González, José R. Hilera</i>	
Adaptive Interactive Dialogs through the Web: Addressing User’s Interaction Requirements Dynamically	190
<i>Martín González Rodríguez, María del Puerto Paule Ruiz, Juan Ramón Pérez Pérez, Aitor de la Puente Salan, María del Carmen Suárez Torrente</i>	

Dialog Model Clustering for User Interface Adaptation	194
<i>Guido Menkhaus, Sebastian Fischmeister</i>	
AVE - Method for 3D Visualization of Search Results	204
<i>Wojciech Wiza, Krzysztof Walczak, Wojciech Cellary</i>	
Ubiquitous Access to Deep Content via Web Services	208
<i>Zsolt Tivadar Kardkovács, Gábor Mihály Surányi</i>	

Languages and Tools

NDT-Tool: A Case Tool to Deal with Requirements in Web Information Systems	212
<i>M.J. Escalona, J. Torres, M. Mejías, A. Reina</i>	
A Design Toolkit for Hypermedia Applications	214
<i>Susana Montero, Paloma Díaz, Ignacio Aedo</i>	
WebML+ for Communication of Information Flows: An Empirical Study	218
<i>David Lowe, Rachatrin Tongrungrrojana</i>	
Multiple Markups in XML Documents	222
<i>Luis Arévalo, Antonio Polo, Miryam Salas, Juan Carlos Manzano</i>	
BDOviedo3: Data XML Storage and Management	226
<i>Ana Belén Martínez, Darío Álvarez, Francisco Ortín, Juan Manuel Cueva L., M. Ángeles Díaz</i>	
Building Applications with Domain-Specific Markup Languages: A Systematic Approach to the Development of XML-Based Software	230
<i>José Luis Sierra, Alfredo Fernández-Valmayor, Baltasar Fernández-Manjón, Antonio Navarro</i>	
An XML-Based Approach for Fast Prototyping of Web Applications	241
<i>Antonio Navarro, Baltasar Fernández-Manjón, Alfredo Fernández-Valmayor, José Luis Sierra</i>	
X-SHAAD: An XML Implementation for Hypermedia Systems Modeling through SHAAD	245
<i>David Mérida, Ramón Fabregat, Carlos Arteaga, Anna Urra</i>	

Mobility and the Web

Semi-automatic Assessment Process in a Ubiquitous Environment for Language Learning	255
<i>M. Paredes, M. Ortega, P.P. Sánchez-Villalón, M.A. Redondo, C. Bravo, J. Bravo</i>	

Mobile EC Service Applications by Privacy Management	259
<i>Whe Dar Lin</i>	

User Interfaces: A Proposal for Automatic Adaptation	263
<i>Montserrat Sendín, Jesús Lorés, Francisco Montero,</i> <i>Víctor López-Jaquero, Pascual González</i>	

Multimedia Techniques and Telecommunications

Moving Vehicle Tracking for the Web Camera	267
<i>Seongah Chin, Moonwon Choo</i>	

Measuring End-to-End Quality of a News-on-Demand Web Service	271
<i>J.R. Arias, F.J. Suárez, D.F. García, J.I. Marín</i>	

Continuous Media Streams Service Based on the Adaptive Buffer Sharing Policy	275
<i>Yong Woon Park, Si Woong Jang</i>	

Security

New WAKE Key Recovery Protocol on M-commerce	279
<i>Yong-ho Lee, Im-yeong Lee, Hyung-woo Lee</i>	

An Improvement of VeriSign's Key Roaming Service Protocol	281
<i>Jeeyeon Kim, Hyunjo Kwon, Haeryong Park, Seungjoo Kim,</i> <i>Dongho Won</i>	

Host Revocation Authority: A Way of Protecting Mobile Agents from Malicious Hosts	289
<i>Oscar Esparza, Miguel Soriano, Jose L. Muñoz, Jordi Forné</i>	

Enabling Secure Multicast Using a New Java LKH Rekeying Tool	293
<i>Josep Pegueroles, Francisco Rico-Novella</i>	

A Taxonomy of Web Attacks	295
<i>Gonzalo Álvarez, Slobodan Petrović</i>	

A Pseudorandom Bit Generator Based on Block Upper Triangular Matrices	299
<i>Rafael Álvarez, Joan-Josep Climent, Leandro Tortosa,</i> <i>Antonio Zamora</i>	

Retrofitting Security into a Web-Based Information System	301
<i>David Bettencourt da Cruz, Bernhard Rumpe, Guido Wimmel</i>	

Web Quality and Testing

A Quantitative Analysis of eCRM Tools in the Austrian Pharmaceutical Industry	306
<i>Arno Scharl, Horst Treiblmaier</i>	
A Browser Compatibility Testing Method Based on Combinatorial Testing	310
<i>Lei Xu, Baowen Xu, Changhai Nie, Huowang Chen, Hongji Yang</i>	
Analyzing Errors and Referral Pairs to Characterize Common Problems and Improve Web Reliability	314
<i>Li Ma, Jeff Tian</i>	
Towards the Design of a Metrics Cataloging System by Exploiting Conceptual and Semantic Web Approaches	324
<i>L. Olsina, M.A. Martin, J. Fons, S. Abrahao, O. Pastor</i>	
Choosing the “Rightweight” Model for Web Site Quality Evaluation	334
<i>Luisa Mich, Mariangela Franch, Pierluigi Novi Inverardi, Pietro Marzani</i>	
WLGauge – A Web Link Gauge to Measure the Quality of External WWW Links	338
<i>Omar Garcia, Srivalli Vilapakkam Nagarajan, Peter Croll</i>	
Hyperlinks Analysis of Dynamic Web Applications	349
<i>Angle Hsieh, Downing Yeh</i>	
Why Not RSVP over DTM ?	353
<i>Cláudia J. Barenco Abbas, L. Javier García Villalba</i>	
Scalable QoS Approach in a Core Internet Network	364
<i>Cláudia J. Barenco Abbas, L. Javier García Villalba</i>	
Accessibility Metrics of Web Pages for Blind End-Users	374
<i>Julia González, Mercedes Macías, Roberto Rodríguez, Fernando Sánchez</i>	
A Three Dimensional Web Quality Model	384
<i>Julían Ruiz, Coral Calero, Mario Piattini</i>	
Comparison of Methods and Existing Tools for the Measurement of Usability in the Web	386
<i>Maria E. Alva O., Ana B. Martínez P., Juan Manuel Cueva L., T. Hernán Sagástegui Ch., Benjamín López P.</i>	

Semantic Web

Automatic Generation of Wrapper for Data Extraction from the Web	390
<i>Suzhi Zhang, Zhengding Lu</i>	
Semantic XML Filtering by Ontology Combination	395
<i>Kyeung Soo Lee, Dong Ik Oh, Yong Hae Kong</i>	
Genre and Domain Processing in an Information Retrieval Perspective . .	399
<i>Céline Poudat, Guillaume Cleuziou</i>	
An Architecture for Semantics-Based Interaction of Spontaneously Connecting Software	403
<i>Teemu Vaskivuo</i>	
Integration of Spatial XML Documents with RDF	407
<i>J.E. Córcoles, Pascual González, V. López Jaquero</i>	
Foundations of a New Proposal for Querying Relational Databases and XML Documents	411
<i>Ana Fermoso García, María José Gil Larrea, Luis Joyanes Aguilar, Jesús Luis Díaz Labrador</i>	
Selection of Ontologies for the Semantic Web	413
<i>Adolfo Lozano-Tello, Asunción Gómez-Pérez, Encarna Sosa</i>	
Modeling Applications for the Semantic Web	417
<i>Fernanda Lima, Daniel Schwabe</i>	
Automatic Derivation of DAML-S Service Specifications from UML Business Models	427
<i>Darío Franco, Víctor Anaya, Ángel Ortiz</i>	
Swarm Intelligent Surfing in the Web	431
<i>Jie Wu, Karl Aberer</i>	
The Cooperative Web: A Step towards Web Intelligence	441
<i>Daniel Gayo-Avello, Darío Álvarez-Gutiérrez, Agustín Cernuda-del-Río, José Gayo-Avello, Luis Vinuesa-Martínez, Néstor García-Fernández</i>	

Web Applications Development

Partitioning the Navigational Model: A Component-Driven Approach . . .	445
<i>Stephen Kerr, Daniel M. German</i>	
A Component-Oriented Framework for the Implementation of Navigational Design Patterns	449
<i>Mohammed Abul Khayes Akanda, Daniel M. German</i>	

An Internet-Based Collaborative Engineering System	451
<i>Hwagyo Park</i>	
Data Integration Based WWW with XML and CORBA	455
<i>Zhengding Lu, Suzhi Zhang</i>	
Experiences in Web Site Development with Multidisciplinary Teams. From XML to JST	459
<i>Raúl Izquierdo, Aquilino Juan, Benjamín López P., Ricardo Devis, Juan Manuel Cueva L., César F. Acebal</i>	
The NDT Development Process	463
<i>M.J. Escalona, M. Mejías, J. Torres, A. Reina</i>	
Essential Use Cases in the Design of Multi-channel Service Offerings - A Study of Internet Banking	468
<i>Lia Patrício, J. Falcão e Cunha, Raymond P. Fisk, Oscar Pastor</i>	
Modelling Dynamic Personalization in Web Applications	472
<i>Irene Garrigós, Jaime Gómez, Cristina Cachero</i>	
Towards Self-Describing Web Services	476
<i>Phillipa Oaks</i>	
User Profiling Capabilities in OOWS	486
<i>J. Fons, F.J. García, V. Pelechano, Oscar Pastor</i>	
Towards a Common Metamodel for the Development of Web Applications	497
<i>Nora Koch, Andreas Kraus</i>	
The Spanish Morphology in Internet	507
<i>Octavio Santana Suárez, José N. Pérez, Francisco Carreras, Zenón José Hernández Figueroa, Gustavo Rodríguez Rodríguez</i>	
Morphoanalysis of Spanish Texts: Two Applications for Web Pages	511
<i>Octavio Santana Suárez, Zenón José Hernández Figueroa, Gustavo Rodríguez Rodríguez</i>	
Agile Web Engineering (AWE) Process: Multidisciplinary Stakeholders and Team Communication	515
<i>Andrew McDonald, Ray Welland</i>	
Serverless Web-Multicast Chat System for Multi-users	519
<i>M.A. Ngadi, Bernard S. Doherty</i>	
The Multimedia Home Platform (MHP) Framework for Web Access through Digital TV	523
<i>Alberto Gil, José J. Pazos, Jorge García, Rebeca P. Díaz, Ana Fernández, Manuel Ramos</i>	

DEMOS Tools for Online Discussion and Decision Making	525
<i>Rolf Luehrs, Juan Pavón, Miguel Schneider</i>	
Hera: Development of Semantic Web Information Systems	529
<i>Geert-Jan Houben, Peter Barna, Flavius Frasincar, Richard Vdovjak</i>	
Development of an Application to Support WEB Navigation	539
<i>Oscar Sanjuán Martínez, Vanessa Cejudo Mejías, Javier Parra, Andrés Castillo, Luis Joyanes Aguilar</i>	
Critical Information Systems Authentication Based on PKC and Biometrics	543
<i>Carlos Costa, José Luís Oliveira, Augusto Silva</i>	
Electronic Patient Record Virtually Unique Based on a Crypto Smart Card	545
<i>Carlos Costa, José Luís Oliveira, Augusto Silva</i>	
Publish-Subscribe for Mobile Environments	547
<i>Mihail Ionescu, Ivan Marsic</i>	
Author Index	551