

Lecture Notes in Computer Science

2480

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

Springer

Berlin

Heidelberg

New York

Barcelona

Hong Kong

London

Milan

Paris

Tokyo

Yanbo Han Stefan Tai
Dietmar Wikarski (Eds.)

Engineering and Deployment of Cooperative Information Systems

First International Conference, EDCIS 2002
Beijing, China, September 17-20, 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

Yanbo Han
Institute of Computing Technique
P.O. Box 2704, 100080 Beijing, China
E-mail: yhan@ict.ac.cn

Stefan Tai
IBM T.J. Watson Research Center
P.O. Box 704, 10598 NY Yorktown Heights, USA
E-mail: stai@us.ibm.com

Dietmar Wikarski
FH Brandenburg, University of Applied Sciences
Magdeburger Str. 50, 14770 Brandenburg an der Havel, Germany
E-mail: wikarski@fh-brandenburg.de

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Engineering and deployment of cooperative information systems : first international conference ; proceedings / EDCIS 2002, Beijing, China, September 17 - 20, 2002. Yanbo Han ... (ed.). - Berlin ; Heidelberg ; New York ; Hong Kong ; London ; Milan ; Paris ; Tokyo : Springer, 2002
(Lecture notes in computer science ; Vol. 2480)
ISBN 3-540-44222-7

CR Subject Classification (1998): H.2, H.4, H.5, C.2.4, I.2, H.3, J.1

ISSN 0302-9743

ISBN 3-540-44222-7 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 Markus Richter, Heidelberg
Printed on acid-free paper SPIN: 10871411 06/3142 5 4 3 2 1 0

Preface

Today, technologies for engineering and deployment of cooperative information systems have become increasingly critical in the construction of practically all types of large-scale distributed systems. Stimulating forums with different focuses are thus still in need of researchers and professionals from academia and industry to exchange ideas and experience and to establish working relationships. The idea to organize in China an academic event focusing on current topics in the field was born during the IFIP World Computer Congress 2000 that was held in Beijing, China. And here are the proceedings of EDCIS 2002!

This volume comprises the technical research papers accepted for presentation at EDCIS 2002. Of the initial 159 paper submissions involving nearly 500 authors from 14 countries of all continents, 45 papers were carefully selected. Every paper was reviewed by at least three members of the program committee, and judged according to its technical merit and soundness, originality, significance, presentation quality, and relevance to the conference. The accepted papers cover various subjects such as workflow technology, coordination technology, advanced transactions, groupware systems, semantic web, ontologies, mobile agents, and enterprise modeling, and enterprise application integration.

Herein we would like to express our deepest appreciation to the authors of the submitted papers, to the members of the program committee, and to all the external reviewers for their hard and fine work in reviewing the submissions. We would also like to thank the following institutions for their sponsorship: China Computer Federation, EASST, IEEE, Institute of Computing of the Chinese Academy of Sciences, Fraunhofer Institute for Software and Systems Technologies, Brandenburg University of Applied Sciences, Tsinghua University, and IBM Research. Finally, we would like to thank the following individuals for their efforts towards making EDCIS 2002 a successful conference: Wolfgang Deiters, Jens-Helge Dahmen, Katharina Menzel, Edgardo Moreira, Donglai Li, and Jing Lu.

July 2002

Yanbo Han, Stefan Tai, and Dietmar Wikarski

General Co-chairs

R. Lu	Academy of Mathematics, China
H. Weber	Technical University Berlin, Germany
M. Shi	Tsinghua University, China

Executive Co-chairs (Program and Organization)

Y. Han	Institute of Computing Technology, China
S. Tai	IBM T.J. Watson Research Center, USA
D. Wikarski	University of Applied Sciences Brandenburg, Germany

Members of the Program Committee

W.M.P. van der Aalst	Eindhoven University of Technology, The Netherlands
Y. Bi	University of Scranton, USA
C. Cao	Institute of Computing Technology, China
X. Cheng	Institute of Computing Technology, China
T. Cheung	City University of Hong Kong, Hong Kong
P. Dadam	University of Ulm, Germany
W. Deiters	Fraunhofer Institute for Software and Systems Engineering (ISST), Germany
J. Eder	University of Klagenfurt, Austria
C. (Skip) Ellis	University of Colorado, USA
J. Fan	Institute of Computing Technology, China
Y. Fan	Tsinghua University, China
G. Faustmann	Berufsakademie Berlin, Germany
A. Fuggetta	Politecnico di Milano, Italy
P. Grefen	University of Twente, The Netherlands
J. Gu	East China Normal University, China
T. Herrmann	University of Dortmund, Germany
S. Jablonski	Friedrich-Alexander University of Erlangen-Nürnberg, Germany
A. Jacobsen	University of Toronto, Canada
M. Li	Institute of Software, China
J. Li	Institute of Computing Technology, China
F. Lindert	Fraunhofer Institute for Software and Systems Engineering (ISST), Germany

L. Liu	Beijing University of Aeronautics and Astronautics, China
F. Pacull	Xerox Research Centre Europe, France
R. Reichwald	Technical University of Munich, Germany
R. Reinema	Fraunhofer Institute for Secure Telecooperation (SIT), Germany
I. Rouvellou	IBM T. J. Watson Research Center, USA
K. Sandkuhl	Fraunhofer Institute for Software and Systems Engineering (ISST), Germany
G. Schwabe	University of Koblenz, Germany
A. Strohmeier	Swiss Federal Institute of Technology in Lausanne, Swit- zerland
Z. Tari	RMIT University, Australia
R. Unland	University of Essen, Germany
X. Ye	University of Inner Mongolia, China
G. Yu	Northest University of China, China

Additional Reviewers

J. Andreoli
S. Angelov
D. Arregui
B. Bachmendo
D. Buchs
C. Bussler
H. Chen
B. Chidlovskii
M. Diefenbruch
B. Dongbo
P. van Eck
R. Eshuis
Q. Feng
M. Fokkinga
Y. Gao
W. Gruber
V. Gruhn
F. Gu
S. Haseloff
D. Hiemstra
M. Hoffmann
J. Hu
D. Hurzeler
C. Ihl
D. N. Jansen
T. Kamphusmann
M. M. Kandé
M. van Keulen
A. Kienle
J. Kienzle
M. Lehmann
K. Loser
Q.Z. Lu
C. Meiler
T. A. Mikalsen
M. Reichert
B. Schloss
J. Si
K. Sikkell
C. M. Stotko
J. Tan
W. Tian

G. Vollmer
B. Wang
F.J. Wang
H. Wang
L. Wang
S. Weber
J. Willamowski
C. Zhang
J. Zhang
Z. Zhao
Y. Zheng
L. Zhou
X. Zhou
Q. Zeng

Table of Contents

Workflows I

A Data Warehouse for Workflow Logs.....	1
<i>J. Eder, G. Olivotto, W. Gruber</i>	
Workflow and Knowledge Management: Approaching an Integration.....	16
<i>J. Lai, Y. Fan</i>	
Linear Temporal Inference of Workflow Management Systems Based on Timed Petri Net Models.....	30
<i>Y. Qu, C. Lin, J. Wang</i>	

Workflows II

Discovering Workflow Performance Models from Timed Logs.....	45
<i>W.M.P. van der Aalst, B.F. van Dongen</i>	
Performance Equivalent Analysis of Workflow Systems Based on Stochastic Petri Net Models.....	64
<i>C. Lin, Y. Qu, F. Ren, D.C. Marinescu</i>	
An Agent Enhanced Framework to Support Pre-dispatching of Tasks in Workflow Management Systems.....	80
<i>J. Liu, S. Zhang, J. Cao, J. Hu</i>	

Ontologies

TEMPPLET: A New Method for Domain-Specific Ontology Design	90
<i>Y. Dong, M. Li</i>	
An Environment for Multi-domain Ontology Development and Knowledge Acquisition.....	104
<i>J. Si, C. Cao, H. Wang, F. Gu, Q. Feng, C. Zhang, Q. Zeng, W. Tian, Y. Zheng</i>	
Applying Information Retrieval Technology to Incremental Knowledge Management.....	117
<i>Z. Yang, Y. Liu, S. Li</i>	

Semantic Web

Visualizing a Dynamic Knowledge Map Using a Semantic Web Technology.	130
<i>H.-G. Kim, C. Fillies, B. Smith, D. Wikarski</i>	

Indexing and Retrieval of XML-Encoded Structured Documents in Dynamic Environment. 141
S. Kim, J. Lee, H. Lim

Knowledge Management: System Architectures, Main Functions, and Implementing Techniques..... 155
J. Ma, M. Hemmje

Enterprise Application Integration

A Dynamic Matching and Binding Mechanism for Business Service Integration..... 168
F.Wang, Z. Zhao, Y. Han

A Uniform Model for Authorization and Access Control in Enterprise Information Platform. 180
D. Li, S. Hu, S. Bai

Constraints-Preserving Mapping Algorithm from XML-Schema to Relational Schema. 193
H. Sun, S. Zhang, J. Zhou, J. Wang

Mobile Agents

Study on SOAP-Based Mobile Agent Techniques. 208
D. Wang, G. Yu, B. Song, D. Shen, G. Wang

Securing Agent Based Architectures. 220
M. Maxim, A. Venugopal

Service and Network Management Middleware for Cooperative Information Systems through Policies and Mobile Agents..... 232
K. Yang, A. Galis, T. Mota, X. Guo, C. Todd

Enterprise Modeling

Research on Enterprise Modeling of Agile Manufacturing 247
H. Xu, L. Zhang, B. Zhou

HCM – A Model Describing Cooperation of Virtual Enterprises. 257
Y. Zhang, M. Shi

A Description for Service Supporting Cooperations. 267
M. Wiedeler

Distributed Systems Analysis

Analysis of an Election Problem for CSCW in Asynchronous Distributed Systems.	280
<i>S.-H. Park</i>	
A Linear-Order Based Access Method for Efficient Network Computations.	289
<i>S.-H. Woo, S-B Yang</i>	
A Petri-Net Model for Session Services.	303
<i>J. Shen, Y. Yang, J. Luo</i>	

Software Engineering

Software Processes for Electronic Commerce Portal Systems.	315
<i>V.Gruhn, L. Schoepe</i>	
Architecture Support for System-of-Systems Evolution.....	332
<i>J. Han, P. Chen</i>	
Expressing Graphical User's Input for Test Specifications.	347
<i>J. Chen</i>	

Architectures

An Intelligent Decision Support System in Construction Management by Data Warehousing Technique.	360
<i>Y. Cao, K. Chau, M. Anson, J. Zhang</i>	
Distributed Heterogeneous Inspecting System and Its Implementation.	370
<i>L. Huang, Z. Wu</i>	
Architecture for Distributed Embedded Systems Based on Workflow and Distributed Resource Management.....	381
<i>Y. Lin, X. Zhou, X. Shi</i>	
Knowledge Management and the Control of Duplication.	396
<i>D. Cook, L. Mellor, G. Frost, R. Creutzburg</i>	

Transactions

An Execution and Transaction Model for Active, Rule-Based Component Integration Middleware.	403
<i>Y. Jin, S. Urban, A. Sundermier, S. Dietrich</i>	

Implementation of CovaTM. 418
J. Jiang, M. Shi

Resource-Based Scripting to Stitch Distributed Components. 429
J.-M. Andreoli, D. Arregui, F. Pacull, J. Willamowski

Coordination I

Multi-agent Coordination Mechanism in Distributed Environment. 444
M. Xu, Y. Zhuang

Coordination among Multi-agents Using Process Calculus and ECA Rule. 456
Y. Wei, S. Zhang, J. Cao

An RBAC-Based Policy Enforcement Coordination Model in Internet
Environment. 466
Y. Zhang, J. You

Coordination II

A CORBA-Based Negotiation Strategy in E-Commerce. 478
Y. Zhao, G. Wang

Negotiation Framework for the Next Generation Mobile Middleware Service
Environment. 487
M. Sihvonen, J. Holappa

Groupware I

An Internet-Based Conference System for Real-Time Distributed Design
Evaluation. 499
K. Dai, Y. Wang, X. Xu

Intention Preservation by Multi-versioning in Distributed Real-Time Group
Editors. 510
L. Xue, M. Orgun, K. Zhang

Supporting Group Awareness in Web-Based Learning Environments. 525
B. Hu, A. Kuhlenkamp, R. Reinema

Groupware II

Raison d'Etre Object: A Cyber-Hearth That Catalyzes Face-to-Face Informal
Communication. 537
T. Matsubara, K. Sugiyama, K. Nishimoto

The Neem Platform: An Extensible Framework for the Development of
Perceptual Collaborative Applications. 547
 P. Barthelmess, C.A. Ellis

Author Index..... 563