Lecture Notes in Computer Science 2319
Edited by G. Goos, J. Hartmanis, and J. van Leeuwen

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

Cristina Gacek (Ed.)

Software Reuse: Methods, Techniques, and Tools

7th International Conference, ICSR-7
Austin, TX, USA, April 15-19, 2002
Proceedings

Springer

Series Editors

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

Volume Editor

Cristina Gacek
University of Newcastle, Department of Computing Science
Centre for Software Reliability
Newcastle upon Tyne NE1 7RU, UK
E-mail: cristina.gacek@ncl.ac.uk

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Software reuse: methods, techniques, and tools : 7th international conference ; proceedings / ICSR-7, Austin, TX, USA, April 15 - 19, 2002. Cristina Gacek (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ; Hong Kong ; London ; Milan ; Paris ; Tokyo : Springer, 2002
(Lecture notes in computer science ; Vol. 2319)
ISBN 3-540-43483-6

CR Subject Classification (1998): D.2, K.6, D.1, J.1

ISSN 0302-9743
ISBN 3-540-43483-6 Springer-Verlag Berlin Heidelberg New York

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

http://www.springer.de

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Steingräber Satztechnik GmbH, Heidelberg
Printed on acid-free paper SPIN: 10846652 06/3142 5 4 3 2 1 0

Message from the Program Chair

As the years have passed, much progress in the field of software reuse has been made. Many of the early ideas in this area have already become embedded in everyday software development practices, and many of its sub-areas have gained enough recognition to be discussed as relevant topics of their own, with their own clear sub-community. These developments could imply a fragmentation of the software reuse community and a decline in interest in software reuse in general. Fortunately, as reflected by the program of ICSR-7, both academic and industrial reuse communities realize that there are many advantages to holding discussions in a broader forum, adding to the diversity of experiences and ideas shared.

ICSR-7 is privileged to have a very prestigious and dedicated program committee, with all members having embraced an electronic review process that was demanding and time-consuming. I would like to thank them for their excellent performance and dedication towards making the conference a success.

In times when many conferences are observing a decreasing number of submissions, ICSR-7 has been very fortunate to have received a large number of good quality submissions originating from several continents: America (North and South), Asia, Europe, and Oceania. This has resulted in a set of papers, tutorials, and workshops that should enlighten and deepen the knowledge of readers and conference participants with varying backgrounds and interests. I believe Austin (Texas-USA) will prove to be *the* place to be during the ICSR-7 timeframe. I hope you enjoy the conference and the surrounding environment to the fullest!

April 2002 Cristina Gacek

Message from the General Chair

This is the seventh International Conference in Software Reuse and the second time it has been held in the United States. The conference has matured and stands as an important forum for the academic world as well as an important technology transfer gate to the software industry. Our main focus is the leverage of productivity in software production by means of reusing processes and artifacts previously built. It is a simple idea, but with huge challenges, of both a technical and a social nature. Our conference, by means of its workshops, tutorials, keynotes (Jay Misra and Roger Sessions), and a program with the best submitted papers, aims at the presentation and discussion of new ideas and new results permeating the topic of reuse.

We are very happy to be in Austin this time. Austin has been an important center for research and development in the software industry and has focussed on aspects related to software reuse. We are very glad and grateful that Don Batory accepted to be our host, taking care of the local arrangements. I am certain that ICSR-7 in Austin will be a great conference.

I have to thank the excellent team that brought us ICSR-7. Cristina Gacek has done an amazing job as program chair. It was not easy handling the large number of mails that were necessary to coordinate a virtual program committee meeting and dealing with the submission and review web system. Peter Knauber, the tutorial chair, successfully put together eight tutorials for the conference. Krzysztof Czarnecki managed to bring together five workshops that deal with specific topics related to reuse and the first young researchers' workshop that aims to attract the graduate students to discuss their topics of research. We are all grateful to each one of the workshop chairs. Their work was most appreciated, as we widened the conference scope with their workshops. We thank Giancarlo Succi, who was responsible for our marketing. He managed and sponsored the ICSR-7 web site. As mentioned before, Don Batory took care of local arrangements, and I thank him for this. Many thanks to Ira Baxter, responsible for corporate donations and Ernesto Guerrieri the financial and registration chair. The steering committee (Biggerstaff, Favaro, Frakes, and Guerrieri) was of fundamental importance for their guidance and support. Of course, we extend our thanks to the institutions that host the members of our team, without whose support it would be impossible to put forward such a conference. We also would like to thank Sodalia and BigLever Software for their support.

I, myself, would like to thank Peter A. Freeman, responsible for the UCI Reuse Project, with whom I first learned about reuse. Many years have passed, but I can still remember the great times of the early findings in the reuse area. I also wish to thank the Departamento de Informática , PUC-Rio, and CNPq for their continuing support.

April 2002

Julio Cesar Sampaio do Prado Leite
www.inf.puc-rio.br/~julio

Committees

General Chair	Julio Cesar Leite	**Financial and Registrations Chair**	Ernesto Guerrieri
Program Chair	Cristina Gacek	**Workshop Chair**	Krzysztof Czarnecki
Local Chair	Don Batory	**Tutorial Chair**	Peter Knauber
Corporate Chair	Ira Baxter	**Publicity Chair**	Giancarlo Succi

Program Committee

S. Bandinelli (Spain)
L. Bass (USA)
D. Batory (USA)
I. Baxter (USA)
L. Benedicenti (Canada)
P. O. Bengtsson (Sweden)
T. Biggerstaff (USA)
B. Boehm (USA)
C. Boldyreff (UK)
J. Bosch (The Netherlands)
P. Clements (USA)
S. Cohen (USA)
K. Czarnecki (Germany)
P. Devanbu (USA)
J. C. Dueñas (Spain)
W. Emmerich (UK)
J. Favaro (Italy)
B. Frakes (USA)
C. Gacek (UK)
H. Gomaa (USA)
E. Guerrieri (USA)
J. Jourdan (France)
K. Kang (Korea)
P. Knauber (Germany)
C. Krueger (USA)
J. C. Leite (Brazil)
F. Linden (The Netherlands)
J. Llorens (Spain)
C. Lucena (Brazil)
J. A. McDermid (UK)
N. Maiden (UK)
M. Mannion (UK)
M. Marchesi (Italy)
M. Matsumoto (Japan)
A. Mili (USA)
M. Morisio (Italy)
H. Muller (Canada)
D. Musser (USA)
J. Neighbors (USA)
J. Ning (USA)
W. Pedrycz (Canada)
J. Penix (USA)
J. Poulin (USA)
W. Pree (Germany)
R. Prieto-Diaz (USA)
A. Romanovsky (UK)
B. Scherlis (USA)
K. Schmid (Germany)
M. Sitaraman (USA)
D. Smith (USA)
I. Sommerville (UK)
G. Succi (Canada)
B. Weide (USA)
D. Weiss (USA)
C. Werner (Brazil)

External Reviewers

Delano Beder
Rodrigo Cerón
Jilles van Gurp
Michel Jaring
Greg Kulczycki
Marcos Mangan
Jason Mansell
Eduardo Saenz Matallana
Michael Mehlich
Dirk Muthig
Ted Pavlic
Panos Periorellis
Serge Salicki
Iratxe Gómez Susaeta
Ian Welch
Juan C. Yelmo

Sponsors and Supporters

BigLever Software, Inc.

Dep. de Informática of PUC-Rio

Fraunhofer IESE

Generic Programming

Op40, Inc.

Semantic Designs, Inc.

Sodalia

Univ. of Alberta Dep. of Electrical and Computer Eng.

Univ. of Newcastle upon Tyne, CS Dept.

Univ. of Texas, Computer Science Dept.

Table of Contents