Lecture Notes in Computer Science1439Edited by G. Goos, J. Hartmanis and J. van Leeuwen1439

Boris Magnusson (Ed.)

System Configuration Management

ECOOP'98 SCM-8 Symposium Brussels, Belgium, July 20-21, 1998 Proceedings



Series Editors

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

Volume Editor

Boris Magnusson Lund Institute of Technology, Department of Computer Science P.O. Box 118, SE-221 00 Lund, Sweden E-mail: boris.magnusson@dna.lth.se

Cataloging-in-Publication data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

System configuration management : proceedings / ECOOP'98 SCM-8 Symposium, Brussels, Belgium, July 20 - 21, 1998. Boris Magnusson (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ; Budapest ; Hong Kong ; London ; Milan ; Paris ; Santa Clara ; Singapore ; Tokyo : Springer, 1998 (Lecture notes in computer science ; Vol. 1439) ISBN 3-540-64733-3

CR Subject Classification (1991): D.2, K.6, K.4.3

ISSN 0302-9743 ISBN 3-540-64733-3 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 1998 Printed in Germany

Typesetting: Camera-ready by author SPIN 10637998 06/3142 - 5 4 3 2 1 0 Printed on acid-free paper

Preface

Configuration Management is the discipline of managing the evolution of families of systems. It involves supporting versioning, composition, and generation of all relevant configuration items, as well as controlling and supporting related team activities. It is central to any large engineering project and requires a significant amount of system support. These problems have been studied in parallel, in the *Software* domain and in the general product domain (*PDM*). With this year's conference we have attempted to create a forum for interaction between these two communities. As a consequence the abbreviation *SCM* now means *System Configuration Management*.

Earlier, seven SCMs were organized as workshops, but with a growing community of researchers and practitioners in the field the format has this year been changed to a regular conference. Despite this change, and a growing number of attendees we hope the meeting can maintain some of its character with lively discussions and its special flavor with participants from industry, academia, and tool vendors. Earlier SCMs were organized in conjunction with Software Engineering conferences. This year's shift to join a conference dedicated to object orientation hopefully creates a new blend of people with backgrounds in Software CM, PDM, and OO – areas which have interesting common problems.

Much of the currently growing interest in SCM can be traced to the CMU/SEI CMM model with its focus on 'repeatability' and SCM as a key process, as well as the availability of networks and the need for new distributed solutions their use demands. Papers in the parts on *Cooperative Systems and Web Based Applications* in particular illustrate this research trend. Several papers in the parts on *Experimental Systems and Formal Approaches* can also be read in this light. We are happy to see that almost half of the papers come from industry, including all the papers in the *Industrial Experience* part. And finally, the papers in the *PDM and SCM* part contains comparisons that will hopefully help people from both domains to understand the relation between the fields, as well as a paper that illustrates the relation between SCM, PDM and OO.

Having SCM-8 organized as an open conference (rather than a workshop with limited attendance as before), and in conjunction with ECOOP, where CM has not been a central issue, we expect an unusually high number of new participants. The conference therefore started with an invited *tutorial*, by Susan Dart, which was also open for ECOOP participants. You will find an extended abstract of this presentation at the end of the proceedings.

As the program chair, I would like to express my gratitude to all the authors who submitted papers, the program committee doing a wonderful job in reviewing and selecting the program. Also, I thank all the authors who bore with me in getting the papers in a suitable electronic format (with page numbers and running heads) which still is surprisingly tedious when different document processing systems are involved.

Lund, May 1998

Boris Magnusson, SCM-8 Program chair

Organization

SCM-8 was organized in connection with the European Conference on Object Oriented Programming, ECOOP'98, this year taking place in Brussels, Belgium. Relying on the local organization for ECOOP has saved us from having to deal with the local organization for which we are most grateful.

Conference chair: Annita Persson, Ericsson Microwave AB, Sweden Program chair: Boris Magnusson, Lund Institute of Technology, Sweden

Program Committee

Geoffrey Clemm, Rational Software, USA Reidar Conradi, NTNU, Trondheim, Norway Susan A. Dart, Dart Technology Strategies, USA Prasun Dewan, University of North Carolina, USA Jacky Estublier, University of Grenoble, France Andre van der Hoek, University of Colorado at Boulder, USA Boris Magnusson, Lund Institute of Technology, Sweden Chris Marlin, Flinders University, Australia Annita Persson, Ericsson Microwave AB, Sweden Ian Sommerville, University of Lancaster, United Kingdom Walter F. Tichy, University of Karlsruhe, Germany

Previus SCM Events

SCM-1 1988, Grassau, Germany SCM-2 1990, Princeton, USA SCM-3 1991, Trondheim, Norway SCM-4 1993, Baltimore, USA SCM-5 1995, Seattle. USA SCM-6 1996, Berlin, Germany SCM-7 1997, Boston, USA

Contents

Industrial Experience

Introducing ClearCase as a Process Improvement Experiment
Industrial Experiences from SCM Current State Analysis
Change Measurements in an SCM Process
Experimental Systems
PRCS: The Project Revision Control System
Multi-Grain Version Control in the Historian System
High-Level Best Practices in Software Configuration Management
Experiences with Architectural Software Configuration Management in Ragnarok67 Henrik B. Christensen (University of Aarhus)
PDM and SCM
Toward SCM/PDM Integration ?
Software Configuration Management and Engineering Data Management: Differences and Similarities
Product Configuration Using Object Oriented Grammars

X Contents

Formal Approaches

Versioning System Models Through Description Logic
Supporting Fine-Grained Traceability in Software Development Environments 133 Peter Lindsay and Owen Traynor (The University of Queensland)
System Modeling Resurrected
Cooperative Systems
Version Sensitive Editing: Change History as a Programming Tool
Coordinated Editing of Versioned Packages in the JP Programming Environment158 Michael L. Van De Vanter (Sun Microsystems Laboratories)
CoEd - A Tool for Versioning of Hierarchical Documents
Web Based Applications
Modelling Versioned Hypertext Documents
Requirements for Software Deployment Languages and Schema
Tutorial
The Agony and Ecstasy of Configuration Management (Abstract)204 Susan Dart (Dart Technology Strategies Inc)
Author Index207