

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

1235

Advisory Board: W. Brauer D. Gries J. Stoer

Reidar Conradi (Ed.)

Software Configuration Management

ICSE'97 SCM-7 Workshop
Boston, MA, USA, May 18-19, 1997
Proceedings



Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany

Juris Hartmanis, Cornell University, NY, USA

Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editor

Reidar Conradi

Norwegian University of Science and Technology (NTNU)

Gløshaugen, N-7034 Trondheim, Norway

E-mail: conradi@idt.ntnu.no

Cataloging-in-Publication data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

**Software configuration management : proceedings / ICSE '97
SCM-7 Workshop, Boston, MA, USA, May 18 - 19, 1997. Reidar
Conradi (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ;
Budapest ; Hong Kong ; London ; Milan ; Paris ; Santa Clara ;
Singapore ; Tokyo : Springer, 1997
(Lecture notes in computer science ; Vol. 1235)
ISBN 3-540-63014-7**

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

ISSN 0302-9743

ISBN 3-540-63014-7 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 1997

Printed in Germany

Typesetting: Camera-ready by author

SPIN 10548783 06/3142 - 5 4 3 2 1 0 Printed on acid-free paper

Preface

Software Configuration Management (SCM) is the discipline of managing the evolution of software systems. It involves supporting the versioning, composition, and generation of all relevant software items, as well as supporting related team activities. It is central to any large software engineering project and requires significant system support. SCM takes advantage of advances in various fields such as system modeling, distributed databases, software process technology, software engineering environments, and tool integration and interoperability.

This workshop is the 7th in the series, and will take place just before the main ICSE'97 conference, as it did the last three times. Previous workshops were held in Grassau (Germany, 1988), Princeton (USA, 1989), Trondheim (Norway, 1991), Baltimore (USA, 1993), Seattle (USA, 1995), and Berlin (Germany, 1996). The goal of the workshop series is to merge the work of researchers, vendors, and practitioners in an attempt to discuss and establish concepts and techniques, and to gather experiences in the SCM field.

The goal of the workshop was to discuss the state-of-the-art and state-of-the-practice in SCM, as well as challenges for the future. Leading-edge research in SCM was discussed, as well as how current research might lead to improved SCM products, and the requirements of industry for SCM solutions.

The workshop particularly requested papers presenting advances and experiences on the following topics: use of SCM tools and methods, industrial requirements for SCM, versioning models and version selection, access, sharing and visibility models, data modeling and data management for SCM, software process modeling for SCM, team support and distributed, cooperative work, software building and rebuilding, tool integration and interoperability, and any other topic related with SCM.

The workshop attracted 49 papers, including 11 short position papers – the greatest number since 1991. Of these papers, 16 were selected for publication in Springer Verlag's LNCS series. All remaining 33 papers were distributed at the workshop in a separate printing. Invited workshop participants were all those with submitted papers. The workshop was organized in seven sessions: versioning models, reuse and system models, process aspects, distributed SCM, SCM on the web, industrial experiences, and sum-up and future directions (no papers on the last session).

March 1997

Reidar Conradi

Table of Contents

Session 1: "Versioning Models",

Chair: G. Clemm.

Towards a Uniform Version Model for
Software Configuration Management

R. Conradi and B. Westfechtel 1

What Have You Done for Me Lately?
(Branches, Merges, and Change Logs)

J. Buffenbarger and K. Gruell 18

Change Sets Versus Change Packages:
Comparing Implementations of Change-Based SCM

D. W. Weber 25

Session 2: "Reuse and System Models",

Chair: J. Estublier.

Constructing a Large Product with Jam

L. Wingerd and C. Seiwald 36

Versioning and Consistency for Dynamically
Composed Configurations

B. R. Schmerl and C. D. Marlin 49

Session 3: "Process Aspects",

Chair: S. A. Dart.

Managing the Software Development Process with ClearGuide

D. B. Leblang 66

High Level Process Modeling for SCM Systems

J. Estublier, S. Dami, and M. Amieur 81

Session 4: "Distributed SCM",

Chair: A. van der Hoek.

Distributed Source Control System

B. Milewski 98

ScmEngine: A Distributed Software Configuration Management Environment on X.500 J. X. Ci, M. Poonawala, W. Tsai, A. K. Onoma, and H. Suganuma ...	108
COO-Transaction: Supporting Cooperative Work P. Molli	128
Supporting Distributed Configuration Management in Virtual Enterprises J. Noll and W. Scacchi	142
Session 5: "SCM on the Web", Chair: I. Sommerville.	
Distributed Configuration Management via Java and the World Wide Web J. J. Hunt, F. Lamers, J. Reuter, and W. F. Tichy	161
WebRC: Configuration Management for a Cooperation Tool P. Fröhlich and W. Nejdil	175
Session 6: "Industrial Experiences", Chair: A. Persson.	
Product Management Requirements for SCM Discipline T. Kilpi	186
A Case-Study of Configuration Management with ClearCase in an Industrial Environment U. Asklund and B. Magnusson	201
Experience with Change-Oriented SCM Tools I. Crnkovic	222