TABLE OF CONTENTS

Conference Chairs........................................................................................................................................... x
Program Committee ........................................................................................................................................... xi
Organizing Committee....................................................................................................................................... xiii
Preface................................................................................................................................................................ xiv

SESSION 1A: COMPONENT BASED SOFTWARE ENGINEERING

Secrobat: Secure and Robust Component-Based Architectures................................................................................. 3
   Artem Vorobiev and Jun Han

A Precise Estimation Technique for Test Coverage of Components in Object-Oriented Frameworks.................................................................................................................11
   Yuji Sakata, Kazutoshi Yokoyama, Hironori Washizaki, and Yoshiaki Fukazawa

An Approach Based on Modeling Dynamic Behavior of the System to Assess the Impact of COTS Upgrades........................................................................19
   Anjaneyulu Pasala, Srinivasa Rao, Srinivas Gunturu, and Purnendu Sinha

Component Composition through Architectural Patterns for Problem Frames ..........................................................27
   Christine Choppy, Denis Hatebur, and Maritta Heisel

SESSION 4A: COMPONENT BASED SOFTWARE ENGINEERING

Component-Based Development of MILLS: A Case Study in the Development of an Inter-library Loan Software System....................................................................................................................................37
   Naresh Kumar Agarwal, Danny C. C. Poo, and Teo Keng Yong

Adopting Model-Driven Development for Integrated Services and Appliances in Home Network Systems.................................................................................................................................45
   Hiroshi Igaki, Masahide Nakamura, Ken-ichi Matsumoto, and Mikio Aoyama

Efficient Component Based Software Engineering Using the TCEM Methodology and the TCET Tool ..............................................................................................................................................53
   Santokh Singh and Cheung Ling Kelly Yu

Toward a Code Search Engine Based on the State-of-Art and Practice ........................................................................61
## SESSION 3B: FORMAL METHODS

- A Systematic Approach to Connecting Standalone Theorem Provers to Formal Development Environments
  - David Hemer
  - Page: 183

- Constructing Behavioral State Machine Using Interface Protocol Specification
  - Osamu Shigo, Atsushi Okawa, and Daiki Kato
  - Page: 191

- Timing Verification of UML Activity Diagram Based Code Block Level Models for Real Time Multiprocessor System-on-Chip Applications
  - Dipankar Das, Rajeev Kumar, and P. P. Chakrabarti
  - Page: 199

## SESSION 1B: OBJECT-ORIENTED TECHNOLOGY

- Modeling and Customization of Fault Tolerant Architecture Using Object-Z/XVCL
  - Ling Yuan, Jin Song Dong, and Jing Sun
  - Page: 209

- A Pattern-Based Model Evolution Approach
  - Soon-Kyeong Kim and David Carrington
  - Page: 217

- Safety Analysis for Dynamic Update of Object Oriented Programs
  - Yogesh Murarka, Umesh Bellur, and Rushikesh K. Joshi
  - Page: 225

- Strengthening Method Contracts for Objects
  - Atul Gupta and Amit Raj
  - Page: 233

## SESSION 5A: TESTING & PROGRAM CHECKING

- Testing of Timer Function Blocks in FBD
  - Eunkyoung Jee, Seungjae Jeon, Hojung Bang, Sungdeok Cha, Junbeom Yoo, Geeyong Park, and Keechoon Kwon
  - Page: 243

- Generating Interoperability Tests for Networked Media Devices
  - Srihari Sukumaran
  - Page: 251

- Interaction Testing in Model-Based Development: Effect on Model-Coverage
  - Renée C. Bryce, Ajitha Rajan, and Mats P.E. Heimdahl
  - Page: 259

## SESSION 6A: TESTING & QUALITY MGMT

- Detecting Duplications in Sequence Diagrams Based on Suffix Trees
  - Hui Liu, Zhiyi Ma, Lu Zhang, and Weizhong Shao
  - Page: 269

- Towards Interactive Fault Localization Using Test Information
  - Dan Hao, Lu Zhang, Hong Mei, and Jiasu Sun
  - Page: 277

- A Framework for Software Product Engineering
  - Kesav Nori and N. Swaminathan
  - Page: 285
SESSION 1C: MAINTENANCE/REVERSE ENGG.

Genericity - A “Missing in Action” Key to Software Simplification and Reuse ................................................................. 293
Stan Jarzabek

An Empirical Study of Factors and Their Relationships in Outsourced Software Maintenance ................................................................. 301
Pankaj Bhatt, Gautam Shroff, Williams K., and Arun K. Misra

An Accurate and Convenient Undo Mechanism for Refactorings ................................................................................................. 309
Katsuhisa Maruyama

Efficient and Accurate Software Pattern Detection ......................................................................................................................... 317
Niklas Pettersson and Welf Löwe

SESSION 5B: EMPIRICAL SOFTWARE ENGINEERING

Evaluation of Source Code Updates in Software Development Based on Component Rank .................................................. 327
Reishi Yokomori, Masami Noro, and Katsuro Inoue

An Experience with Design by Contract .................................................................................................................................. 335
Judy Tantivongsathaporn and Daniel Stearns

Usage Patterns of the Java Standard API ........................................................................................................................................... 342
Homan Ma, Robert Amor, and Ewan Tempero

SESSION 6B: EMPIRICAL SOFTWARE ENGINEERING

A Case Study of an Empirical Approach to Component Requirements in Developing a Plagiarism Detection Tool ........................................................................................................................................ 353
Noriko Hanakawa and Mike Barker

Building Scalable Failure-Proneness Models Using Complexity Metrics for Large Scale Software Systems ......................................................................................................................... 361
Thirumalesh Bhat and Nachiappan Nagappan

An Approach of a Technique for Effort Estimation of Iterations in Software Projects ................................................................. 367
José Antonio Pow-Sang and Enrique Jolay-Vasquez

SESSION 4C: SOFTWARE PROCESS IMPROVEMENT

Cycle Time Reduction ......................................................................................................................................................................... 377
Nagesh Mukundarao

A Process Model Design and Tool Development for Supplier Agreement Management of CMMI: Capability Level 2 ......................................................................................................................... 385
Chakkanart Vivatanavorasin, Nakornthip Prompoon, and Athasit Surarerks

A Theoretical Perspective on Knowledge Based Organizational Learning ......................................................................................... 393
K. Alagarasamy, Justus S, and K. Iyakutti
A Systematic Approach to Process Enactment Analysis As Input to Software Process Improvement or Tailoring ................................................................. 401
   Ming Huo, He Zhang, and Ross Jeffery

SESSION 7B: PRODUCT LINE ENGG/OO

Inter-model Consistency in UML Based on CPN Formalism ................................................................. 411
   Yoshiyuki Shinkawa

Introducing MDA in a Large IT Consultancy Organization ......................................................................... 419
   Vinay Kulkarni and Sreedhar Reddy

Applying Formal Approach to Core Asset Instantiation in Product Line Engineering ..................................... 427
   Suk Kyung Shin, Jin Sun Her, and Soo Dong Kim

A Versioning Scheme for Consistent Evolution of OO Applications ............................................................. 435
   Umesh Bellur and Vallieswaran V.

SESSION 7C: MAINTENANCE/KNOWLEDGE-BASED APPROACH

A Knowledge-Based Approach for Safety Analysis Using System Interactions ............................................ 445
   Tariq Mahmood and Edmund Kazmierczak

Project Replayer with Email Analysis - Revealing Contexts in Software Development .................................... 453
   Kimiharu Ohkura, Keita Goto, Noriko Hanakawa, Shinji Kawaguchi, and Hajimu Iida

Cohesion Analysis in Linux Kernel ................................................................................................................. 461
   Vinay Kumar Reddy, K. Janakiram, and D. Janakiram

Visualizing Clone Cohesion and Coupling ...................................................................................................... 467
   Zhen Ming Jiang, Ahmed E. Hassan, and Richard C. Holt

SESSION 2B: SE EDUCATION

Implementation and Evaluation of Teaching an Introductory Software Engineering Course Framed in Cognitive Apprenticeship .............................................. 477
   Shen-Tzay Huang, Yi-Pei Cho, and Yu-Jen Lin

Security: Bridging the Academia-Industry Gap Using a Case Study ............................................................ 485
   Kirti Garg, Vasudeva Varma, Giridhar K N, and Abhishek K. Mishra

Author Index ................................................................................................................................................. 493