TABLE OF CONTENTS

Technology of Object-Oriented Languages and Systems (TOOLS 30)

Preface..............................................................................................................................................
Program Committee ....................................................................................................................... 

KEYNOTE PRESENTATIONS

Tools for Component Documentation, Analysis, and Testing.........................................................
   David L. Parnas, McMaster University, Canada
The Unity of Software and the Power of Rountrip Engineering....................................................... 
   Bertrand Meyer, Interactive Software Engineering, USA
Life After the Object Wars................................................................................................................
   Don Box, DevelopMentor, USA
Programming Language Design and Software Quality.................................................................
   Tucker Taft, AverStar, USA 

TECHNICAL PAPERS

QUALITY

Performance Tuning Mobile Agent Workflow Applications..............................................................
   M.J. Flester, RABA Technologies, USA; S.S. Foster, Dept. of Defense, USA;
   D. Moore, AT&T Laboratories, USA; B.A. Nebesh, Dept. of Defense, USA
Automatic Detection of Design Problems in
Object-Oriented Reengineering ...................................................................................................
   O. Ciupke, FZI Forschungszentrum Informatik, Germany
Evolution of a Small Object Oriented Manufacturing System....................................................
   T. Morrisette, USA

DATABASES

Implementing a Distributed Garbage Collector for OO Databases................................................
   R. Bielak & J.-P. Sarkis, CAL FP Bank, USA
Persistent Object Synchronization with Active Relational Databases ........................................... 
   F. Porto, S. Carvalho, R. Melo, PUC-Rio, Brazil; and M. Silva, MJVS Informatica, Brazil
Overview of the ROL2 Deductive Object-Oriented Database System ........................................
   M. Liu, University of Regina, Canada
TESTING

Measuring the Effectiveness of Method Test Sequences Derived from Sequencing Constraints
F. J. Daniels, Bell Laboratories, USA; and K. C. Tai, North Carolina State University, USA

A New Metrics Set for Evaluating Testing Efforts for Object-Oriented Programs
K. Periyasamy and X. Liu, University of Manitoba, Canada

Benchmark Metrics for Enterprise Object Request Brokers
M. Vilicich & S. Aslam-Mir, Expersoft Corporation, USA

Analysis Techniques for Testing Polymorphic Relationships
R. Alexander, Software Productivity Consortium, USA; and J. Offutt, George Mason University, USA

JAVA

When to Trust Mobile Objects: Access Control in the Jini™ Software System
C. Crichton, J. Davies, and J. Woodcock, Oxford University, UK

Detecting Evolution Incapabilities by Analyzing Java Binaries
M. Mezini, J.U. Pipka, University of Siegen, Germany; T. Ditmar, and W. Boot, Daedalos Consulting GmbH, Germany

Specifying Java Frameworks Using Abstract Programs
A. Mikhajlova, Turku Centre for Computer Science, Finland

FRAMEWORKS

Component Frameworks — A Case Study
H. Praehofer, J. Sametinger, and A. Stritzinger, Johannes Kepler University, Linz, Austria

Answerer: A Design Pattern for Dynamical Conditional Execution
M. Omori, N. Ikeda, and J-i. Yamamoto, Toshiba Corporation Japan

Enhancing an Event-Based OO Framework for Distributed Programming
B. Silverajan and J. Harju, Tampere University of Technology, Finland

METHODS

Use Case Pitfalls: Top 10 Problems from Real Projects
Using Use Cases
S. Lilly, SRA International, Inc., USA

Use Case Modeling Guidelines
D. G. Firesmith, Lante Corporation, USA

Cooperative Software Development: Concepts, Model and Tools
J. Altmann and G. Pomberger, Johannes Kepler University Linz, Austria
FRAMEWORKS

View Programming for Decentralized Development of OO Programs. ......................................................
   H. Mili, J. Dargham, A. Mili, O. Cherkaoui, and R. Godin,
   University of Québec in Montréal, Canada

Object Lessons Learned from an Intelligent Agents Framework for
Telephony-Based Applications .................................................................
   D. Yannakopoulos, M. Ferretti, and M. Schultz,
   IBM Global Services, USA

Tool Support for Testing and Documenting Framework-Based Software ..............................................
   W. Strunk, Micrologica AG, Germany; and C. Lilienthal,
   University of Hamburg, Germany

METHODS

Contracts: From Analysis to C++ Implementation .............................................................................
   R. Plösch & J. Pichler, Johannes Kepler University, Linz, Austria

A Comparison of Defensive Development and Design by Contract .................................................
   D.G. Firesmith, Lante Corporation, USA

Interaction Schemata: Compiling Interactions to Code ......................................................................
   N. Sangal, E. Farrell, K. Lieberherr, and D. Lorenz,
   Tendril Software, USA

TEACHING

Recording User Actions in a Smalltalk Programming Environment .................................................
   M. Macgregor, P. Thomas, and M. Woodman,
   The Open University, England

Separable UI Architectures in Teaching Object Technology ............................................................
   M. Woodman, R. Griffiths, S. Holland, M. Macgregor,
   and H. Robinson, The Open University, England

Visualizing O-O Testing in Virtual Communities —
Distributed Teaching and Learning ..............................................................................................
   S. Ramakrishnan, Monash University, Australia

JAVA

Storing Java Objects in Any Database ..............................................................................................
   R.K. Ege, Florida International University, USA

Using Java to Add "Stored Procedures" to Databases ........................................................................
   R.K. Ege, N. Rishe, J. Liu, and V. Lebedev,
   Florida International University, USA

A Concurrent Object-Based Model and its Use for Coordinating Java Components ..............................
   S. Majoul, C. Percebois, and J.-P. Bodeveix,
   IRIT - Université Paul Sabatier, France
TOOLS

Managing the Software Development by Using the Recursive Multi-Threaded (RMT) TOOL .................................................................

A.I. Concepcion, S. Lin, California State University, USA; and S.J. Simon, Environmental Systems Research Institute, USA

Entity-Relationship Software Development Environment ............................................................

P. Muenchaisri and T. Minoura, Oregon State University, USA

MysterX: A Scheme Toolkit for Building Interactive Applications with COM .................................................................

P. Steckler, Rice University, USA

THEORY

Communication as a Means to Differentiate Objects, Components and Agents .................................................................

D. Deugo, F. Oppacher, B. Ashfield, and M. Weiss, Carleton University, Canada

Bounding Component Behavior via Protocols .................................................................................

S. Visnovsky, Charles University, Czech Republic; F. Plasil, and M. Besta, Charles University and Academy of Sciences of the Czech Republic, Czech Republic

Towards Efficient Support for Executing the Object Constraint Language .................................................................

P. Collet & R. Rousseau, I3S-CNRS-UNSA, France

TUTORIALS

QUALITY

Systematic Techniques for Inspecting Critical Software .................................................................................

David Parnas, McMaster University, Canada

The Development and Verification of Safety Critical Software .................................................................................

George Romanski, Aonix, USA

Managing by Contract .................................................................................................................................................

Bertrand Meyer, Interactive Software Engineering, USA

Verification and Validation of Object-Oriented Software Systems .................................................................................

Kasi Periyasamy, University of Manitoba, Canada

LANGUAGE

Mastering JFC ‘Look and Feel’ and UI Delegation .................................................................................

Mitchell Goldstein, Modis Inc., USA

Quality Component Development: Making the Most of JavaBeans and Enterprise JavaBeans Features .................................................................................

Gilda Pour, San Jose State University, USA

Ada and the Objects .................................................................................................................................................

Benjamin Brosgol, Aonix, USA
Programming with C++ Exceptions .................................................................
  Angelika Langer, Germany

Behind the Beans ..............................................................................................
  Michael Stal, Siemens AG, Germany

Java, Eiffel and C++: The Language Comparison ...........................................
  Ian Joyner, Microsoft Research Institute, Australia

TECHNOLOGY

Mastering the Windows Eiffel Library ..............................................................
  Glenn Maughan, Westernport Group Pty Ltd, Australia
  & Raphael Simon, Interactive Software Engineering, USA

Distributed Objects from a Patterns Perspective ............................................
  Michael Stal, Siemens AG, Germany

Building Scalable ODBMS Applications ...........................................................
  Matt BenDaniel, Object Design, USA

Real-Time Object-Oriented Distributed Systems: RT CORBA and RMA ..........
  Antonios Broumas, Tri-Pacific Software, USA

METHODOLOGY

System Design: Architectures and Archetypes .................................................
  Stephen J. Mellor, Project Technology, USA

A Short Use Case Writing Workshop .................................................................
  Alistair Cockburn, Humans & Technology, USA

Modularization Revisited: Aspects in the Design and Evolution of Software Systems
  Cristina Videira Lopes, Xerox Research Center, USA

Advanced Visual Modelling: Beyond UML .......................................................  
  Stuart Kent, University of Kent, UK; Joseph Gil, Technion, Israel;  
  and John Howse, University of Brighton, UK

Advanced OO Modelling: Metamodels and Notations for the Next Millenium
  Brian Henderson-Sellers, University of Technology, Sydney, Australia

Analysis by Contract: An Introduction to Precise OO Modeling with UML and OCL
  Richard Mitchell, University of Brighton, UK

EXPERIENCE

Design of Commercial Object-Oriented Applications — The Patterns ............
  Frieder Monninger, Object Tools GmbH, Germany

Octopus/UML: An Object-Oriented Method Used in Industry .......................  
  Rallis Farfarakis, Nokia Research Center, Finland

Analysis, Design and Implementation of Distributed Java Business Frameworks Using Domain Patterns
  Ali Arsanjani, IBM Enterprise Java Services, USA
Requirement Patterns

Christopher Creel, Technical Resource Connection, TRC

MANAGEMENT

Introduction to the OPEN Method with UML

Brian Henderson-Sellers, University of Technology, Sydney, Australia

Effective Strategies and Techniques for Rapid Object-Oriented Application Development

Michael P. Anton, Financial Technology Solutions, USA

Software Development "in the Zone"

Todd Lauinger, Reliastar, USA

Creating Social Agents with Reusable Components: A Practitioner's Guide

Dana Moore, AT&T Labs, USA

UML DEMO

Features of UML Tools

Tony Wasserman, Software Methods and Tools, USA

WORKSHOPS

Project Management of Object-Oriented Developed Systems

Moderator: Guy Carter & Dilip Patel, South Bank University, UK

Making the Transition to Component-Based Enterprise Software Development: Overcoming the Obstacles – Patterns for Success

Moderators: Martin Griss, Hewlett-Packard Laboratories, USA; Gilda Pour, San Jose State University, USA; and John Favaro, Intecs Sistemi, Italy

Component-Based Software Engineering Processes

Moderators: Kingsley C. Nwosu, Lucent Technologies, USA; and Robert C. Seacord, Carnegie Mellon University

PANELS

Agents & Workflow — An Intimate Connection, or Just Friends?

Moderator: Martin L. Griss, Hewlett-Packard Laboratories, Palo Alto, CA

High Level Modelling Languages, Adaptable Process Models and Software Generation: Drivers for Quality and Productivity

Moderator: Ulrich Frank, Universität Koblenz, Germany

The Great Language Debate

Moderator: Richard Riehle, Adaworks, USA
Direct Mapping and User Interface

*Martin Fowler, Fowler Software Design, USA*

Experiences Teaching Eiffel as a First Programming Language to Economy Student

*Guido Dedene, Katholieke Universiteit Leuven, Belgium*

**Author Index**

**About the TOOLS Conference Series**