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Joint

**8th European Software
Engineering Conference (ESEC)**

and

**9th ACM SIGSOFT Symposium on the
Foundations of Software Engineering (FSE-9)**

**Vienna University of Technology, Austria,
September 10-14, 2001**

sponsored by:

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Welcome

We are pleased to invite you to participate in ESEC/FSE 2001, the third joint meeting of the European Software Engineering Conference, and ACM SIGSOFT's Symposium on the Foundations of Software Engineering.

Come to Vienna to share your ideas and results with your academic and industrial colleagues and hear about their experiences. Select from a rich choice of tutorials to hear about the state of the art. Listen to what leading people in the field have to say in the invited talks. Catch the latest research results from the paper presentations. Participate in intensive one-day or two-day workshops on current research topics. And – participate. Make new friends, meet old friends and foster the human relation in our profession.

We also invite you to a city that is worth a trip of its own. Beautifully situated on the Danube river, full of historic sites, majestic views, cultural events and shopping facilities. Vienna, the city of music and culture, offers you a rich choice of opportunities.

Whatever your interests are, this conference has something to offer you. So, just do it. Register for ESEC/FSE 2001 now and plan a rewarding trip.

Conference Outline

ESEC/FSE 2001 brings together researchers and practitioners of software engineering to exchange new research results and experience reports related to both traditional and emerging fields of software engineering.

In addition to the technical program, ESEC/FSE 2001 includes a program of tutorials and workshops on current topics in software engineering.

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Volker Gruhn, University of Dortmund, Germany

Tutorial Chair:

Harald Gall, Vienna University of Technology, Austria

Workshop Chair:

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- Yun Yang, Australia • Pamela Zave, USA

Conference Location

Vienna University of Technology

Building: Freihaus

Street: Wiedner Hauptstrasse 8-10

A-1040 Vienna

Monday, September 10, 2001

Full-Day Tutorial F2 (see details on page 5)

Component Technologies: Java Beans, COM, CORBA, RMI, EJB and the CORBA Component Model

Wolfgang Emmerich, Zuhlke Engineering Ltd, UK

Nima Kaveh, University College London, UK

September 10, 2001, 9:00 - 17:00, Room Hoersaal 3 (HS3)

Half-Day Tutorial H5 (see details on page 5)

Building Systems from Commercial Components: Method Foundations

Kurt Wallnau and Robert Seacord, Software Engineering Institute at CMU, USA

September 10, 2001, 9:00 - 12:30, Room Hoersaal 2 (HS2)

Half-Day Tutorial H8 (see details on page 5)

EasyWinWin: A Groupware-Supported Methodology For Requirements Negotiation

Barry Boehm, University of Southern California, USA

Paul Grünbacher, Johannes Kepler University, Austria

September 10, 2001, 13:30 - 17:00, Room Hoersaal 4 (HS4)

W1: International Workshop on Principles of Software Evolution – IWPSE 2001 (see details on page 5)

T. Tamai, University of Tokyo, Japan

September 10-11, 2001, Rooms: Hoersaal 6 (HS6)

Hoersaal 8 (HS8)

Tuesday, September 11, 2001

Full-Day Tutorial F3 (see details on page 5)

Aspect-Oriented Programming

Gregor Kiczales, University of British Columbia, Canada

Erik Hilsdale, Xerox PARC, USA

September 11, 2001, 9:00 - 17:00, Hoersaal 3 (HS3)

Half-Day Tutorial H10 (see details on page 5)

From Use Cases to Code – Rigorous Software Development with the UML

Albert Zündorf, Technical University of Braunschweig, Germany

September 11, 2001, 9:00 - 12:30, Hoersaal 4 (HS4)

W1: International Workshop on Principles of Software Evolution – IWPSE 2001 (see details on page 5)

T. Tamai, University of Tokyo, Japan

September 10-11, 2001, Rooms: Hoersaal 6 (HS6)

Hoersaal 8 (HS8)

W2: Workshop on Composition Languages – WCL 2001

(see details on page 5)

Jean-Guy Schneider, Swinburne University of Technology, Australia; Markus Lumpe, Iowa State University of Science and Technology, USA

September 11, 2001, Hoersaal 7 (HS7)

18:00 Welcome Reception

Vienna University of Technology,
in front of Hoersaal 1 (HS 1)

Wednesday, September 12, 2001

Technical Program, Room Hoersaal 1 (HS1)

8:30 - 8:45 Welcome

8:45 - 10:00 **Keynote and ACM SIGSOFT Outstanding Research Award Presentation**
Chair: David Notkin (University of Washington)
Michael Jackson
(Independent Consultant, London, UK,
AT&T Research Laboratories):
Where, Exactly, Is Software Engineering?

10:00 - 10:30 Break

10:30 - 12:30 **Architecture**

Chair: David Rosenblum (University of California, Irvine)

*André van der Hoek (Univ. of California, Irvine),
Marija Rakic, Roshanak Roshandel, Nenad Medvidovic
(Univ. of Southern California):*
Taming Architectural Evolution

Yoshitomi Morisawa (Nihon Unisys), Koji Torii (Nara Inst.):
An Architectural Style of Product Lines for Distributed
Processing Systems, and Practical Selection Method

*Michel Wermelinger, Antónia Lopes, José Luiz Fiadeiro
(Univ. de Lisboa):*

A Graph Based Architectural (Re)configuration Language

*Timothy J. Sliski, Matthew P. Billmers, Lori A. Clarke, Leon
J. Osterweil (Univ. of Massachusetts, Amherst):*

An Architecture for Flexible, Evolvable Process-Driven
User-Guidance Environments

12:30 - 13:30 Break

13:30 - 14:30 **Distributed Systems**

Chair: Mehdi Jazayeri (Technical University of Vienna)

Nima Kaveh, Wolfgang Emmerich (Univ. College London):
Deadlock Detection in Distributed Object Systems

Ramesh Jagannathan, Paolo A.G. Sivilotti (Ohio State Univ.):
Increasing Client-Side Confidence in Remote Component
Implementations

14:30 - 15:00 Break

15:00 - 16:30 **Specification**

Chair: Gerti Kappel (University of Linz)

Daniel Jackson, Ilya Shlyakhter, Manu Sridharan (MIT):
A Micromodularity Mechanism

*Sebastian Uchitel, Jeff Kramer and Jeff Magee (Imperial
College):*

Detecting Implied Scenarios in Message Sequence Chart
Specifications

Peter Wendorff (ASSET GmbH):

A Formal Approach to the Assessment and Improvement
of Terminological Models Used in Information Systems
Engineering

16:30 - 17:15

Chair: Volker Gruhn (University of Dortmund)

*Vincenzo Ambriola, Università di Pisa, Dipartimento di
Informatica:*

Report from European Workshop on Software Process
Technology

19:00 **Conference Banquet**

at the Monastery of Klosterneuburg
(busses depart at 18:00 from the "Verkehrsbuero"-building,
Friedrichstraße 7, opposite of the "Secession"-building.
This is a two-minutes walk from the conference site).

Thursday, September 13, 2001

Technical Program, Room Hoersaal 1 (HS1)

8:30 - 9:30 **Keynote**

Chair: Volker Gruhn (University of Dortmund)
Günter Popp and Ralph Seitz
(Versicherungs-Aktiengesellschaft, Munich):
Business case: IT-solutions to support
14.000 insurance agencies

9:30 - 10:30 **Modularity**

Chair: Nenad Medvidovic (Univ. of Southern California)

*Yvonne Coady, Gregor Kiczales, Mike Feeley, Greg
Smolyn (Univ. of British Columbia):*

Using AspectC to Improve the Modularity of Path-Specific
Customization in Operating System Code

*Kevin Sullivan, Yuanfang Cai, Ben Hallen (Univ. of Vir-
ginia) and Willam Griswold (Univ. of California, San
Diego):*

The Structure and Value of Modularity in Software Design

10:30 - 11:00 Break

11:00 - 12:30 **Component Composition**

*Chair: Jean-Guy Schneider (Swinburne University of
Technology)*

*Luca de Alfaro, Thomas A. Henzinger (Univ. of California,
Berkeley):* Interface Automata

Paola Inverardi, Massimo Tivoli (Univ. of L'Aquila):
Automatic Synthesis of Deadlock free connectors for
COM/DCOM Applications

L. Davis, R. Gamble, J. Payton, G. Jonsdottir, D.

Underwood (Univ. of Tulsa): A Notation for Problematic
Architecture Interactions

12:30 - 13:30 Break

13:30 - 14:30 **Panel: XML - Lingua Franca of the Web?**

*Chair: Wolfgang Emmerich (University College
London)*

Panelists: Engin Kirda (TU Vienna)

Ernst Ellmer (Zuhlke Engineering GmbH)

Anthony Finkelstein (UCL)

14:30 - 15:00 Break

15:00 - 17:00 **Verification**

Chair: Carlo Montangero (Università di Pisa)

*Alberto Coen-Portisini (Univ. di Lecce), Giovanni Denaro,
Carlo Ghezzi (Politecnico di Milano), Mauro Pezzè (Univ.
di Milano-Bicocca):*

Using Symbolic Execution for Verifying Safety-Critical
Systems

Kathi Fisler (Worcester Polytechnic Inst.),

Shriram Krishnamurthi (Brown Univ.):

Modular Verification of Collaboration-Based Software
Designs

*Yunja Choi, Sanjai Rayadurgam, Mats P.E. Heimdahl
(Univ. of Minnesota):*

Automatic Abstraction for Model Checking Software
Systems with Interrelated Numeric Constraints

*Norman Ramsey (Harvard Univ.), Elod Csirmaz (Mihaly
Fazekas Secondary Grammar School):*

An Algebraic Approach to File Synchronization

Friday, September 14, 2001

Technical Program, Room Hoersaal 1 (HS1)

8:30 - 9:30 Keynote

Chair: A Min Tjoa (Vienna Univ. of Technology)
Pierre de Chazelles
(A380 System Engineering Support):
The A380 challenges for Software Engineering

9:30 - 10:30 Real Time UML

Chair: Wilhelm Schäfer (University of Paderborn)
Gregor Engels, Jochen M. Küster (Univ. of Paderborn), Luuk Groenewegen (Leiden Univ.), Reiko Heckel (Univ. of Paderborn):
A Methodology for Specifying and Analyzing Consistency of Object-Oriented Behavioral Models
Luigi Lavazza (CEFRIEL, Politecnico di Milano), Garbiele Quaroni, Matteo Venturelli (TXT e-solutions):
Combining UML and formal notations for modelling real-time systems

10:30 - 11:00 Break

11:00 - 12:30 Components

Chair: Gianpaolo Cugola (Politecnico di Milano)
Chris Lüer, David S. Rosenblum (Univ. of California, Irvine):
WREN - An Environment for Component-Based Development
Jens H. Jahnke (Univ. of Victoria):
Engineering Component-based Net-Centric Systems for Embedded Applications
Robert Bruce Findler, Mario Latendresse, Matthias Felleisen (Rice Univ.):
Behavioral Contracts and Behavioral Subtyping

12:30 - 13:30 Break

13:30 - 15:00 Testing

Chair: Mary Jean Harrold (Georgia Institute of Technology)
Jon Edvardsson, Mariam Kamkar (Linköping Univ.):
Analysis of the Constraint Solver in UNA Based Test Data Generation
William Dickinson, David Leon, Andy Podgurski (Case Western Reserve Univ.): Pursuing Failure: The Distribution of Program Failures in a Profile Space
Atif M. Memon, Mary Lou Soffa (Univ. of Pittsburgh), Martha E. Pollack (Univ. of Michigan):
Coverage Criteria for GUI Testing

15:00 - 15:30 Break

15:30 - 17:00 Experiences and Case Studies

Chair: Dewayne Perry (The University of Texas at Austin)
Reidar Conradi (Norwegian Univ. of Science and Technology), Tore Dyba (SINTEF Telecom and Informatics):
An empirical study on the utility of formal routines to transfer knowledge and experience
Bernd Freimut, Susanne Hartkopf, Peter Kaiser (Fraunhofer IESE), Jyrki Kontio (Helsinki Univ. of Technology), Werner Kobitzsch (Tenovis GmbH&Co KG):
An Industrial Case Study of Implementing Software Risk Management
Forrest Shull (Fraunhofer Center Maryland, Univ. of Maryland), Jeffrey Carver (Univ. of Maryland), Guilherme H. Travassos (Univ. Rio de Janeiro):
An Empirical Methodology for Introducing Software Processes

17:00 - 17:15 Closing

Other Conference Meetings

- **ICSE 2003 Program Committee Meeting**
Tuesday, September 11, 17:30 - 18:00,
seminar room 118 (Tower A (green), 5th floor)
- **ESEC Steering Committee Meeting**
Wednesday, September 12, 12:30-13:30
seminar room 118 (Tower A (green), fifth floor)
- **ICSE 2003 Organization Committee Meeting**
Wednesday, September 12, 16:30-18:00
Seminar Room 118 - Tower A (green), 5th floor
- **ICSE Steering Committee Meeting**
Thursday, September 13, 17:00,
seminar room 118 (Tower A (green), 5th floor)

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Conference Office / Registration Desk

If you need assistance during the conference the ESEC/FSE organization team and Nethotels will be happy to help you.

During the conference you can register at the Registration Desk, which is located in front of Hoersaal 1 (HS 1).

Monday, September 10	08:00 - 15:00
Tuesday, September 11	08:00 - 19:00
Wednesday, September 12	07:30 - 19:00
Thursday, September 13	08:00 - 12:00
Friday, September 14	08:00 - 12:00

Tutorials

Full-Day Tutorial F2

Component Technologies: Java Beans, COM, CORBA, RMI, EJB and the CORBA Component Model

Wolfgang Emmerich, Zuhke Engineering Ltd, UK
Nima Kaveh, University College London, UK

This full-day tutorial is aimed at both industrial and academic participants, who wish to get an overview of the local and distributed component technologies that are currently available. We assume that participants are familiar with object-oriented programming concepts. We introduce the idea of component-based development by defining the concept and providing its economic rationale. We describe how object-oriented programming evolved into local component models (e.g. Java Beans) and distributed object technologies (e.g. CORBA, RMI and COM). We then address how these technologies matured into distributed component models (e.g. Enterprise Java Beans and CORBA). We give an assessment of the maturity of each of these technologies and sketch how they are used to build distributed architectures.

Full-Day Tutorial F3

Aspect-Oriented Programming

Gregor Kiczales, University of British Columbia, Canada
Erik Hilsdale, Xerox PARC, USA

Aspect-oriented programming (AOP) is a technique for improving separation of concerns in software design and implementation. AOP works by providing explicit mechanisms for capturing the structure of crosscutting concerns. Using traditional techniques the implementation of concerns like exception handling, multi-object protocols, synchronization, and resource sharing tends to be spread out across the source code. The lack of modularity for these concerns makes them more difficult to develop and maintain.

This tutorial will show how to use AOP to implement concerns like these in a concise modular way. The effect of using AOP on modularity, extensibility, separate development and overall program comprehensibility will be discussed, as well as issues in the adoption of AOP into existing projects.

Half-Day Tutorial H5

Building Systems from Commercial Components: Method Foundations

Kurt Wallnau and Robert Seacord, Software Engineering Institute at CMU, USA

This tutorial describes fundamental ideas of component based development. The tutorial touches on different categories of component-based development method, and the problems they address. We then sharpen the focus to one class of design problem and the essential methodological response to this class of problem: systems developed from pre-existing components acquired from commercial sources, where these components are deployed onto operating system platforms. Topics covered include: evaluation techniques and myths associated with them; design as search; risk and feasibility as search criteria; and, representation and management of the search space. A case study, drawn from first-hand experience on an industrial-scale project, will be presented to illustrate the main ideas.

Half-Day Tutorial H8

EasyWinWin: A Groupware-Supported Methodology For Requirements Negotiation

Barry Boehm, University of Southern California, USA
Paul Grünbacher, Johannes Kepler University, Austria

EasyWinWin is a requirements definition methodology that builds on the win-win negotiation approach and leverages collaborative technology to improve the involvement and interaction of key stakeholders. With EasyWinWin, the stakeholders move through a step-by-step win-win negotiation where they collect, elaborate, and prioritize their requirements, and then surface and resolve issues. This tutorial introduces the EasyWinWin negotiation approach and situates it with respect to other leading requirements determination approaches, and within the spiral model of software development. We explain the objectives and deliverables of each step in the methodology, and offer tips and pitfalls from the field. We give a live demonstration of the collaborative tools and the methodology in action, and demonstrate facilitation techniques that keep the process moving forward. Throughout the tutorial, we will present the highlights from several real-world EasyWinWin projects.

Half-Day Tutorial H10

From Use Cases to Code – Rigorous Software Development with the UML

Albert Zündorf, Technical University of Braunschweig, Germany

The Rational Unified Process lacks technical guidance for the development of OO applications. This tutorial fills this gap. We first use UML scenario diagrams to analyze use-cases. Next, we show a method to analyze scenarios and to derive UML class diagrams and UML behavior modeling for active classes and methods. We show how to choose and embed design patterns in a design and how to employ different architectural styles. From such a precise design, smart CASE tools generate fully functional implementations. We explain state-of-the-art code generation concepts for UML and assess current CASE tools for their code generation capabilities and for their support through all software development phases more generally.

Workshops

W1: International Workshop on Principles of Software Evolution – IWPSE 2001

Contact: T. Tamai, University of Tokyo, Japan
(iwpse2001@jaist.ac.jp)
esec.ocg.at/workshops

The international workshop on software evolution, IWPSE 2001, is organized for discussing and presenting papers on the theory and experience of software evolution. Software evolution generally means that software changes itself according to the change of its specification/requirements or its operating environment. It is widely recognized as one of the most important problems in software engineering. Although a significant amount of work has been done so far and most of the modern software concepts are essential for software evolution, it is still a challenging problem to be attacked.

This is due to its inherent complexity and to the lack of theoretical foundation and empirical studies of software evolution. IWPSE 2001 is intended to provide a forum to discuss a wide range of topics of software evolution:

- Theory of software evolution
- Evolution of requirements and environments
- Architecture for evolution and evolution of architecture
- Software process for evolution and evolution of software process
- Methodology for evolutionary design and development
- Testing and verification of evolution
- Metrics of evolution
- Configuration and change management for evolution
- Development support environment for evolutionary
- Experience and lessons learned from evolutionary software systems

W2: Workshop on Composition Languages – WCL 2001

Contact: Jean-Guy Schneider, Swinburne University of Technology, Australia (schneidr@it.swin.edu.au)
Markus Lumpe, Iowa State University of Science and Technology, USA (lumpe@cs.iastate.edu)
esec.ocg.at/workshops

The aim of WCL 2001 is to provide a forum to address problems concerning the design and implementation of higher-level languages for component-based software development. The main focus of the workshop will be on language aspects, and not on component-based systems in general. Besides a discussion of theoretical and practical issues related to composition languages, we hope that this workshop also results in an outline of collaborative topics relevant for both researchers and practitioners as well as a list of areas for further exploration.

In contrast to similar workshops in the area of component-based software, WCL 2001 aims to particularly address specific problems related to composition systems and environments. More precisely, we would like to emphasize important issues of

- the design and implementation of higher-level languages for component-based software development,
- the definition of new paradigms for the specification of reusable architectural assets, and
- expressing applications as compositions of software components (i.e. scripting).