

Foreword

ETAPS 2002 was the fifth instance of the European Joint Conferences on Theory and Practice of Software. ETAPS is an annual federated conference that was established in 1998 by combining a number of existing and new conferences. This year it comprised 5 conferences (FOSSACS, FASE, ESOP, CC, TACAS), 13 satellite workshops (ACL2, AGT, CMCS, COCV, DCC, INT, LDTA, SC, SFEDL, SLAP, SPIN, TPTS, and VISS), 8 invited lectures (not including those specific to the satellite events), and several tutorials.

The events that comprise ETAPS address various aspects of the system development process, including specification, design, implementation, analysis, and improvement. The languages, methodologies, and tools which support these activities are all well within its scope. Different blends of theory and practice are represented, with an inclination towards theory with a practical motivation on one hand and soundly-based practice on the other. Many of the issues involved in software design apply to systems in general, including hardware systems, and the emphasis on software is not intended to be exclusive.

ETAPS is a loose confederation in which each event retains its own identity, with a separate program committee and independent proceedings. Its format is open-ended, allowing it to grow and evolve as time goes by. Contributed talks and system demonstrations are in synchronized parallel sessions, with invited lectures in plenary sessions. Two of the invited lectures are reserved for “unifying” talks on topics of interest to the whole range of ETAPS attendees. The aim of cramming all this activity into a single one-week meeting is to create a strong magnet for academic and industrial researchers working on topics within its scope, giving them the opportunity to learn about research in related areas, and thereby to foster new and existing links between work in areas that were formerly addressed in separate meetings.

ETAPS 2002 was organized by the Laboratoire Verimag in cooperation with

Centre National de la Recherche Scientifique (CNRS)
Institut de Mathématiques Appliquées de Grenoble (IMAG)
Institut National Polytechnique de Grenoble (INPG)
Université Joseph Fourier (UJF)
European Association for Theoretical Computer Science (EATCS)
European Association for Programming Languages and Systems (EAPLS)
European Association of Software Science and Technology (EASST)
ACM SIGACT, SIGSOFT, and SIGPLAN

The organizing team comprised

Susanne Graf - General Chair
Saddek Bensalem - Tutorials
Rachid Echahed - Workshop Chair
Jean-Claude Fernandez - Organization

Alain Girault - Publicity
Yassine Lakhnech - Industrial Relations
Florence Maraninchi - Budget
Laurent Mounier - Organization

Overall planning for ETAPS conferences is the responsibility of its Steering Committee, whose current membership is:

Egidio Astesiano (Genova), Ed Brinksma (Twente), Pierpaolo Degano (Pisa), Hartmut Ehrig (Berlin), José Fiadeiro (Lisbon), Marie-Claude Gaudel (Paris), Andy Gordon (Microsoft Research, Cambridge), Roberto Gorrieri (Bologna), Susanne Graf (Grenoble), John Hatcliff (Kansas), Görel Hedin (Lund), Furio Honsell (Udine), Nigel Horspool (Victoria), Heinrich Hußmann (Dresden), Joost-Pieter Katoen (Twente), Paul Klint (Amsterdam), Daniel Le Métayer (Trusted Logic, Versailles), Ugo Montanari (Pisa), Mogens Nielsen (Aarhus), Hanne Riis Nielson (Copenhagen), Mauro Pezzè (Milan), Andreas Podelski (Saarbrücken), Don Sannella (Edinburgh), Andrzej Tarlecki (Warsaw), Herbert Weber (Berlin), Reinhard Wilhelm (Saarbrücken)

I would like to express my sincere gratitude to all of these people and organizations, the program committee chairs and PC members of the ETAPS conferences, the organizers of the satellite events, the speakers themselves, and finally Springer-Verlag for agreeing to publish the ETAPS proceedings. As organizer of ETAPS'98, I know that there is one person that deserves a special applause: Susanne Graf. Her energy and organizational skills have more than compensated for my slow start in stepping into Don Sannella's enormous shoes as ETAPS Steering Committee chairman. Yes, it is now a year since I took over the role, and I would like my final words to transmit to Don all the gratitude and admiration that is felt by all of us who enjoy coming to ETAPS year after year knowing that we will meet old friends, make new ones, plan new projects and be challenged by a new culture! Thank you Don!

January 2002

José Luiz Fiadeiro

Preface

The conference on Fundamental Approaches to Software Engineering (FASE) as one part of the European Joint Conferences on Theory and Practice of Software (ETAPS) focused on both aspects of ‘engineering’: rigor and applicability.

FASE 2002 now in its fifth year promoted the paradigm of ‘continuous software engineering’, including component-based software architecture, model and meta-model-based software engineering, and the understanding of the software process as an evolutionary process for the following reasons, as stated in the call for papers:

Large-scale information and communication infrastructures are of growing concern to industry and public organizations. They are expected to exist for an indefinite length of time, are supposed to be flexibly adjustable to new requirements, and are hence demanded to encompass evolvable software systems. This poses new challenges to software engineering research and practice: new software structuring and scaling concepts are needed for heterogeneous software federations that consist of numerous autonomously developed, communicating, and inter-operating systems; new software development processes are needed to enable the continuous improvement and extension of heterogeneous software federations.

Different component paradigms are under discussion now, a large number of specification and modeling languages have been proposed, and an increasing number of software development tools and environments have been made available to cope with the problems. At the same time research on new theories, concepts, and techniques is under way that aims at the development of their precise and (mathematically) formal foundation. In the call for papers, the following topics were emphasized:

- Component concepts and component-based software architectures, including practical concepts like EJB, DCOM, or CORBA
- Integration platforms and middleware systems for large-scale heterogeneous software federations
- Model-based software engineering
- Semi-formal and formal modeling and specification techniques for component-based software
- Meta-models of modeling and specification concepts
- Experience reports on best practices with component models and specifications, development tools, modeling environments, and software development kits
- Integration of formal concepts and current best-practice concepts in industrial software development

The program committee consisted of:

Egidio Astesiano (Genova, Italy)
Christine Choppy (Paris, France)
José Fiadeiro (Lisbon, Portugal)
Anthony Finkelstein (London, UK)
Marie-Claude Gaudel (Orsay, France)
Heinrich Hußmann (Dresden, Germany)
Ralf-Detlef Kutsche, co-chair (Berlin, Germany)
Michael Löwe (Hannover, Germany)
Tiziana Margaria (Dortmund, Germany)
Narciso Martí Oliet (Madrid, Spain)
Michaël Périn (UJF/Verimag, France)
Herbert Weber, co-chair (Berlin, Germany)

The program committee received almost 60 papers, that were evaluated in an electronic submission and reviewing procedure. The members of the PC worked hard, as did also a number of co-reviewers, who are listed below. The PC cooperated closely with the responsible coordinator of the tool demonstration track, Peter D. Mosses. We would like to cordially express our thanks to all members of the PC and to all co-reviewers for their work.

Finally, the program committee decided to select 21 papers, and, additionally, in a different selection procedure, 4 short papers for the tool demonstrations associated with FASE. The result of the efforts of the reviewers and the PC are the proceedings in front of you, containing valuable new ideas and input to interesting and controversial discussions and further joint work in the challenging area of theory and practice of software engineering.

The invited lecture, with the aim of helping to bridge the gap between theory and practice, was delivered by Hellmuth Broda, the CTO of SUN Microsystems Inc. for Europe, Middle East, and Africa. He has agreed to give a talk on new visions and experiences concerning software architectures and software development in global infrastructures.

Finally, we would like to express our thanks to all contributors to the success of the conference, particularly to José Luiz Fiadeiro, the chairman of the ETAPS steering committee, and to Susanne Graf and her team in Grenoble for their great efforts in the ETAPS global coordination. Last but not least, a special thanks to the team at CIS/TU Berlin, helping with several aspects of the conference and, especially to Lutz Friedel, Claudia Gantzer, and Andreas Leicher for their great support in putting together the proceedings.

Referees

Anahita Akhavan
 Egidio Astesiano
 Didier Bert
 Marius Bozga
 Volker Braun
 Felix Bübl
 Christine Choppy
 Juliane Dehnert
 Giorgio Delzanno
 Birgit Demuth
 Mireille Ducass
 Amal El-Fallah
 José Fiadeiro
 Anthony Finkelstein
 Mike Fischer
 Robert France
 David de Frutos-Escrig
 Falk Fuenfstueck
 Marie-Claude Gaudel
 Susanne Graf
 Martin Grosse-Rhode
 Claudia Gsottberger
 Armando Haeberer
 Heinrich Hußmann
 Valérie Issarny
 Jean-Claude Fernandez
 Peter R. King
 Yves Kodratoff
 Ralf-Detlef Kutsche
 Yassine Lakhnech
 Ulrike Lechner
 Y. Ledru
 Andreas Leicher
 Nicole Levy

Ben Lindner
 Luis F. Llana-Díaz
 Michael Löwe
 Antonia Lopes
 Tiziana Margaria
 Bruno Marre
 Ana Moreira
 Laurent Mounier
 Peter D. Mosses
 Markus Nagelmann
 Oliver Niese
 Thomas Noll
 Manuel Núñez
 Narciso Martí Oliet
 Aomar Osmani
 Ricardo Peña
 Michaël Périn
 Pascal Poizat
 Gianna Reggio
 Simone Roettger
 Michel de Rougemont
 Oliver Rütthing
 Sylviane R. Schwer
 Jörn Guy Süß
 Gabriele Taentzer
 Anne Thomas
 Alberto Verdejo
 Frederic Voisin
 Herbert Weber
 Michel Wermelinger
 Haiseung Yoo
 Elena Zucca