

Foreword

ETAPS'99 is the second 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 comprises five conferences (FOSSACS, FASE, ESOP, CC, TACAS), four satellite workshops (CMCS, AS, WAGA, CoFI), seven invited lectures, two invited tutorials, and six contributed 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 programme 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. As an experiment, ETAPS'99 also includes two invited tutorials on topics of special interest. 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 have hitherto been addressed in separate meetings.

ETAPS'99 has been organized by Jan Bergstra of CWI and the University of Amsterdam together with Frans Snijders of CWI. Overall planning for ETAPS'99 was the responsibility of the ETAPS Steering Committee, whose current membership is:

André Arnold (Bordeaux), Egidio Astesiano (Genoa), Jan Bergstra (Amsterdam), Ed Brinksma (Enschede), Rance Cleaveland (Stony Brook), Pierpaolo Degano (Pisa), Hartmut Ehrig (Berlin), José Fiadeiro (Lisbon), Jean-Pierre Finance (Nancy), Marie-Claude Gaudel (Paris), Susanne Graf (Grenoble), Stefan Jähnichen (Berlin), Paul Klint (Amsterdam), Kai Koskimies (Tampere), Tom Maibaum (London), Ugo Montanari (Pisa), Hanne Riis Nielson (Aarhus), Fernando Orejas (Barcelona), Don Sannella (Edinburgh), Gert Smolka (Saarbrücken), Doaitse Swierstra (Utrecht), Wolfgang Thomas (Aachen), Jerzy Tiuryn (Warsaw), David Watt (Glasgow)

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CWI

The University of Amsterdam

The European Association for Programming Languages and Systems

The European Association for Theoretical Computer Science

I would like to express my sincere gratitude to all of these people and organizations, the programme committee 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.

Edinburgh, January 1999

Donald Sannella

ETAPS Steering Committee Chairman

Preface

This is the second time that of ESOP has formed part of the ETAPS cluster of conferences, workshops, working group meetings and other associated activities. One of the results of colocating so many conferences is a reduction in the number of possibilities to submit a paper to a European conference and the increased competition between conferences that occurs when boundaries between individual conferences have not yet become well established. This may have been the reason for the fact that only 44 submission were received this year. On the other hand we feel that the average quality of submissions has gone up, and thus the program committee was able to select 18 good papers, only one less than the year before.

The program committee did not meet physically, and all discussion was done using a Web-driven data base system. Despite some mixed feelings there is an overall tendency to appreciate the extra time available for giving papers a second look and really going into comments made by other program committee members.

I want to thank my fellow program committee members for the work they have put into the refereeing process and the valuable feedback they have given to authors. I want to thank the referees for their work and many detailed comments, and finally I want to thank everyone who has submitted a paper: without authors, no conference.

Utrecht, January 1999

Doaitse Swierstra
ESOP'99 Chairman

Program Committee:

Ralph Back, TUCS, Turku, Finland
Roland Backhouse, Eindhoven University of Technology, The Netherlands
François Bourdoncle, Ecole des Mines de Paris, France
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Gert Smolka, Universität des Saarlandes, Germany
Doaitse Swierstra (Chair), Utrecht University, The Netherlands

Referees for ESOP'99

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Franz Achermann
Hassan Hait-Kaci
Paulo Almeida
Luís Barbosa
Gilles Barthe
Richard Bird
Frank S. de Boer
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Programming Languages and Systems

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