

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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- KPN Research
- Philips Research
- The EU programme “Training and Mobility of Researchers”
- 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

FASE'99, the Second International Conference on Fundamental Approaches to Software Engineering is one of the major events of ETAPS'99, aiming to bridge the gap between theory and practice.

FASE'99 is intended to provide a forum where fundamental approaches are presented, compared and discussed. Based on the principle that to enhance software quality, the software production process requires rigorous methods, firmly grounded on scientifically justified techniques, the conference addresses basic issues, especially in the integration of so-called formal and informal aspects as well as rigorous experimental studies of effectiveness and applicability of formal methods. After a rigorous refereeing process, followed by a fifteen-days electronic selection meeting, 13 papers were selected for presentation and are included in this volume. It also includes two invited papers and two demos.

The FASE'99 Program Committee (PC) members are :

- Jean-Pierre Finance (Chair, Université Henri Poincaré, France)
- Egidio Astesiano (Università di Genova, Italy, former chair)
- Michel Bidoit (Ecole Normale Supérieure de Cachan, France)
- Dan Craigen (Canada)
- Carlo Ghezzi (Politecnico di Milano, Italy)
- Hartmut Ehrig (Technische Universität Berlin, Germany)
- René Jacquart (CERT DERI, Toulouse, France)
- Cliff Jones (UK)
- Tom Maibaum (Imperial College, London, UK)
- F. Orejas (Barcelona, Spain)
- Doug Smith (Kestrel Institute, Palo Alto, California, USA)
- Axel Van Lamsweerde (Université Catholique de Louvain, Belgium)
- Martin Wirsing (Universität München, München, Germany)

I thank the PC very much for its efficient cooperation during the refereeing and selection process, and my thanks also go to the other referees involved. The discussions were often lively, sometimes heated, but always fair and constructive.

I would like to express my sincere gratitude to Don Sannella, the coordinator of the ETAPS' 99 Steering Committee, who helped us in a firm but always kindly way to respect the calendar and our deadlines.

In all interactions with authors and the publisher, I have been invaluablely supported by Nadine Beurné and Jean-Michel Antoine : many thanks to them.

Nancy, January 1999

Jean-Pierre Finance
FASE'99 PC Chairman