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Fundamental Approaches to Software Engineering

10th International Conference, FASE 2007
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on Theory and Practice of Software, ETAPS 2007
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Proceedings

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Foreword

ETAPS 2007 is the tenth instance of the European Joint Conferences on Theory and Practice of Software, and thus a cause for celebration.

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 the 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.

History and Prehistory of ETAPS

ETAPS as we know it is an annual federated conference that was established in 1998 by combining five conferences [Compiler Construction (CC), European Symposium on Programming (ESOP), Fundamental Approaches to Software Engineering (FASE), Foundations of Software Science and Computation Structures (FOSSACS), Tools and Algorithms for Construction and Analysis of Systems (TACAS)] with satellite events.

All five conferences had previously existed in some form and in various collocated combinations: accordingly, the prehistory of ETAPS is complex. FOSSACS was earlier known as the Colloquium on Trees in Algebra and Programming (CAAP), being renamed for inclusion in ETAPS as its historical name no longer reflected its contents. Indeed CAAP's history goes back a long way; prior to 1981, it was known as the Colloquium de Lille sur les Arbres en Algèbre et en Programmation. FASE was the indirect successor of a 1985 event known as Colloquium on Software Engineering (CSE), which together with CAAP formed a joint event called TAPSOFT in odd-numbered years. Instances of TAPSOFT, all including CAAP plus at least one software engineering event, took place every two years from 1985 to 1997 inclusive. In the alternate years, CAAP took place separately from TAPSOFT.

Meanwhile, ESOP and CC were each taking place every two years from 1986. From 1988, CAAP was collocated with ESOP in even years. In 1994, CC became a “conference” rather than a “workshop” and CAAP, CC and ESOP were thereafter all collocated in even years.

TACAS, the youngest of the ETAPS conferences, was founded as an international workshop in 1995; in its first year, it was collocated with TAPSOFT. It took place each year, and became a “conference” when it formed part of ETAPS 1998. It is a telling indication of the importance of tools in the modern field of informatics that TACAS today is the largest of the ETAPS conferences.

The coming together of these five conferences was due to the vision of a small group of people who saw the potential of a combined event to be more than the sum of its parts. Under the leadership of Don Sannella, who became the first ETAPS steering committee chair, they included: Andre Arnold, Egidio Astesiano, Hartmut Ehrig, Peter Fritzsos, Marie-Claude Gaudel, Tibor Gyimothy, Paul Klint, Kim Guldstrand Larsen, Peter Mosses, Alan Mycroft, Hanne Riis Nielson, Maurice Nivat, Fernando Orejas, Bernhard Steffen, Wolfgang Thomas and (alphabetically last but in fact one of the ringleaders) Reinhard Wilhelm.

ETAPS today is a loose confederation in which each event retains its own identity, with a separate programme committee and 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 1998–2006

The first ETAPS took place in Lisbon in 1998. Subsequently it visited Amsterdam, Berlin, Genova, Grenoble, Warsaw, Barcelona, Edinburgh and Vienna before arriving in Braga this year. During that time it has become established as the major conference in its field, attracting participants and authors from all over the world. The number of submissions has more than doubled, and the numbers of satellite events and attendees have also increased dramatically.

ETAPS 2007

ETAPS 2007 comprises five conferences (CC, ESOP, FASE, FOSSACS, TACAS), 18 satellite workshops (ACCAT, AVIS, Bytecode, COCV, FESCA, FinCo, GT-VMT, HAV, HFL, LDTA, MBT, MOMPES, OpenCert, QAPL, SC, SLA++P, TERMGRAPH and WITS), three tutorials, and seven invited lectures (not including those that were specific to the satellite events). We received around 630 submissions to the five conferences this year, giving an overall acceptance rate of 25%. To accommodate the unprecedented quantity and quality of submissions, we have four-way parallelism between the main conferences on Wednesday for the first time. Congratulations to all the authors who made it to the final programme! I hope that most of the other authors still found a way of participating in this exciting event and I hope you will continue submitting.

ETAPS 2007 was organized by the Departamento de Informática of the Universidade do Minho, in cooperation with

- European Association for Theoretical Computer Science (EATCS)
- European Association for Programming Languages and Systems (EAPLS)
- European Association of Software Science and Technology (EASST)
- The Computer Science and Technology Center (CCTC, Universidade do Minho)
- Camara Municipal de Braga
- CeSIUM/GEMCC (Student Groups)

The organizing team comprised:

- João Saraiva (Chair)
- José Bacelar Almeida (Web site)
- José João Almeida (Publicity)
- Luís Soares Barbosa (Satellite Events, Finances)
- Victor Francisco Fonte (Web site)
- Pedro Henriques (Local Arrangements)
- José Nuno Oliveira (Industrial Liaison)
- Jorge Sousa Pinto (Publicity)
- António Nestor Ribeiro (Fundraising)
- Joost Visser (Satellite Events)

ETAPS 2007 received generous sponsorship from Fundação para a Ciência e a Tecnologia (FCT), Enabler (a Wipro Company), Cisco and TAP Air Portugal.

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

Perdita Stevens (Edinburgh, Chair), Roberto Amadio (Paris), Luciano Baresi (Milan), Sophia Drossopoulou (London), Matt Dwyer (Nebraska), Hartmut Ehrig (Berlin), José Fiadeiro (Leicester), Chris Hankin (London), Laurie Hendren (McGill), Mike Hinchey (NASA Goddard), Michael Huth (London), Anna Ingólfssdóttir (Aalborg), Paola Inverardi (L'Aquila), Joost-Pieter Katoen (Aachen), Paul Klint (Amsterdam), Jens Knoop (Vienna), Shriram Krishnamurthi (Brown), Kim Larsen (Aalborg), Tiziana Margaria (Göttingen), Ugo Montanari (Pisa), Rocco de Nicola (Florence), Jakob Rehof (Dortmund), Don Sannella (Edinburgh), João Saraiva (Minho), Vladimiro Sassone (Southampton), Helmut Seidl (Munich), Daniel Varro (Budapest), Andreas Zeller (Saarbrücken).

I would like to express my sincere gratitude to all of these people and organizations, the programme committee chairs and PC members of the ETAPS conferences, the organizers of the satellite events, the speakers themselves, the many reviewers, and Springer for agreeing to publish the ETAPS proceedings. Finally, I would like to thank the organizing chair of ETAPS 2007, João Saraiva, for arranging for us to have ETAPS in the ancient city of Braga.

Edinburgh, January 2007

Perdita Stevens
ETAPS Steering Committee Chair

Preface

Software engineering is a complex enterprise spanning many sub-disciplines. At its core are a set of technical and scientific challenges that must be addressed in order to set the stage for the development, deployment, and application of tools and methodologies in support of the construction of complex software systems. The International Conference on Fundamental Approaches to Software Engineering (FASE) — as one of the European Joint Conferences on Theory and Practice of Software (ETAPS) — focuses on those core challenges. FASE provides the software engineering research community with a forum for presenting well-founded theories, languages, methods, and tools arising from both fundamental research in the academic community and applied work in practical development contexts.

In 2007, FASE continued in the strong tradition of FASE 2006 by drawing a large and varied number of submissions from the community — 141 in total. Each submission was reviewed by at least three technical experts from the Program Committee with many papers receiving additional reviews from the broader research community. Each paper was discussed during a 10-day “electronic” meeting. In total, the 26 members of the Program Committee, along with 101 additional reviewers, produced more than 500 reviews. We sincerely thank each of them for the effort and care taken in reviewing and discussing the submissions.

The Program Committee selected a total of 30 papers — an acceptance rate of 21%. Accepted papers addressed topics including model-driven development, distributed systems, specification, service-oriented systems, testing, software analysis, and design. The technical program was complemented by the invited lectures of Jan Bosch on “Software Product Families: Towards Compositionality” and of Bertrand Meyer on “Contract-Driven Development.”

FASE 2007 was held in Braga (Portugal) as part of the tenth meeting of ETAPS — for some history read the Foreword in this volume. While FASE is an integral part of ETAPS, it is important to note the debt FASE owes to ETAPS and its organizers. FASE draws significant energy from its synergistic relationships with the other ETAPS meetings, which gives it a special place in the software engineering community. Perdita Stevens and the rest of the ETAPS Steering Committee have provided extremely helpful guidance to us in organizing FASE 2007 and we thank them. João Saraiva and his staff did a wonderful job as local organizers and as PC chairs we appreciate how smoothly the meeting ran due to their efforts.

In closing, we would like to thank the authors of all of the FASE submissions and the attendees of FASE sessions for their participation and we look forward to seeing you in Budapest for FASE 2008.

January 2007

Matthew B. Dwyer
Antónia Lopes

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