IFIP Advances in Information
and Communication Technology 310

IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

> *IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.*

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

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Analysis, Architectures and Modelling of Embedded Systems

Third IFIP TC 10 International
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Langenargen, Germany, September 14-16, 2009
Proceedings

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Preface

This book presents the technical program of the International Embedded Systems Symposium (IESS) 2009. Timely topics, techniques and trends in embedded system design are covered by the chapters in this volume, including modelling, simulation, verification, test, scheduling, platforms and processors. Particular emphasis is paid to automotive systems and wireless sensor networks. Sets of actual case studies in the area of embedded system design are also included.

Over recent years, *embedded systems* have gained an enormous amount of processing power and functionality and now enter numerous application areas, due to the fact that many of the formerly external components can now be integrated into a single System-on-Chip. This tendency has resulted in a dramatic reduction in the size and cost of embedded systems. As a unique technology, the design of embedded systems is an essential element of many innovations.

Embedded systems meet their performance goals, including real-time constraints, through a combination of special-purpose hardware and software components tailored to the system requirements. Both the development of new features and the reuse of existing intellectual property components are essential to keeping up with ever more demanding customer requirements. Furthermore, design complexities are steadily growing with an increasing number of components that have to cooperate properly. Embedded system designers have to cope with multiple goals and constraints simultaneously, including timing, power, reliability, dependability, maintenance, packaging and, last but not least, price.

The significance of these constraints varies depending on the application area a system is targeted for. Typical embedded applications include consumer electronic, automotive, medical, and communication devices.

The International Embedded Systems Symposium (IESS) is a unique forum to present novel ideas, exchange timely research results, and discuss the state of the art and future trends in the field of embedded systems. Contributors and participants from both industry and academia take active part in this symposium which fosters research relations and collaboration between academic researchers and industry representatives worldwide. The IESS conference is organized by the Computer Systems Technology committee (TC10) of the International Federation for Information Processing (IFIP).

IESS is a true inter-disciplinary conference on the design of embedded systems. Computer science and electrical engineering are the predominant academic disciplines concerned with the topics covered in IESS, but many applications also involve civil, mechanical, aerospace, and automotive engineering, as well as various medical disciplines.

In 2005, IESS was held for the first time in Manaus, Brazil. In this initial installment, IESS 2005 was very successful with 30 accepted papers ranging from specification to embedded systems application. IESS 2007 was the second edition of the symposium held in Irvine (CA), USA, with 35 accepted papers and 2 tutorials

ranging from analysis, design methodologies to case studies from automotive and medical applications.

IESS 2009 was held in Langenargen, Germany, at Schloß Montfort a historic castle. The castle is located by the Bodensee. The articles presented in this book are the result of a rigorous double-blind review process implemented by the Technical Program Committee. Out of 46 valid submissions, 28 papers were accepted for publication, yielding an overall acceptance rate of 60.8%.

The strong technical program led to a very successful IESS 2009 conference.

First and foremost, we thank our sponsors ZF Friedrichshafen AG, the Carl von Ossietzky University Oldenburg, and the Paderborn University for their generous financial support of this conference. Without these contributions, IESS 2009 would not have been possible in its current form.

We would also like to thank IFIP as the organizational body for the promotion and support of the IESS conference.

Last but not least, we thank the authors for their interesting research contributions and the members of the Technical Program Committee for their valuable time and effort in reviewing the articles.

September 2009

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Mauro C. Zanella
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IFIP TC10 Working Conference: International Embedded Systems Symposium (IESS), September 14–16, 2009, Schloß Montfort, Langenargen, Germany

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