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Dependable Computing EDCC-4

4th European Dependable Computing Conference
Toulouse, France, October 23-25, 2002
Proceedings

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Foreword

It was with great pleasure that, on behalf of the entire organizing committee, I welcomed participants to EDCC-4, the Fourth European Dependable Computing Conference, held for the first time in France. The fourth issue of EDCC carried on the traditions established by the previous conferences in this series: EDCC-1 was held in Berlin (Germany) in October 1994, EDCC-2 in Taormina (Italy) in October 1996, and EDCC-3 in Prague (Czech Republic) in September 1999.

EDCC evolved from a merger of tow other conference series at the moment when the Iron Curtain fell. One of these, known as the "International Conference on Fault-Tolerant Computing Systems", was organized during the period 1982–1991, by the German Technical Interest Group "Fault-Tolerant Computing Systems". The other series, known as the "International Conference on Fault-Tolerant Systems and Diagnostics", was organized during the period 1975–1990 in the former Czechoslovakia, Poland, Bulgaria, and the former GDR. The composition of the EDCC steering committee and the organizing committees of the successive issues of the conference have mirrored the East–West unification character of the conference series.

The EDCC conference is becoming a unique meeting point for researchers and practitioners from all over the world in the field of Dependable Systems. It is organized by the SEE Working Group "Dependable Computing" in France, the GI/ITG/GMA Technical Committee on Dependability and Fault Tolerance in Germany, and the AICA Working Group "Dependability of Computer Systems" in Italy. Furthermore, committees of several global professional organizations, such as IEEE and IFIP, support the conference.

Organizations and individuals are becoming increasingly dependent on sophisticated computing systems. Thus, dependability – and all its attributes of reliability, availability, safety, and security, for example – is becoming more and more challenging for every computing system. This growing importance of the field of dependability in everyday life is strongly emphasized by the fact that the European Union has initiated major specific actions on dependability, both in the current 5th Framework Programme on Information Society Technologies, and in the 6th Framework Programme to be launched in a few months.

In September 1999, Toulouse was selected as the conference venue for the 4th conference issue. This beautiful city, situated in the southwest of France, is the capital of the "Midi-Pyrénées" region, the largest French province. Toulouse is a major European center for educational institutions, including universities and several research laboratories covering all spheres of knowledge. A number of industrial companies especially concerned with dependability challenges are located in and around Toulouse: Alcatel Space Industries, Astrium, EADS Airbus, Motorola, Rockwell Collins France, Thales Avionics, etc.

The choice of Toulouse as the October 2002 conference venue gave us the opportunity to organize it in conjunction with the Innovation and Future Technologies Fair, SITEF 2002. This exhibition presents the European Research Programmes, and is structured around the themes defined in the 5th and 6th Framework Programmes which are essential for the economy and jobs in the future: information and communication, health and ecosystem resources, the means required for competitive and sustained growth. Thus, EDCC-4 provided a unique occasion for the participants to visit the SITEF exhibition and initiate or reinforce contacts with both the academic and industrial European communities, in particular, the preparation of the 6th Framework Programme.

Organizing an international conference is never possible without the collective efforts of many people. I had the privilege to work with a group of excellent people, and it is my pleasure to extend to them my sincere thanks for their exceptional work. For lack of space, I cannot draw up the list of all those people who contributed to the successful organization of EDCC-4. But let me mention at least some of them: Andrea Bondavalli (Program Chair), Fabrizio Grandoni (Publication Chair), Vincent Nicomette (Publicity Chair), Felicita Di Giandomenico (Fast Abstracts Chair), the 32 members of the Program Committee, and all the external referees.

The conference received generous financial support from several organizations: the Paul Sabatier University of Toulouse, the French National Centre for Scientific Research, the "Chambre de Commerce et d'Industrie de Toulouse", the French Ministry of Research, and the European Commission. Their support was necessary to offer the participants what we hope was a cordial and unforgettable hospitality. Their help is gratefully acknowledged.

Finally, I would like to thank Springer-Verlag for publishing the conference proceedings in the well-known series of Lecture Notes in Computer Science.

I hope that the conference participants enjoyed both the technical and social programs of EDCC-4, thus confirming the successful continuation of this series.

Toulouse, July 2002 Pascale Thévenod-Fosse

Preface

The European Dependable Computing Conference is in its fourth edition. EDCC is the successor of two European conference series on fault tolerance, dependability, and aspects of testing and diagnosis. One of them, known as the "International Conference on Fault-Tolerant Computing Systems" was organized during the period 1982-1991 by the German Technical Interest Group "Fault-Tolerant Computing Systems". The other series, known as the "International Conference on Fault-Tolerant Systems and Diagnostics", was organized during the period 1975-1990 in the former Czechoslovakia, Poland, Bulgaria, and the former GDR. EDCC-1 was held in Berlin (Germany) in October 1994, EDCC-2 in Taormina (Italy) in October 1996, and EDCC-3 in Prague (Czech Republic) in September 1999; Toulouse (France) was chosen for this fourth edition.

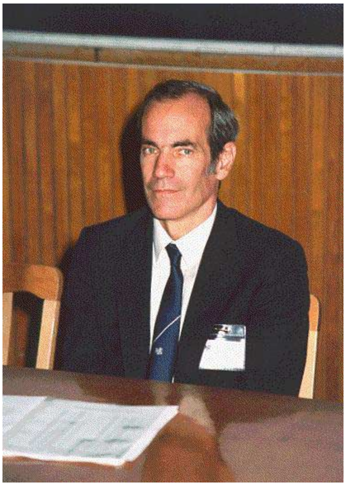
EDCC is organized by the SEE Working Group "Dependable Computing" in France, the GI/ITG/GMA Technical Committee on Dependability and Fault Tolerance in Germany, and the AICA Working Group "Dependability of Computer Systems" in Italy. Furthermore, committees of several global professional organizations, such as IEEE and IFIP, support the conference. EDCC is thus the forum for European researchers in dependability, and is extending towards a world-wide dimension as researchers from all over the world show their interest by choosing EDCC for submitting their manuscripts and presenting their work.

The selection process was very careful. Each manuscript was sent out for review to three PC members plus two external reviewers. Fifty-one submissions from 18 countries were received and the 32 members of the Program Committee and 68 external reviewers returned on time a total of 217 reviews. This made the selection process very comprehensive. The entire process was managed using the START tool. Silvano Chiaradonna of CNUCE-CNR graciously helped with the acquisition, operation, and maintenance of this tool, and for his efforts I feel particularly indebted to him. The committee met in Pisa, Italy for two days in May 2002 to arrange the technical program. A total of 16 papers were selected to appear in the Proceedings. The rest of the technical program was defined to include three panels, a forum for Fast Abstracts to report on very recent work, and a keynote on contemporary topics.

I would like to thank the Program Committee members for their help in putting together the final program. They helped us in many ways right from the beginning, including topic identification, suggesting external reviewers, refereeing, and attending the Pisa meeting in large numbers. I also thank all of the external reviewers for making available their time and their technical knowledge, and the authors of all the manuscripts for their contributions and the timely submissions. Special thanks go to Pascale Thévenod, an enthusiastic and supportive General Chair, Felicita Di Giandomenico, the Fast Abstracts Chair, and Rogerio De Lemos, Jean-Claude Laprie, and Luca Simoncini who led the organization of three panels on interesting and stimulating topics. I would like finally to acknowledge the support of the Steering Committee.

I hope the participants found the conference interesting and stimulating and will continue to contribute to its success in the coming years.

Firenze, July 2002 Andrea Bondavalli



These proceedings were just ready for printing when the sad and terrible news reached the organizers that Jan Hlavicka, member of the Steering Committee of EDCC and the Chairman of the previous EDCC, has gone forever. Jan was not only an outstanding researcher and a devoted professor, but the archetype of a European scientist. He was the initiator of the FTSD conferences held annually from the mid 1970s until 1990. The FTSD conferences were the integrative platform for scientists working in the field of dependability in Central- and Eastern Europe and became one of the roots of the EDCC series. Jan was one of the first to make an effort to integrate scientists both at the regional and at the international levels. We must thank him for the fast integration of our community after the political changes in 1989.

Jan's vision that we have a unique European culture is such an evident truth that we will keep pushing forward to continue the ideas of our late friend.

Throughout his career, he was constantly productive in both research and service to his profession. In short, he was a gentleman and a scholar who will be sincerely missed by all who knew him.

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