

# Formal Specifications of Computer-Based Systems

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## 1. Origins

The IFIP TC10 Working Group 10.1 Computer Aided Systems Theory Committee Meeting at the Vienna University of Technology on the 30<sup>th</sup> September 1999, resulted in expressing the interest to support a joint workshop with the IEEE Computer Society TC-ECBS focused on *Formal Specifications of Computer-Based Systems* (FS CBS) owing to a substantial overlap in this research domain. Franz Pichler, the founder of the IFIP WG10.1, and Charles Rattray, the IFIP WG10.1 chair, delegated Miroslav Sveda, a member of both WG10.1 and TC-ECBS, to act as a contact person in this activity.

The ECBS Executive Committee has welcome and greatly supported origination and implementation of the IEEE/IFIP Joint Workshops on FS CBS as *Formal Specifications Working Group Sessions* following annual ECBS Conferences.

## 2. Joint Workshop 2000

The first IEEE/IFIP Joint Workshop on Formal Specifications of Computer-Based Systems, sponsored by both IEEE TC-ECBS and IFIP WG10.1, has been organized by Miroslav Sveda and Charles Rattray and held in Edinburgh, Scotland, 6-7 April 2000. It created a forum for researchers and practitioners from industry and academia, in which discussions focused on completed work as well as work-in-progress related to FS CBS.

Authors of 17 accepted contributions, which were published in the Preprints Proceedings 2000 [1] and presented at the workshop, had the possibility to extend their submissions to full papers and resubmit them for journal publication. The program committee consisting of Vaclav Dvorak, Charles Rattray, Jerzy Rozenblit and Miroslav Sveda reviewed the 9 full-length papers. The best 6 of them passed the reviewing process by and appeared in the special issue of the electronic Journal of Universal Computer Science (Springer) [2].

## 3. Joint Workshop 2001

The second IEEE/IFIP Joint Workshop on Formal Specifications of Computer-Based Systems, sponsored by both IEEE TC-ECBS and IFIP WG10.1, has been organized by Charles Rattray, Miroslav Sveda and Jerzy Rozenblit and held in Washington, D.C., 20 April 2001. It created again a forum for researchers and practitioners from industry and academia, in which discussions focused on completed work as well as work-in-progress related to FS CBS.

Authors of 21 accepted contributions, which were published in the Preprints Proceedings 2001 [3] and presented at the workshop, had the possibility to extend their submissions to full papers and resubmit them for journal publication. The program committee consisting of Charles Rattray, Miroslav Sveda and Jerzy Rozenblit reviewed the following 17 full-length papers.

1. Prakash Krishnamurthy, Paolo AG Sivilotti:  
Object Protocols for Distributed Systems
2. John Mullins:  
Two Proof Methods for Fully Bisimulation-based Non-deterministic Admissible Interference
3. Perry Alexander, Cindy Kong:  
Heterogeneous Computer-Based System Specification
4. Dan Zhou, Paul E Black:  
Formal Specification of Operating Systems
5. Miroslav Sveda, Frantisek Zezulka, Radimir Vrba  
A Case-Based Reasoning Approach to Reuse of CBS Specifications
6. David Gray, Geoff Hamilton, James Power, David Sinclair:  
A Specification of TCP/IP using Mixed Intuitionistic Linear Logic

7. Akos Ledeczi, Greg Nordstrom, Gabor Karsai, Peter Volgyesi:  
On Metamodel Composition
8. David W Bustard, Patrick J Lundy:  
Low-cost Support for Business Analysis: A Case Study in Methods Integration
9. Manoranjan Satpathy, Colin Snook, Rachel Harrison, Michael Butler:  
A Comparative Study of Formal and Informal Specifications through an Industrial Case Study
10. Jean Baillie, James Malcolm:  
From CSP to Java: A Rough Guide
11. Dirk Beyer, Andy Heinig:  
Different Strategies for BDD-based Reachability Analysis of Timed Automata
12. Andy Galloway, James Blow:  
Multi-layered Domain Specific Formal Languages
13. V. S. Alagar, G. Haidar, V. Srinivasan:  
A Formal Approach to Designing Software for Ease of Extension and Retraction
14. Jiang Guo:  
An Integrated Formal Framework in the Development of Safety Critical Software Systems
15. Dick Beyer, Heinrich Rust:  
Cottbus Timed Automata: Formal Definitions and Semantics
16. Peng Chen, Duminda Wijesekera:  
Hierarchical and Modular Model Checking of Finite State Machines
17. Issa Traore:  
A Framework for Rigorous Testing of Object-oriented Programs

The best of those papers, which will pass the reviewing process by, will appear in the special issues of the Journal of Applied Systems Studies [4] or the Journal of the Formal Aspects of Computing [5].

#### 4. Joint Workshop 2002

The goal of this workshop, following the IEEE ECBS 2002 Conference, is to provide a forum for researchers and practitioners from industry and academia to discuss both completed work and work-in-progress

related to formal specifications of computer-based systems, software, hardware and hardware/ software applications. The co-chairs of this workshop Jerzy Rozenblit, Miroslav Sveda and Charles Rattray encouraged, in particular, studies focusing on integrating formal techniques into systems design and implementation and on various application case studies.

The FS CBS Call for Papers, distributed through e-mail lists among IEEE ECBS and IFIP TC10 communities, asked to submit 5-8 page extended abstracts for publishing in the Preprints Proceedings. The authors will have an opportunity to present a 20-minute talk on their work. The final papers, based on presented extended abstracts and selected from the refereed full-length papers are to be published in a relevant international journal.

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#### References

- [1] Rattray C., Sveda M. (Editors): *Proceedings of the IEEE TC-ECBS + TF RE and IFIP WG10.1 Joint Workshop on Formal Specifications of Computer-Based Systems*. Edinburgh, Scotland, April 6-7, 2000. Produced by University of Stirling, UK, 2000, pp.iii+85.
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[http://www.jucs.org/jucs\\_6\\_11](http://www.jucs.org/jucs_6_11)
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