

Preface

This volume contains one invited paper and eight selected papers from the 22nd International Workshop on Algebraic Development Techniques (WADT 2014), which took place in Sinaia, Romania, during September 4–7, 2014. The event was dedicated to the memory of Joseph A. Goguen – one of the founding members of the ADT community – who visited Sinaia many times with great pleasure in order to meet with his former student and close friend Răzvan Diaconescu, the local chair of WADT 2014. Sinaia is a beautiful mountain resort that has become a traditional Romanian venue for mathematical and theoretical computer science events, from the second edition of the International Mathematical Olympiad, which was held in 1960, to the more recent Sinaia School on Formal Verification of Software Systems, the Romanian–Japanese Algebraic Specification Workshops, and the Summer School on Language Frameworks, which discussed some of the latest developments related to algebraic specification and in particular to the CafeOBJ language and the K semantic framework.

The algebraic approach to system specification encompasses many aspects of the formal design of software systems. Originally born as formal method for reasoning about abstract data types, it now covers new specification frameworks and programming paradigms (such as object-oriented, aspect-oriented, agent-oriented, logic, and higher-order functional programming) as well as a wide range of application areas (including information systems, concurrent, distributed, and mobile systems). The workshop provided an opportunity to present recent and ongoing work, to meet colleagues, and to discuss new ideas and future trends. Typical topics of interest are:

- Foundations of algebraic specification
- Other approaches to formal specification, including process calculi and models of concurrent, distributed and mobile computing
- Specification languages, methods, and environments
- Semantics of conceptual modeling methods and techniques
- Model-driven development
- Graph transformations, term rewriting, and proof systems
- Integration of formal specification techniques
- Formal testing, quality assurance, validation, and verification

As 22 occurrences of the ADT Workshop can be considered as something noteworthy, a short look back may be allowed. The first workshop took place in Sorpesee, followed by Passau (1983), Bremen (1984), Braunschweig (1986), Gullane (1987), Berlin (1988), Wusterhausen (1990), Dourdan (1991), Caldes de Malavella (1992), S. Margherita (1994), Oslo (1995), Tarquinia (1997), Lisbon (1998), Chateau de Bonas (1999), Genoa (2001), Frauenchiemsee (2002), Barcelona (2004), La Roche en Ardenne (2006), Pisa (2008), Etelsen (2010), and Salamanca (2012). With only a few exceptions at the beginning, it also became a tradition to publish selected papers after each workshop in dedicated volumes of Springer's *Lecture Notes in Computer*

Science (LNCS 332, 534, 655, 785, 906, 1130, 1376, 1589, 1827, 2267, 2755, 3423, 4409, 5486, 7137, and 7841) under the title *Recent Trends in Algebraic Development Techniques*. This speaks to the stability of the ADT community and the continuity of the topics of interest. One should realize, however, that some significant transformations took place from 1982 to today. While ADT stood initially for *Abstract Data Types*, it is now (since 1997) the acronym for *Algebraic Development Techniques*, and the list of topics has broadened accordingly in an amazing way.

The scientific program of WADT 2014 consisted of two invited talks by K. Rustan M. Leino (from Microsoft Research, USA) and Christoph Benzmüller (from Freie Universität Berlin, Germany), and of 32 presentations based on selected abstracts of ongoing research. The abstracts were compiled in a technical report made available during the meeting and later published in the Preprint Series of the Institute of Mathematics of the Romanian Academy. As with previous ADT workshops, the authors were invited to submit full papers, which underwent a thorough review process that was managed using EasyChair. Each paper was reviewed by at least two referees. We would like to thank all the authors who submitted papers and who generally showed interest in the subject, as well as the members of the Program Committee and the external referees appointed by them for their work in completing the reviewing process.

The workshop took place under the auspices of IFIP WG1.3, and was organized by former lecturers and students at the Postgraduate Academic Studies School *Școala Normală Superioară București* (SNSB). We gratefully acknowledge the support offered by IFIP TC1 and the Simion Stoilow Institute of Mathematics of the Romanian Academy (IMAR).

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