Noname manuscript No.
(will be inserted by the editor)

Special issue on "Comprehending Asynchrony in Specification and Analysis"

dedicated to Walter Vogler on the occasion of his 60th birthday

Gerald Lüttgen · **Flavio Corradini**

the date of receipt and acceptance should be inserted later

We feel privileged to serve as guest editors for this special issue of Acta Informatica in honour of our colleague and friend Walter Vogler on the occasion of his 60th birthday. Walter's high scientific standards and his many publications in Acta Informatica make this journal the fitting choice for a tribute to Walter.

Walter has been a very active and influential member of the concurrency theory community for thirty years, and he still is. His academic career started, however, as a mathematician and not as a computer scientist. He studied mathematics at the University of Hamburg, Germany, from 1976 to 1982, in between spending one year at the University of Cambridge, UK. Under the guidance of graph theorist Rudolf Halin, he then engaged in advanced studies in graph representations of abstract groups and successfully defended his doctoral thesis entitled *Darstellung abstrakter Gruppen durch Graphen mit konstantem Link, Hypergraphen und Potenzen von Graphen* in 1984.

Walter switched from mathematics to computer science in 1985 and joined the renowned research group of Wilfried Brauer at the Technical University of Munich, Germany. He habilitated in 1991 after studying various problems in the modular construction of Petri nets and, in particular, showing that partial order semantics is necessary to support action refinement. His treatise on *Modular Construction and Partial Order Semantics of Petri Nets* was published as a monograph in Springer's Lecture Notes in Computer Science series one year later and is still widely cited today. In 1991, Walter became professor of theoretical computer science at the University of Augsburg, Germany, where he continues to be actively engaged in both research and teaching. He is on the editorial board of Elsevier's prestigious journal Information and Computation since 1995 and spent time as guest professor at the University of Marseille, France, in 2003.

The research interests of Walter focus on the theory of concurrent and distributed systems, whether modelled as Petri nets or in process algebras. His research spans various overlapping topics, in particular (1) semantics supporting the modular construction of con-

Gerald Lüttgen
Software Technologies Research Group, University of Bamberg, 96045 Bamberg, Germany
E-mail: gerald.luettgen@swt-bamberg.de

Flavio Corradini
School of Science and Technology, University of Camerino, 62032 Camerino (MC), Italy
E-mail: flavio.corradini@unicam.it

current systems, (2) testing semantics for reasoning about liveness and fairness, (3) efficiency preorders for asynchronous systems, (4) Petri net unfoldings for efficient verification, (5) synthesis of asynchronous circuits via Petri net decomposition and (6) interface theories based on modal transition systems for specifying and analysing component-based systems. Walter's numerous scientific contributions have greatly enriched our understanding of the specification and analysis of asynchronous systems, hence the title of this special issue: *Comprehending Asynchrony in Specification and Analysis*.

The scientific content of this issue consists of seven original articles written by colleagues and friends of Walter, which relate to the aforementioned topics and reverberate Walter's ideas. Hang-Hing Dang and Bernhard Möller derive a modal algebra for Petri nets based on a relation-algebraic calculus for separation logic, while Eike Best and Raymond Devillers present synthesis algorithms that allow T-systems – a generalisation of marked graph Petri nets – to be derived from labelled transition systems. Jörg Desel and Görkem Kilinç consider a novel notion of liveness for Petri nets, called observable liveness, and demonstrate when liveness of a 1-bounded Petri net implies observable liveness. Rob van Glabbeek and Peter Höfner formally establish that fair schedulers cannot be implemented in CCS-like process languages, even under progress and certain fairness assumptions, while Antti Valmari studies the extent to which operators on labelled transition systems may be constructed from other operators, which he does wrt. trace equivalence rather than a more discriminating bisimulation equivalence. Rolf Hennicker and Alexander Knapp show how interface theories supporting pairwise component analysis may be extended to assembly theories for multi-component environments and be equipped with suitable notions of assembly refinement and communication safety. Nikola Beneš et al. introduce parametric modal transition systems to overcome limitations of standard model transition systems, e.g., with regards to expressing persistent choices; they also present an encoding of modal refinement into quantified Boolean formulas, thereby enabling automatic refinement checking.

We wish to acknowledge Walter's wife Petra Damm for bringing his 60th birthday to our attention. We are most grateful to all authors for their contributions to this special issue and their timely help with the reviewing process, and also to the additional reviewers. All articles have been reviewed by three referees who judged the submissions to the high standards expected from Acta Informatica. We thank Acta Informatica's managing editor Ernst-Rüdiger Olderog and Springer for their support and advice in producing this special issue. Last, but not least, we thank Alexander Knapp and others at the University of Augsburg for organising the festive colloquium for Walter, held at Augsburg in April 2015.

Bamberg & Camerino, January 2015