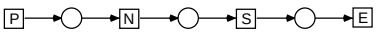
Daniel Moldt
Fabrice Kordon
Kees van Hee
José-Manuel Colom
Rémi Bastide (Eds.)

Proceedings of the International Workshop on

P etri
N ets and
S oftware
E ngineering

PNSE'07



Siedlce, Poland, June 2007

Preface

This booklet contains the proceedings of the International Workshop on Petri Nets and Software Engineering (PNSE'07) in Siedlce, Poland, June 25-26, 2007. It is a satellite event of *Petri Nets 2007*, the 28th International Conference on Application and Theory of Petri Nets and Other Models of Councurrency.

PNSE'07 is organized by institutes from Eindhoven University of Technology, The Netherlands, the University of Hamburg, Germany, the University Pierre et Marie Curie-CNRS 4, Paris, France, the University of Toulouse, France, and the University of Zaragoza, Spain with the local support of the University of Podlasie, Institute of Computer Science and the University of Warsaw, Institute of Computer Science, PAS.

More information about the workshop can be found at

`http://www.informatik.uni-hamburg.de/TGI/events/pnse07/`

For the successful realization of complex systems of interacting and reactive software and hardware components the use of a precise language at different stages of the development process is of crucial importance. Petri nets are becoming increasingly popular in this area, as they provide a uniform language that supports the tasks of modeling, validation and verification. Their popularity is due to the fact that fundamental aspects of causality, concurrency and choice are captured by Petri nets in a natural and mathematically precise way without compromising readability.

The use of Petri nets (P/T-nets, colored Petri nets and extensions) in the formal process of software engineering, covering modeling, validation, and verification, are presented as well as their application and tools supporting the disciplines mentioned above.

The intention of this workshop is to bring together research and application to have a lively mutual exchange of ideas, view points, knowledge, and experience. The submitted papers were evaluated by a program committee, which was supported by several other international experts resulting in at least three reviews per submitted paper. The program committee consists of:

Wil van der Aalst (The Netherlands)
Rémi Bastide (France)
Jonathan Billington (Australia)
Didier Buchs (Switzerland)
Piotr Chrzastowski-Wachtel (Poland)
José-Manuel Colom (Spain)
Jörg Desel (Germany)
Jorge C.A. de Figueiredo (Brasil)
Giuliana Franceschinis (Italy)
Nicolas Guelfi (Luxembourg)
Kees van Hee (The Netherlands)
Jens Bæk Jørgensen (Denmark)

Astrid Kiehn (India)	Ekkart Kindler (Germany)
Michael Köhler (Germany)	Fabrice Kordon (France)
Gabriela Kotsis (Austria)	Maciej Koutny (United Kingdom)
Sadatoshi Kumagai (Japan)	Charles Lakos (Australia)
Johan Lilius (Finland)	Rainer Mackenthun (Germany)
Daniel Moldt (Chair) (Germany)	Heiko Rölke (Germany)
Mark-Oliver Stehr (USA)	Tomas Vojnar (Czech Republic)
Jianli Xu (Finland)	Wlodek M. Zuberek (Canada)

We received 23 high-quality contributions. The program committee has accepted nine of them for full presentation. Furthermore, the committee accepted four papers as short presentations and three short papers (submitted as such). In addition, these proceedings contain eight (non refereed) poster contributions. The poster session is open to all participants of all conference events who want to present ongoing work and current / future projects.

All papers tackle the concepts of objects, components, and agents from different perspectives. Formal as well as application aspects demonstrate the range within which Petri nets can be used and illustrate at the same time that there is a tendency to use more abstract concepts for the analysis and design of Petri net-based models.

The international program committee was supported by the valued work of additional reviewers. Their work is highly appreciated.

The organizers of the PNSE'07 workshop

Contents

Part I Invited Talk

1 Frameworks for Software Architecture
Kees van Hee 3

Part II Full Contributions (long presentation)

2 Process Mining in Petri Net-based Agent-oriented Software Development
Lawrence Cabac, Nicolas Knaak 7

3 Composing Business Process with ID-Net
Ang Chen and Didier Buchs 22

4 Time Recursive Petri net
Dahmani Djaouida, J.M Ilié and M. Boukala 37

5 Designing Case Handling Systems
Kees M. van Hee, Jeroen Keiren, Reinier Post, Natalia Sidorova, Jan Martijn van der Werf 52

6 Petri Net-Based Specification and Deployment of Organizational Models
Michael Köhler, Matthias Wester-Ebbinghaus 67

7 Translating Message Sequence Charts to other Process Languages using Process Mining
Kristian Bisgaard Lassen, Boudewijn F. van Dongen, Wil M.P. van der Aalst 82

8 An Automata-Theoretic Approach to Model-Checking of Petri Nets
Siamak Nazari and John Thistle 98

9 Model driven testing based on test history
Isaac Corro Ramos, Alessandro Di Bucchianico, Lusine Hakobyan . . 112

10 On Petri-net synthesis and attribute-based visualization
H.M.W. Verbeek, A.J. Pretorius, W.M.P. van der Aalst, and J.J. van Wijk 127

Part III Full Contributions (short presentation)

11 Application Development with Mulan
Lawrence Cabac, Till Dörges, Michael Duvigneau, Christine Reese, Matthias Wester-Ebbinghaus 145

12 Petri Nets in Modeling Component Behavior and Verifying Component Compatibility
Donald Craig and Wlodek Zuberek 160

13 Modular state spaces and place fusion
C. Lakos, L. Petrucci 175

14 An Approach to Evaluate System-Level Performance for Stochastic Object Petri-Nets
Reng Yin, Hao Hu, Jidong Ge, Xinyu Li, Jian Lu 191

Part IV Short Contributions

15 Tools for Testing, Debugging and Monitoring Multi-Agent Applications
Lawrence Cabac, Till Dörges 209

16 Petri Nets Tools and Embedded Systems Design
Luis Gomes, João Paulo Barros, Anikó Costa 214

17 Controlling OSGi Bundles with Petri Nets
Felix Simmendinger, Lawrence Cabac, Michael Duvigneau, Nicolas Knaak 220

Part V Poster Contributions

18 Time Distribution for Structural Workflows
Piotr Chrzastowski-Wachtel, Pawel Findeisen, Grzegorz Wolny 229

19 Towards a Formal Specification of a Generic Access Network Architecture using Coloured Petri Nets
Paul Fleischer 231

20 VerICS 2006 - a Model Checker for Real-Time and Multi-Agent Systems
Magdalena Kacprzak, Wojciech Nabialek, Artur Niewiadomski, Wojciech Penczek, Agata Polrola, Maciej Szreter, Grzegorz Szymczuk, Bozena Wozna, and Andrzej Zbrzezny 234

21 Verifying Timed Security Protocols with VerICS
Miroslaw Kurkowski and Wojciech Penczek 236

22 Translation of Promela to Timed Automata
W. Nabialek, P. Janowski 238

23 UML Verification with Verics
Artur Niewiadomski 240

24 Formal Modeling and Analysis of Flexible Processes in Mobile Ad-Hoc Networks
Julia Padberg, Hartmut Ehrig, Kathrin Hoffmann 242

25 Towards Modeling Rational Agents with Object Oriented Petri Nets
Frantisek Zboril, Radek Koci and Vladimir Janousek 244