7th Symposium on Software Performance (SSP) Kiel, November 08–09, 2016

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`http://www.performance-symposium.org/2016/`

1 Preface

More than fifty participants attended the 7th Symposium on Software Performance in Kiel. This occasion was also used to celebrate the tenth birthday of the Kieker monitoring framework.

Performance is one of the most relevant quality attributes of any IT system. While good performance leads to high user satisfaction, weak response times lead to loss of users, perceived unavailability of the system, or unnecessarily high costs of network or computing resources. Therefore, various techniques to evaluate, control, and improve the performance of IT systems have been developed, ranging from online monitoring and benchmarking to modeling and prediction. Experience shows, that for system design or later optimization, such techniques should be applied in smart combination.

Therefore, the "Symposium on Software Performance" brings together researchers and practitioners interested in all facets of software performance, ranging from modeling and prediction to monitoring and runtime management. The symposium is organized by the three established research groups Descartes [1], Kieker [2], and Palladio [3]; thus this symposium also serves as a joint community meeting. Descartes' focus are techniques and tools for engineering self-aware computing systems designed for maximum dependability and efficiency. Kieker is a well-established tool and approach for monitoring software performance of complex, large, and distributed IT systems. Palladio is a likewise-established tool and approach for modeling software architectures of IT systems and for simulating their performance.

The symposium program included contributions from practitioners and researchers in the field of software performance, including but not limited to approaches employing Descartes/Kieker/Palladio. Work on other related tools such as SPASS-Meter [4] and ExplorViz [5] has been presented.

In addition to the three organizing groups, SSP is also supported by the special interest group "Softwaretechnik" (software engineering) of the "Gesellschaft für Informatik (GI)" and by the special interest committee "Messung, Modellierung und Bewertung (MMB) von Rechensystemen" (measurement, modeling, and evaluation of computer systems) of GI and the "Informationstechnische Gesellschaft ITG im VDE."

We solicited two types of contributions, technical papers and extended abstracts for industry or experience talks. Submitted proposals were evaluated by the program review committee:

- Holger Eichelberger, University of Hildesheim
- Robert Heinrich, KIT
- Reiner Jung, Kiel University
- Anne Koziolek, KIT

- Andreas Kumlehn, FAU Erlangen
- Sebastian Lehrig, University of Paderborn
- Dušan Okanović, University of Stuttgart
- Kiana Rostami, KIT
- Henning Schnoor, Kiel University
- Simon Spinner, University of Würzburg
- Jürgen Walter, University of Würzburg
- Felix Willnecker, fortiss GmbH

In addition to these program review committee members, we would like to thank all participants that contributed to the event, including the authors and presenters, as well as our supporters the Cluster Management DiWiSH, the Competence Cluster KoSSE, as well as Instana and NovaTec!

2 Program

Kieker and Palladio developer meetings were preceding the symposium on November 7th. At the symposium, two keynotes

- *Monitor and Manage Microservices*
  Mirko Novakovic (Instana)
- *Disruption of the APM market through open standards and open source – our vision of an ideological change*
  Stefan Thieme (NovaTec)

and the following regular presentations were given:

- *An Experience Talk: How Can Performance Disrupt the Finance Technologies?*
  Emre Taspolatoglu and Jörg Henß
- *A Scalable Web Application for Performance Modeling and Prediction*
  Markus Dlugi
- *A Reference Platform for Software Performance Engineering in DevOps*
  Teerat Pitakrat and Jonas Heinisch
- *Kieker in Eclipse – A Plug-in for Application Performance Monitoring and Dynamic Analysis in Eclipse*
  Florian Echternkamp and Christian Wulf
- *Advanced Typing for the Kieker Instrumentation Languages*
  Reiner Jung and Christian Wulf
- *Moving Kieker to a pipeline-supported development process: Discussing recent achievements and lessons learned*
  Thomas F. Düllmann
- *Kieker4DQL: Declarative Performance Measurement*
  Matthias Blohm, Maksim Pahlberg, Sebastian Vogel, Jürgen Walter and Dušan Okanović
- *Leveraging Palladio for Performance Awareness in the IETS3 Integrated Specification Environment*
  Fabian Keller, Markus Völter, André van Hoorn and Klaus Birken
- *Automatic Synchronization of Palladio Allocation Diagrams with executed Java EE Containers*
  Marco Konersmann and Jens Holschbach
- E*xtensible Graphical Editors for Palladio*
  Misha Strittmatter, Michael Junker, Kiana Rostami, Sebastian Lehrig, Amine Kechaou, Bo Liu and Robert Heinrich
- *Challenges to Trading-Off Performance and Privacy of Component-Based Systems*
  Stephan Seifermann, Kateryna Yurchenko and Max E. Kramer
- *Improving Kieker's Scalability by Employing Linked Read-Optimized and Write-Optimized NoSQL Storage*
  Armin Moebius and Sven Ulrich
- *Refactoring Kieker's Monitoring Component to further Reduce the Runtime Overhead*
  Hannes Strubel and Christian Wulf
- *Triggering Performance Counters for Energy Efficiency Measurements*
  Norbert Schmitt, Jóakim von Kistowski and Samuel Kounev
- *From Reproducibility Problems to Improvements: A journey*
  Aike Sass, Holger Eichelberger and Klaus Schmid
- *Performance Prediction for Multicore Environments – A Experiment Report*
  Markus Frank and Marcus Hilbrich
- *Modeling and Simulating Apache Spark Streaming Applications*
  Johannes Kroß and Helmut Krcmar
- *Modeling IaaS Usage Patterns for the Analysis of Cloud Optimization Policies*
  Sebastian D. Krach, Christian Stier and Athanasios Tsitsipas
- *Security Modeling with Palladio-Different Approaches*
  Marcus Hilbrich, Markus Frank and Sebastian Lehrig

- *Combining Application-Level and Database-Level Monitoring to Analyze the Performance Impact of Database Lock Contention*
  Holger Knoche
- *An Elastic Layers Pattern Approach with Dynamically Added Layers*
  Christian Zirkelbach and Marc Adolf
- *Design and Evaluation of a Proactive, Application-Aware Elasticity Mechanism*
  André Bauer, Nikolas Roman Herbst, Simon Spinner and Samuel Kounev
- *Online Anomaly Detection Based on Monitoring Traces*
  Marius Oehler, Alexander Wert and Christoph Heger
- *Extraction of Operational Workflow-based User Behavior Profiles for Software Modernization*
  Gunnar Dittrich and Christian Wulf
- *Software architecture optimization: Acting the way human architects do it*
  J. Andres Diaz-Pace, Sebastian Frank, André van Hoorn, Alejandro Rago and Santiago Vidal
- *PAVO: A Framework for Result Visualization for Performance Analyses*
  Jürgen Walter, Maximilian König, Simon Eismann and Samuel Kounev
- *SiaaS: Simulation as a Service*
  Felix Willnecker, Christian Vögele and Helmut Krcmar
- *APM Interoperability with OPEN.xtrace: Overview and Lessons learned*
  Alexander Bran, Alper Hidiroglu, Manuel Palenga and Dušan Okanović

For twenty of these presentations short papers are included in the present volume of Softwaretechnik-Trends as post-proceedings.

Additionally, the slides of most presentations are available via the program Web page.

3 Outlook

The next Symposium on Software Performance in 2017 will take place in Würzburg. More information may soon be found at

`http://www.performance-symposium.org/`

References

[1] N. Huber, F. Brosig, S. Spinner, S. Kounev, and M. Bahr, "Model-based self-aware performance and resource management using the Descartes modeling language," *Ieee transactions on software engineering*, 2017. DOI: `http://dx.doi.org10.1109/TSE.2016.2613863`.

[2] A. van Hoorn, J. Waller, and W. Hasselbring, "Kieker: A framework for application performance monitoring and dynamic software analysis," in *Proceedings of the 3rd acm/spec international conference on performance engineering (icpe 2012)*, 2012. DOI: `http://dx.doi.org/10.1145/2188286.2188326`.

[3] R. H. Reussner, S. Becker, J. Happe, R. Heinrich, A. Koziolek, H. Koziolek, M. Kramer, and K. Krogmann, *Modeling and simulating software architectures: The Palladio approach*. MIT Press, 2016, ISBN: 978-0262034760.

[4] H. Eichelberger and K. Schmid, "Flexible resource monitoring of Java programs," *Journal of systems and software*, vol. 93, pp. 163–186, 2014. DOI: `http://dx.doi.org/10.1016/j.jss.2014.02.022`.

[5] F. Fittkau, A. Krause, and W. Hasselbring, "Software Landscape and Application Visualization for System Comprehension with ExplorViz," *Information and software technology*, 2016. DOI: `http://dx.doi.org/10.1016/j.infsof.2016.07.004`.