

# 13th Symposium on Software Performance (SSP) Stuttgart, November 07.-09., 2022

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<https://www.performance-symposium.org/2022/>

## 1 Preface

The 13th edition of the Symposium on Software Performance, held in Stuttgart, brought together researchers and practitioners interested in all aspects of software performance. In this edition, almost 50 participants attended the symposium. Participants were representing 17 different affiliations, including well-known educational and research institutions from Germany and prominent companies from the industry.

Performance is one of the most relevant quality attributes of IT systems. While good performance leads to high user satisfaction, high response times lead to perceived unavailability of the system and may cause a loss of users. Therefore, researchers and practitioners develop techniques to evaluate, control, and improve the performance of IT systems. The developed techniques range from online monitoring and benchmarking to modeling and prediction. Experience shows, that for system design or subsequent optimization, such techniques should be applied in smart combination.

The symposium brings together researchers and practitioners interested in all facets of software performance. The symposium is organized by the three established research groups Palladio [1], Descartes [2] and Kieker [3]. This symposium serves as a joint community meeting, as well. 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 as well as for simulating their performance.

The symposium program includes contributions from practitioners and researchers in the field of software performance, including but not limited to approaches employing Descartes, Kieker, or Palladio.

In addition to the three organizing groups, the SSP is supported by the special interest group "Softwaretechnik" (software engineering) of the "Gesellschaft für Informatik (GI)" and by the special interest committee "Measurement, Modelling and

Evaluation of Computing Systems (MMB)" of GI and the "Informationstechnische Gesellschaft ITG im VDE".

We solicited two types of contributions, namely technical papers and extended abstracts for industry or experience talks. The submissions were reviewed by a program committee consisting of the following members:

- Robert Heinrich, KIT
- Holger Eichelberger, University of Hildesheim
- Reiner Jung, Kiel University
- Holger Knoche, b+m Informatik AG
- André Bauer, University of Würzburg
- Dušan Okanović, Datadog
- David Georg, Reichelt Leipzig University
- Johannes Kroß, Fortiss GmbH
- Henning Schnoor, Kiel University
- Alireza Hakamian, University of Stuttgart
- Sebastian Frank, University of Hamburg
- Mazimilian Walter, KIT
- Martina Rapp, FZI

Currently, the steering committee consists of the following members:

- Steffen Becker, University of Stuttgart
- Wilhelm Hasselbring, Kiel University
- André van Hoorn, University of Hamburg
- Samuel Kounev, University of Würzburg
- Anne Kozirolek, KIT
- Ralf Reussner, KIT/FZI

We would like to thank all committee members, the local organizers, all contributing participants, including the authors and presenters, as well as our sponsors Novatec Consulting GmbH and Vector Informatik GmbH.

## 2 Program

Palladio and Kieker Developer Meetings on the 7th of November preceded the symposium. During the symposium one industry talk from the sponsors and 19 regular presentations were given.

- *What's going on in my Cluster?* [Industry talk] — Mahir Isikli (Novatec)
- *Cloud-Native Scalability Benchmarking with Theodolite: Applied to the TeaStore Benchmark* — Sören Henning, Benedikt Wetzels and Wilhelm Hasselbring
- *State Space Exploration for Planning Recon-figurations in Cloud-native Systems* — Stefan Höppner, Florian Ege, Sarah Stieß and Matthias Tichy
- *Predicting Scaling Efficiency of Distributed Stream Processing Systems via Task Level Performance Simulation* — Johannes Rank, Andreas Hein, Helmut Krcmar and Maximilian Barnert
- *Interoperability on an Enterprise Level: Taking Control Over Observability Data with Observability Pipelines* — Dušan Okanović
- *The Role of Performance in Streaming Analytics Projects: Expert Interviews on Current Challenges and Future Research Directions* — Johannes Rank, Andreas Hein and Helmut Krcmar
- *Modelling EO data processing workloads and environments* — Maximilian Schwinger
- *Architecture Recovery from Fortran Code with Kieker* — Reiner Jung, Henning Schnoor, Sven Gundlach and Wilhelm Hasselbring
- *Extracting Software Architectures from Traces for the Simulation of Microservice-based Architectures* — Tim Thüring, Gabriel Glaser, Marcel Hafner, Abel Gitzing, Sebastian Frank, Alireza Hakamian and André van Hoorn
- *Instrumenting Python with Kieker* — Serafim Simonov, Thomas Duellmann, Reiner Jung and Sven Gundlach
- *Leveraging Kubernetes Source Code for Performance Simulation* — Martin Straesser, Patrick Haas and Samuel Kounev
- *Adapting Kubernetes to IIoT and Industry 4.0 protocols - An initial performance analysis* — Ahmad Alamoush and Holger Eichelberger
- *Co-Simulation of Hardware and Software in Palladio* — Sebastian Weber, Jörg Henß and Ralf Reussner

- *Experiences from Building the Open Database Performance Ranking* — Daniel Seybold and Jörg Domaschka
- *Comparison Between Polling- and Interrupt-based Packet processing Regarding Performance* — Lukas Beierlieb, Lukas Iffländer and Samuel Kounev
- *Generic Performance Measurement in CI: The Geomap Case Study* — David Georg Reichelt, Hannes Krauß, Stefan Kühne and Wilhelm Hasselbring
- *Performance evaluation of BaSys based Asset Administration Shells for Industry 4.0 Applications* — Christian Sauer and Holger Eichelberger
- *Developing an AI-enabled Industry 4.0 platform - Performance experiences on deploying AI onto an industrial edge device* — Holger Eichelberger, Gregory Palmer and Claudia Niederée
- *Supporting and Verifying Transient Behavior Specifications in Chaos Engineering* — Denis Zahariev, Sebastian Frank, Alireza Hakamian and André van Hoorn
- *dqualizer: Domain-centric runtime quality analysis of business-critical application systems* — Heiko Holz, Brill Marius, Dominik Kesim, Matthias Eschhold, Sebastian Frank and André van Hoorn

The present volume of “Softwaretechnik-Trends” includes papers for twelve of these presentations as post-proceedings. Additionally, the slides of the presentations are available at the program web page.

## 3 Outlook

The next Symposium on Software Performance in 2023 will take place in Karlsruhe, FZI. More information are soon available at <http://www.performance-symposium.org/>.

## References

- [1] R. H. Reussner et al., eds. *Modeling and Simulating Software Architectures – The Palladio Approach*. MIT Press, 2016. 408 pp.
- [2] N. Huber et al. “Model-Based Self-Aware Performance and Resource Management Using the Descartes Modeling Language”. In: vol. PP. Mar. 2017.
- [3] W. Hasselbring and A. van Hoorn. “Kieker: A monitoring framework for software engineering research”. In: *Software Impacts* 5 (Aug. 2020), pp. 1–5.