

15th Symposium on Software Performance 2024

Linz, Austria · November 6–7, 2024

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1 Preface

The 15th edition of the Symposium on Software Performance, held November 6–7, 2024, in Linz, Austria, brought together researchers and practitioners with a shared interest in all aspects of software performance. This edition attracted over 50 participants from 16 affiliations, including well-known educational and research institutions from Austria, Germany, and Denmark, as well as prominent industry companies.

Performance is one of the most relevant quality attributes of software systems. While good performance leads to high user satisfaction, weak response times lead to perceived unavailability of systems, or unnecessarily high costs of network or computing resources, or may even cause a loss of users. Therefore, various techniques to evaluate, control, and improve the performance of software systems have been developed, ranging 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 on Software Performance provides a forum for researchers and practitioners interested in all facets of software performance, ranging from modeling and prediction to monitoring and runtime management. The symposium is steered by the three established research groups Descartes, Kieker, and Palladio; thus also serves as a joint community meeting. The program includes contributions from practitioners and researchers in the field of software performance, including but not limited to approaches employing Descartes, Kieker, or Palladio.

This year, the Symposium on Software Performance was hosted in Austria for the first time, organized by the LIT Cyber-Physical Systems Lab at Johannes Kepler University Linz and Dynatrace Research. The symposium was supported by the Softwaretechnik special interest group of the Gesellschaft für Informatik (GI) and sponsored by Dynatrace.

We solicited two types of submissions: technical papers and extended abstracts for industry or experience talks. Proposals were reviewed by a program committee, with the members André Bauer (The University of Chicago), Holger Eichelberger (University

of Hildesheim), Sebastian Frank (University of Hamburg), Sebastian Hahner (Karlsruhe Institute of Technology), Alireza Hakamian (University of Hamburg), Robert Heinrich (Karlsruhe Institute of Technology), Lukas Iffländer (HTW Dresden), Andrea Janes (Free University of Bozen/Bolzano), Reiner Jung (Land Schleswig-Holstein, Central IT), Floriment Klinaku (University of Stuttgart), Holger Knoche (ivv GmbH), Maximilian Meissner (University of Würzburg), Martina Rapp (FZI Research Center for Information Technology), David Georg Reichelt (Lancaster University Leipzig), Larissa Schmid (Karlsruhe Institute of Technology), Henning Schnoor (Kiel University), Sandro Speth (University of Stuttgart), Martin Sträßer (University of Würzburg), Markus Weninger (Johannes Kepler University Linz), and Shinhyung Yang (Kiel University).

The organization and program committee was co-chaired by Sören Henning (Johannes Kepler University Linz), Mario Kahlhofer (Dynatrace Research), and Adriano Vogel (Dynatrace Research).

The steering committee includes Steffen Becker (University of Stuttgart), Wilhelm Hasselbring (Kiel University), Samuel Kounev (University of Würzburg), Anne Koziol, and Ralf Reussner (both Karlsruhe Institute of Technology).

We would like to thank all committee members, the local organization team, and all participants that contributed to the event including the authors and presenters as well as our sponsor Dynatrace. In light of this year's symposium, we also remember our founding and long-time steering committee member, André van Hoorn, who is deeply missed.

2 Program

The annual Kieker developer meeting on November 5 preceded the symposium. Both symposium days started with keynotes from industry practitioners:

- *From Ad-Hoc to Self-Service: Enterprise Performance Engineering Evolution in the past 20 years.* Andreas Grabner, Dynatrace.
- *The power of the commandline: a story of shell scripting, observability, and my laziness.* Philipp Lengauer, Dynatrace.

The technical program comprised 30 presentations:

- *An Empirical Study on the Impact of Selected Host Configuration Parameters on Container Start Times.* Martin Straesser, Nicholas Erhard, and Samuel Kounev.
- *The Hidden Costs of Shared CPU Resources: A Closer Look at Cgroups and QoS.* Simon Volpert, Sascha Winkelhofer, Daniel Seybold, Jörg Domaschka, and Stefan Wesner.
- *Overhead Measurement Noise in Different Runtime Environments.* David Georg Reichelt, Reiner Jung, and André van Hoorn.
- *Evaluating the Overhead of the Performance Profiler Cloudprofiler with MooBench.* Shinhyung Yang, David Georg Reichelt, and Wilhelm Hasselbring.
- *Bringing Vitruvius into the Cloud.* Martin Armbruster, Thomas Weber, and Lars König.
- *Automatic Performance Modeling of Configurable Scientific Software.* Larissa Schmid.
- *Modelling and Optimizing a Graph-based Settlement Delineation and Analysis Workflow.* Lorenz Gruber, Nikolas Herbst, Samuel Kounev, Thomas Esch, and Thanh Nguyen.
- *On the Realisation of a Workflow for Continuous Earth Observation of Forest Dynamics: A Performance Engineering Challenge.* Nikolas Herbst, Niklas Jaggy, David Dingel, David Linke, Claudia Kuenzer, and Samuel Kounev.
- *Scalability of Consistency Preservation with Vitruvius.* Benedikt Jutz and Thomas Weber.
- *Towards a Data Flow Diagram-Centric Confidentiality Analysis in Palladio.* Tom Hüller, Felix Schwickerath, Benjamin Arp, Nils Niehues, Nicolas Boltz, and Sebastian Hahner.
- *Context-aware Security Patterns for Software Evolution.* Emre Taspolatoglu, Robert Heinrich, and Ralf Reussner.
- *The Influence of Granularity of Transactions on Performance in Vitruvius.* Thomas Weber, Benedikt Jutz, and Zenon Zacouris.
- *Performance Factors of Proxy Objects in the Eclipse Modeling Framework.* Martin Armbruster.
- *Analyzing Cyclic Data Flow Diagrams Regarding Information Security.* Benjamin Arp, Nils Niehues, Tom Hüller, Felix Schwickerath, Nicolas Boltz, and Sebastian Hahner.
- *Integrating Security-Enriched Data Flow Diagrams into Architecture-Based Confidentiality Analysis.* Nils Niehues, Benjamin Arp, Tom Hüller, Felix Schwickerath, Nicolas Boltz, and Sebastian Hahner.
- *Extending the OpenTelemetry Java Auto-Instrumentation Agent to Publish Green Software Metrics.* Andreas Brunnert and Ferdinand Gutzy.

- *Towards an Empirical Study on Transient Phases of Microservice Applications.* Ivo Rohwer, Martin Straesser, Yannik Lubas, and Samuel Kounev.
- *ADS Performance Revisited.* Alexander Weber, Jobst Hillbrandt, and Holger Eichelberger.
- *Industry 4.0 Connectors – A Performance Experiment with Modbus/TCP.* Christian Nikolajew and Holger Eichelberger.
- *Investigating Quality Attributes of Machine Learning Inference on the Edge-Cloud Continuum.* Ahmad Rzgar Hamid, Hendrik Reiter, Mikkel Baun Kjærgaard, and Wilhelm Hasselbring.
- *Tracing Performance Metrics in Kotlin Multiplatform Projects via Compile-Time Code Instrumentation.* Markus Weninger.
- *Towards Green Software Metrics for Sustainable Software Development.* Manuel Steinberg.
- *Analyzing Logs of Large-Scale Software Systems using Time Curves Visualization.* Dmytro Borysenkov and Esteban Perez-Wohlfeil.
- *Instrumentation of Software Systems with OpenTelemetry for Software Visualization.* Malte Hansen and Wilhelm Hasselbring.
- *Interoperability From Kieker to OpenTelemetry: Demonstrated as Export to ExplorViz.* David Georg Reichelt, Malte Hansen, Shinhyung Yang, and Wilhelm Hasselbring.
- *The Slingshot Simulator: An Architectural Overview.* Floriment Klinaku, Sarah Stieß, and Steffen Becker.
- *Semantic Validation for Slingshot Simulator Using MontiArc.* Bahareh Taghavi, Robert Heinrich, Adrian Marin, Bernhard Rumpe, Sebastian Stüber, and Sebastian Weber.
- *From Specification to Refinement: Managing Resilience Scenarios with DiSpel Cockpit.* Sebastian Frank, Aref El-Maarawi Tefur, Alireza Hakamian, Joakim von Kistowski, and André van Hoorn.
- *Integration of Performability-Model Extraction and Performability Prediction in Continuous Integration / Continuous Delivery.* Sebastian Weber, Thomas Weber, and Jörg Henß.
- *Design-time analysis of energy consumption effects using compression for mobile devices.* Ralf Sieger.

The present issue of *Softwaretechnik-Trends* includes post-proceedings papers for 16 of these presentations. A further 11 papers will be included in the next issue.

3 Outlook

The next Symposium on Software Performance will be held in 2025 in Kiel, Germany. Further information will soon be available at <http://www.performance-symposium.org/>.