

Kieker: A Framework for Application Performance Monitoring and Dynamic Software Analysis

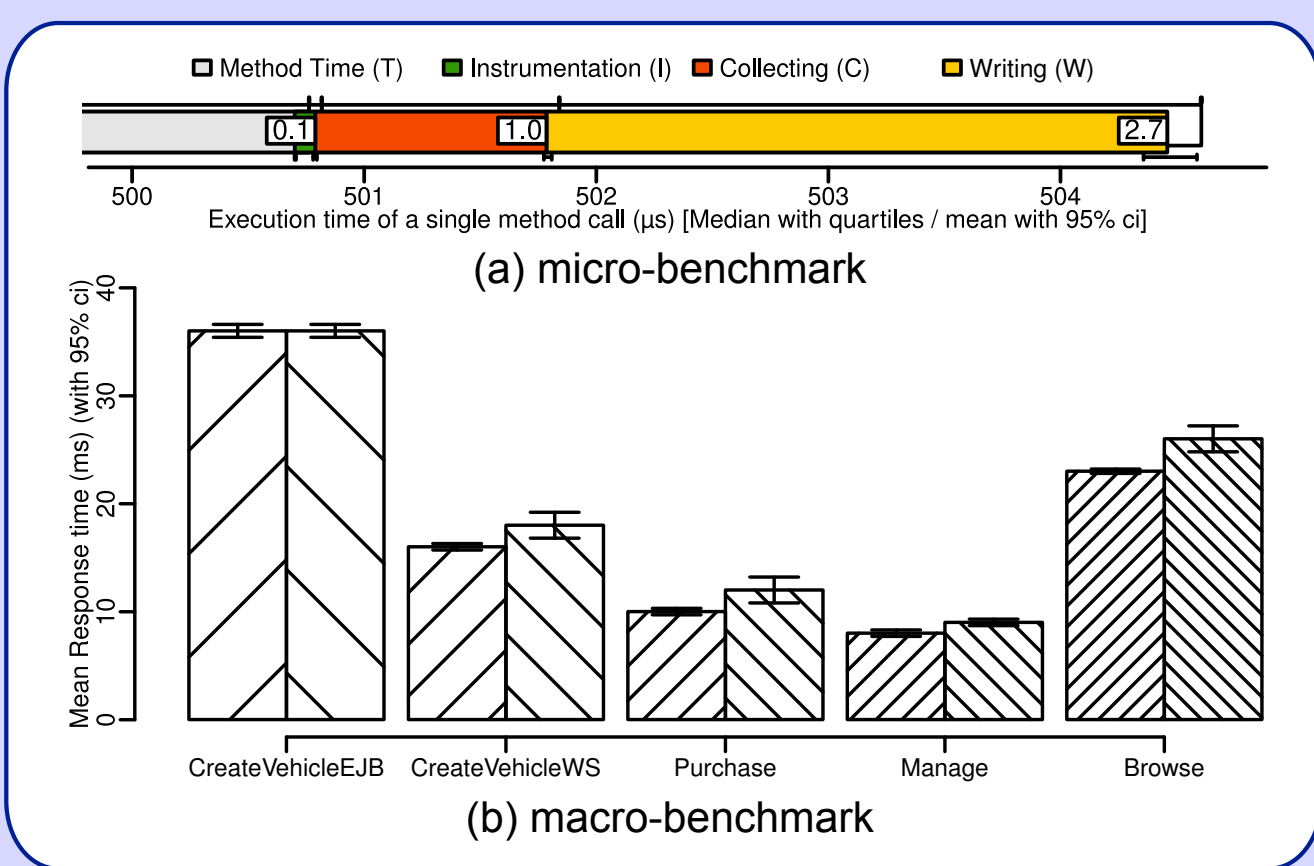
www.kieker-monitoring.net



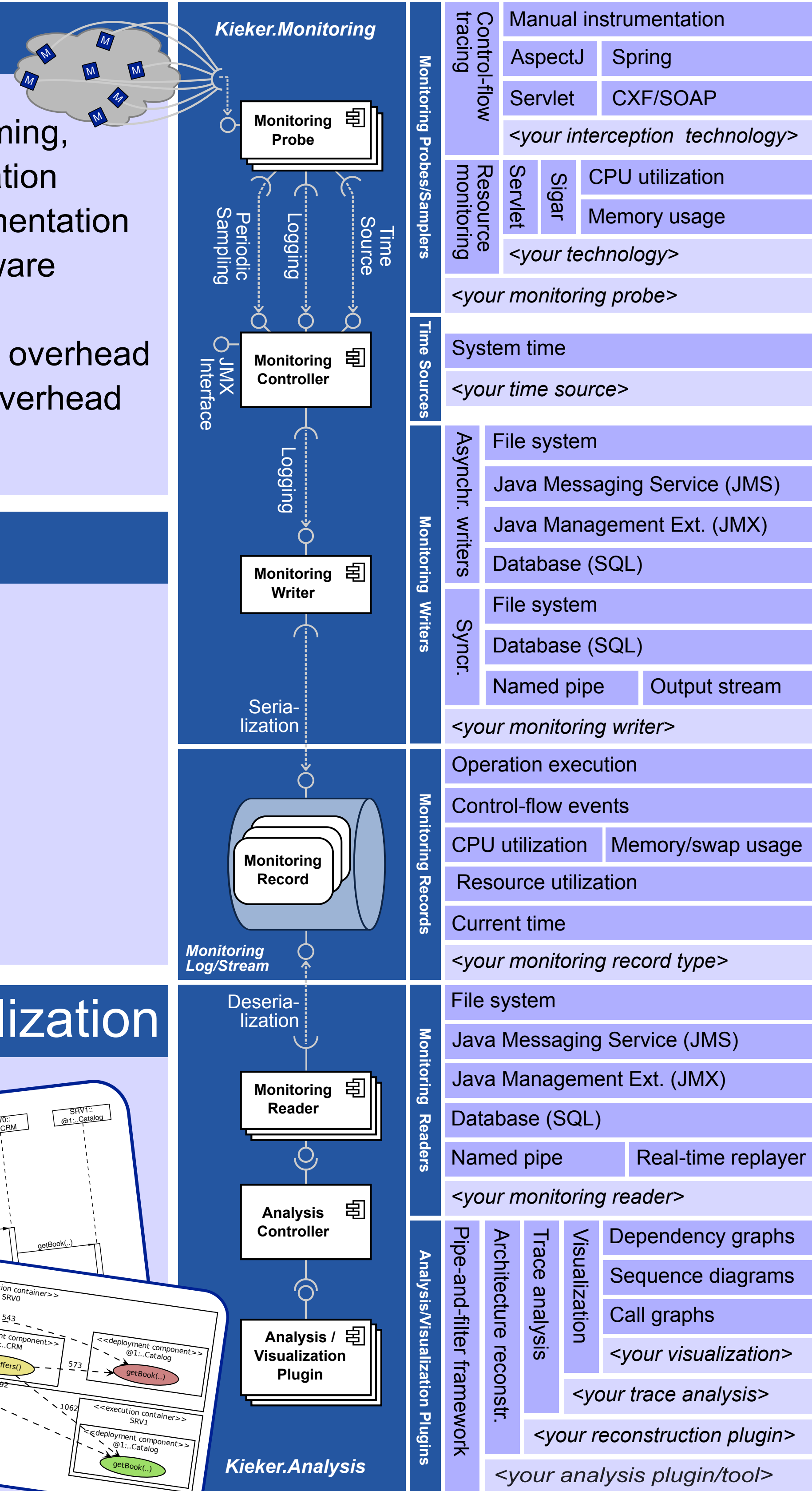
Continuous Application Performance Monitoring for Online and Offline Analysis

- Static analysis is not sufficient to study the internal behavior of software systems comprehensively
- Continuous monitoring allows to gather a system's actual runtime behavior resulting from production usage profiles
- The obtained monitoring data can, for instance, be used for
 - Performance evaluation (e.g., bottleneck detection)
 - (Self-)adaptation control (e.g., capacity management)
 - Application-level failure detection and diagnosis
 - Simulation (workload, measurement, logging, and analysis)
 - Software maintenance, reverse engineering, modernization
 - Service-level management

Instrumentation and Monitoring Overhead



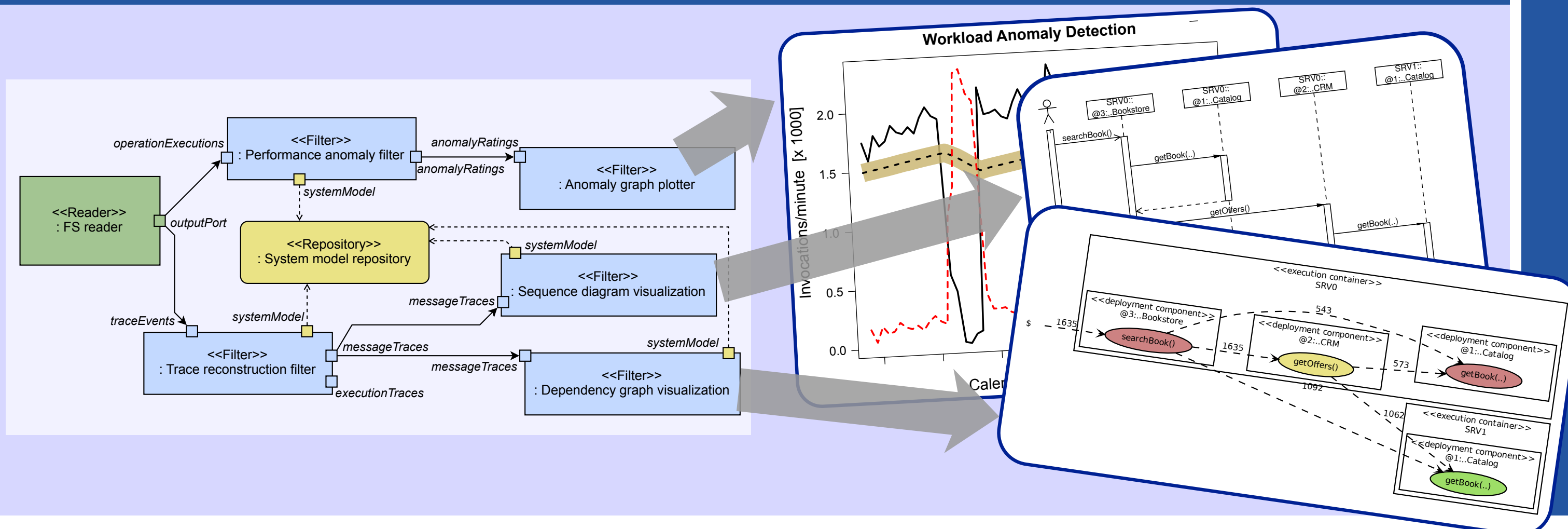
- Includes probes for collecting timing, control flow, and resource utilization
- Support for various Java instrumentation methods, e.g., AspectJ, middleware interception, Servlet filters
- Micro-benchmarks revealed low overhead
- Each activation adds constant overhead (linear scaling)



Framework Characteristics

- Modular, flexible, and extensible architecture
- Extensible probes, readers, writers, records, and plugins
- Integrated monitoring record type model for monitoring and analysis
- Allows to log, reconstruct, analyze, and visualize distributed traces
- Designed for continuous operation in multi-user systems
- Evaluated in lab experiments and industrial case studies (since 2006)
- Kieker is open-source software (Apache License, V. 2.0)

Pipe-and-Filter Configuration for Analysis/Visualization



Invited Tool Demo @ ICPE 2012

A. van Hoorn, J. Waller, and W. Hasselbring.
Kieker: A Framework for Application Performance Monitoring and Dynamic Software Analysis.
 Proc. 3rd ACM/SPEC Int. Conf. Perform. Eng. (ICPE '12), ACM, 2012

Current Activities/Coming Soon

- Monitoring adapters for .NET, VB6, COBOL etc.
- Model-driven instrumentation & analysis
- Web-based graphical user interface
- Plugins for analysis of concurrent behavior