Live Database Trace Visualization in Large Software Landscapes

ICSA 2017 Tutorial

Runtime Modeling and Visualization

Software Engineering Group, Kiel University

Christian Zirkelbach — April 04, 2017

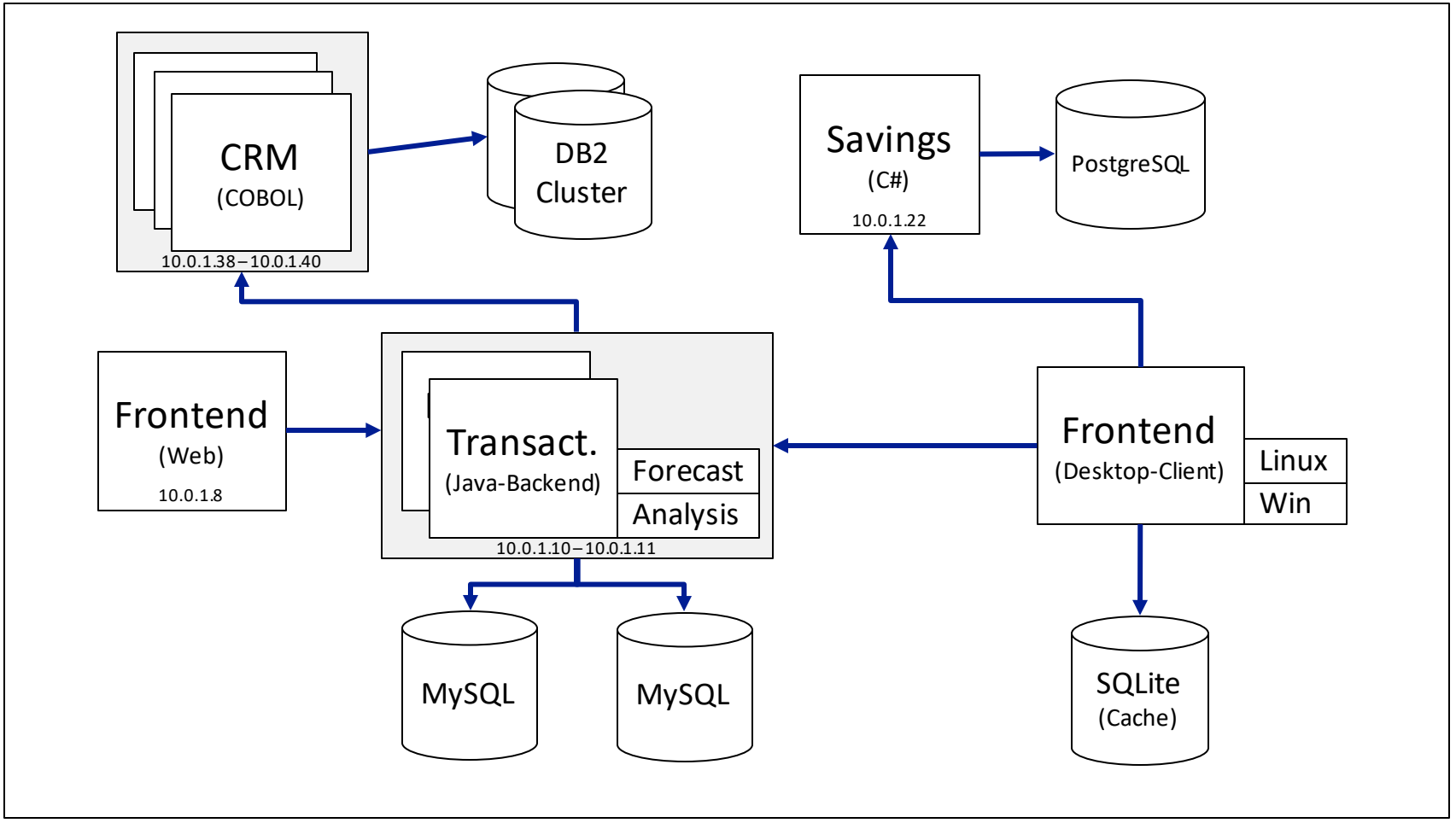
Schedule of Events

Christian-Albrechts-Universität zu Kiel

09:00 – 09:10	Welcome and General Introduction
09:10 – 09:40	Study Foundations
09:40 – 10:00	Model-based Software Application Monitoring
10:00 – 10:30	Runtime Architecture Modeling and Visualization
10:30 – 11:00	Coffee Break
11:00 – 12:15	Introduction to the ExplorViz, Palladio, and iObserve Approaches with following Tool / Visualization Demos
12:15 – 12:30	Study Setup
12:30 – 14:00	Lunch
14:00 – 15:30	Comprehensibility Study
15:30 – 16:00	Coffee Break
16:00 – 16:30	**Live Database Trace Visualization in Large Software Landscapes**
16:30 – 17:00	Feedback and Open Discussion

Example Software Landscape (Banking Industry)

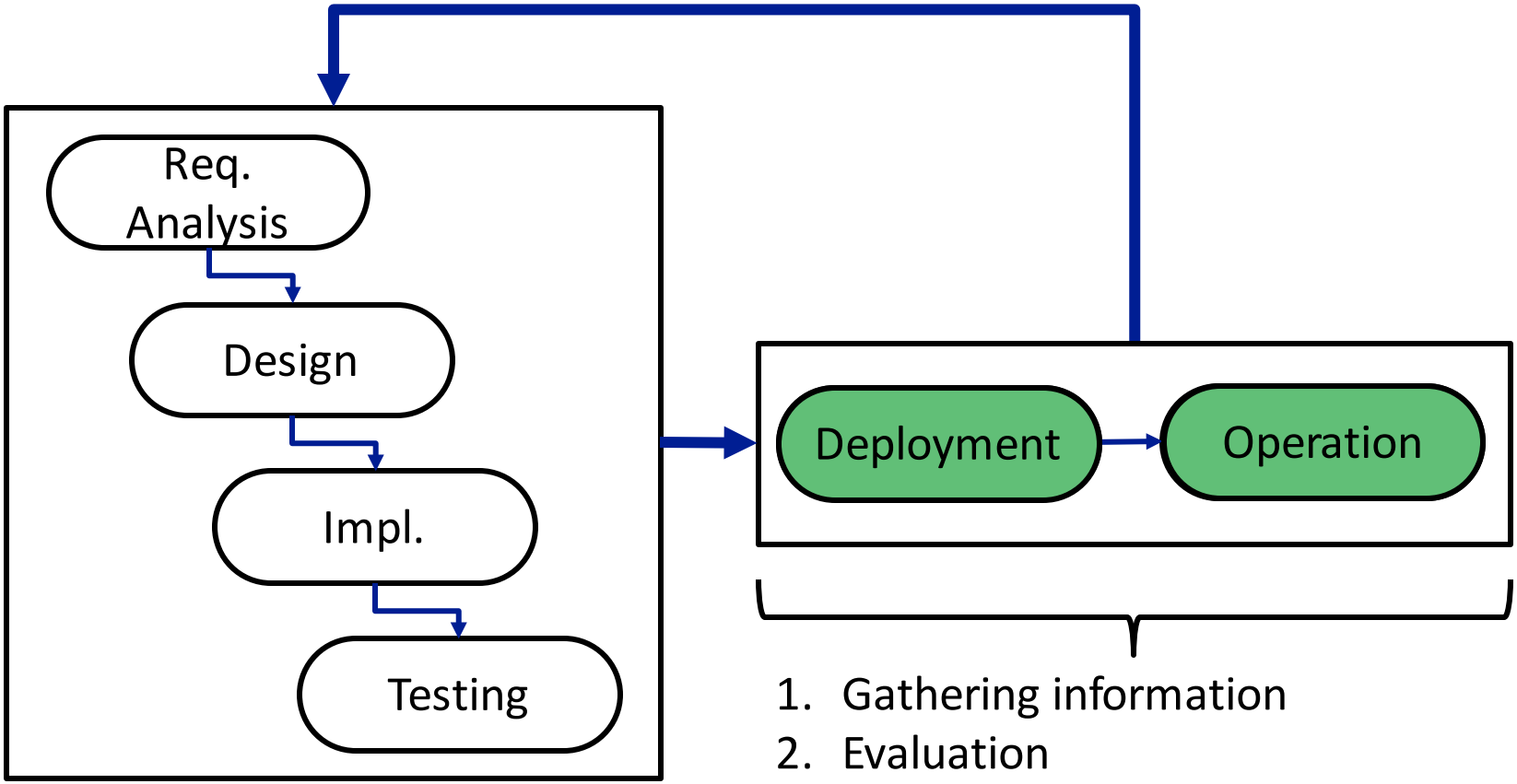
Systems, Applications, and Databases



Challenges

- Handling large-scale, enormous-in-size data repositories [Cuzzocrea et. al]
- Changing requirements or increasing workload
- Performance issues or customer requests [Zirkelbach et. al]
  → ineveitable software updates or refactoring
- Legacy systems: often based on outdated technologies and poorly documented [Godfrey and German]
- Insufficient knowledge of the (actual) systems hamper the process [LaToza et. al]

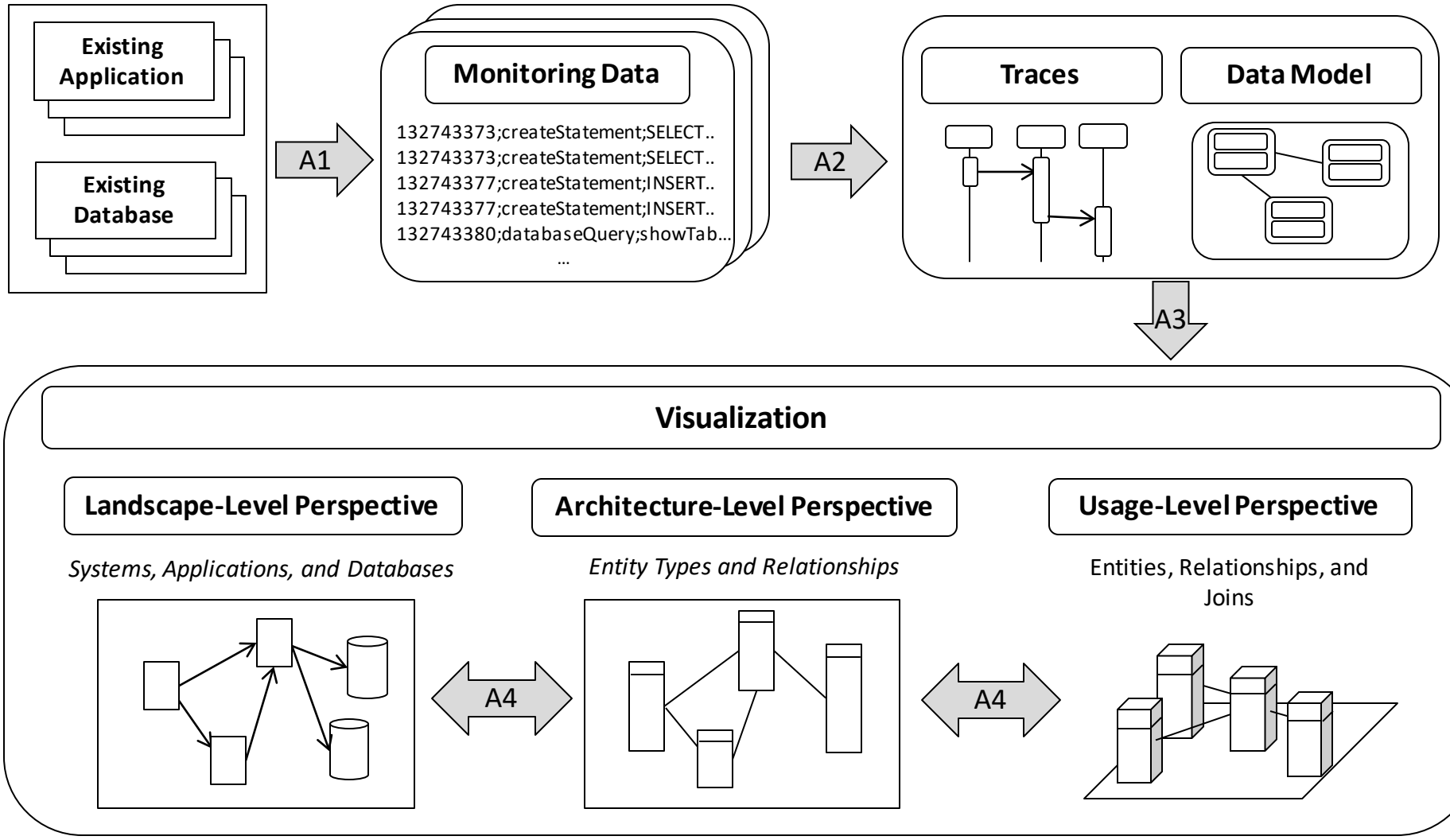
Where to start?



Extended system development life cycle (SDLC) based on [Avison and Fitzgerald]

Envisioned Approach

Envisioned Approach



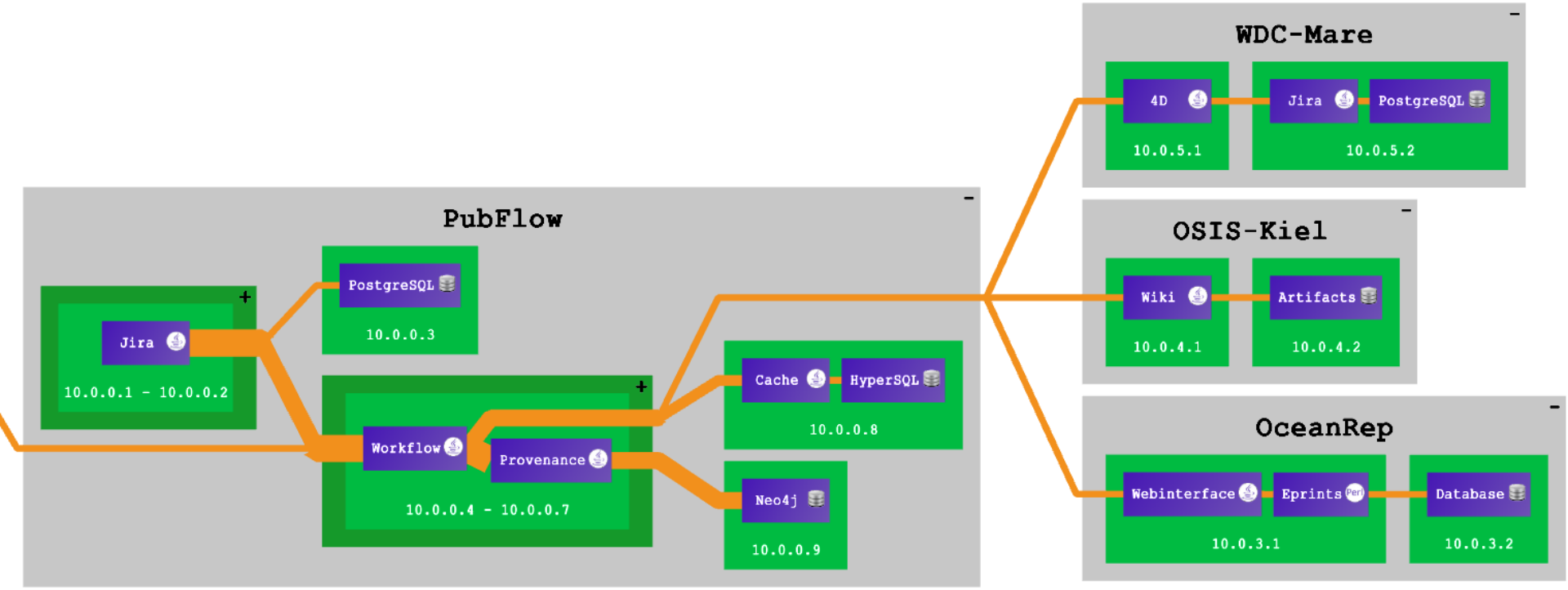
Legend A1: *Monitoring* | A2: *Analysis* | A3: *Transformation* | A4: *Navigation*

Related Work

Related Work

ExplorViz

https://www.explorviz.net



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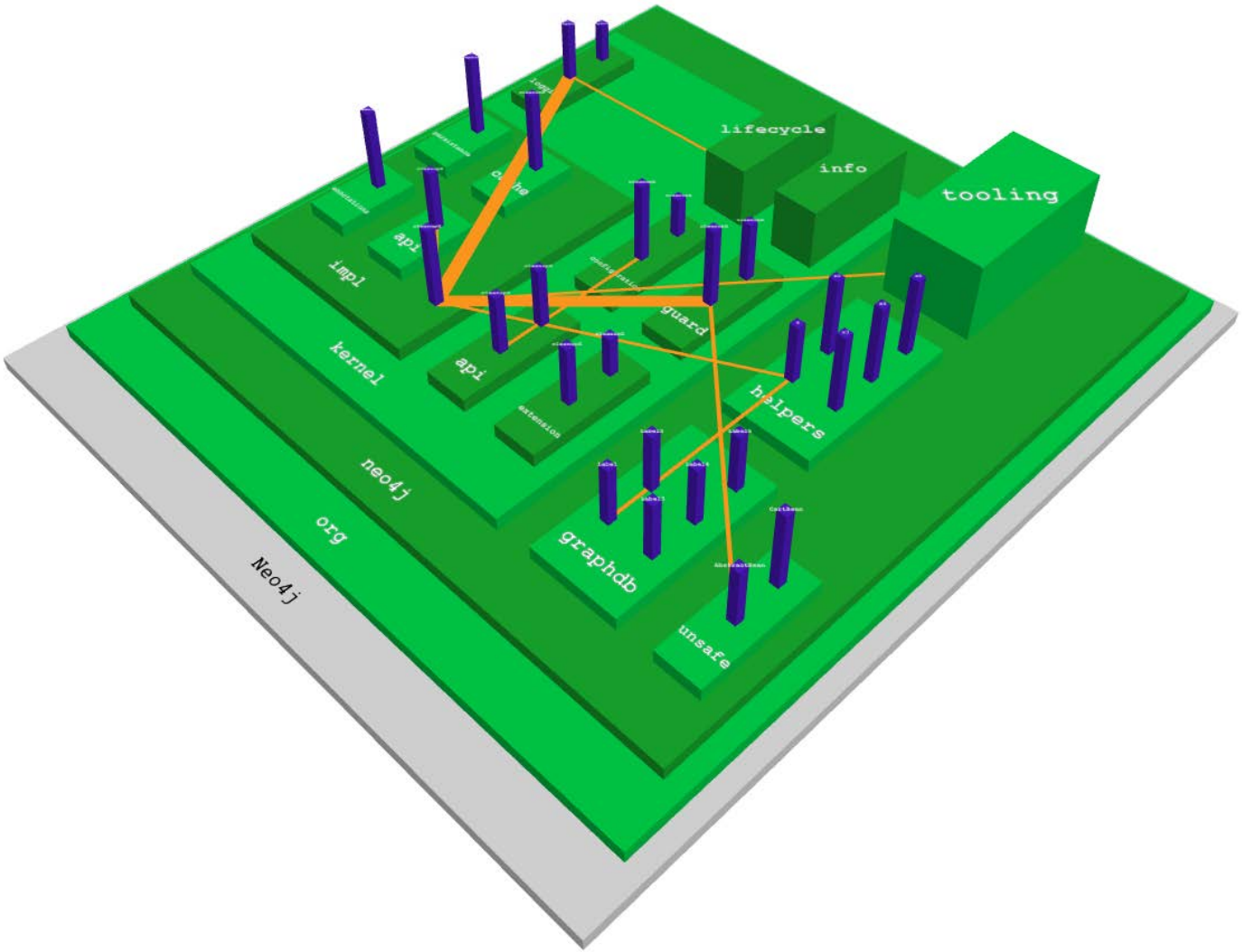
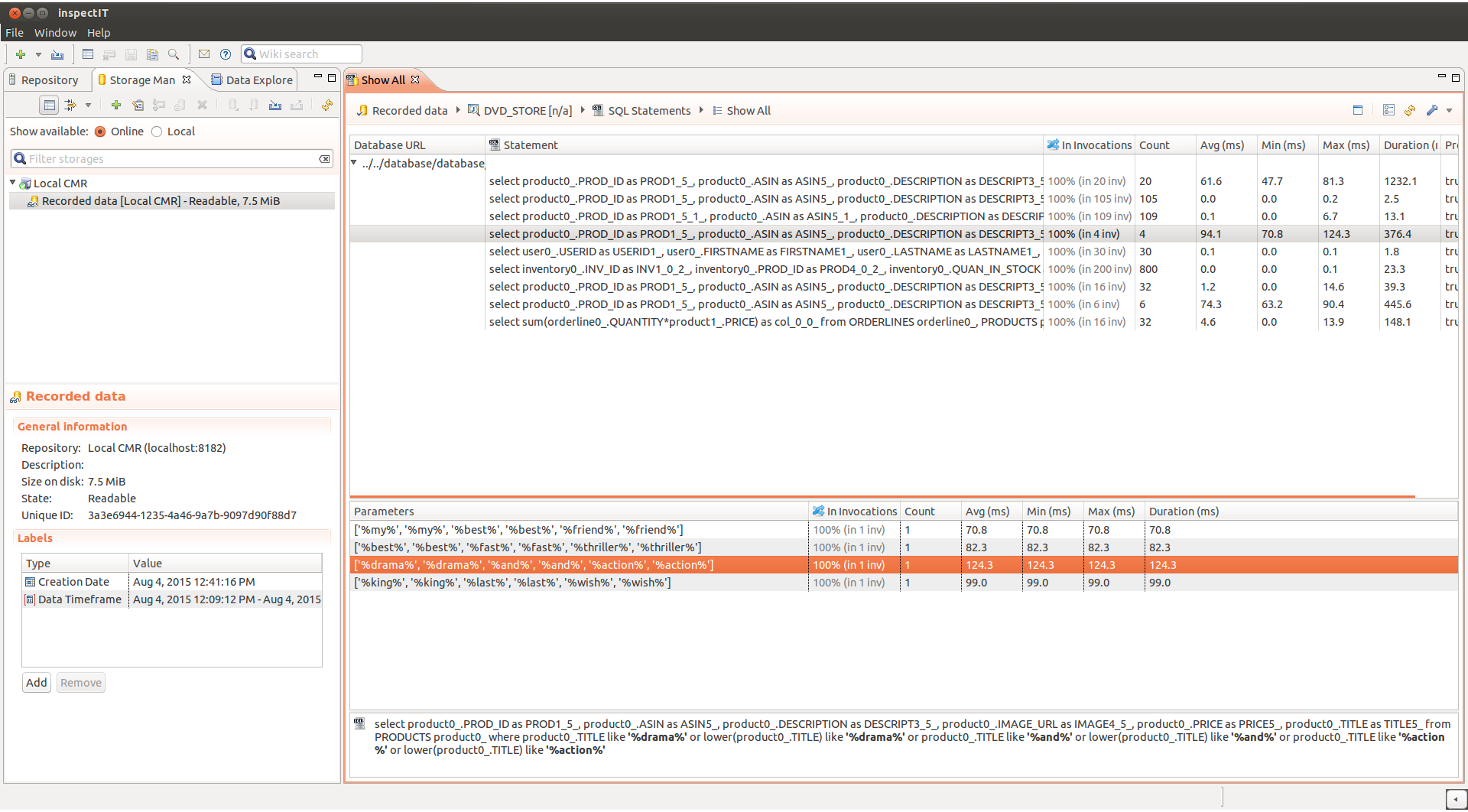


Related Work

InspectIT

https://www.inspectit.rocks



Related Work

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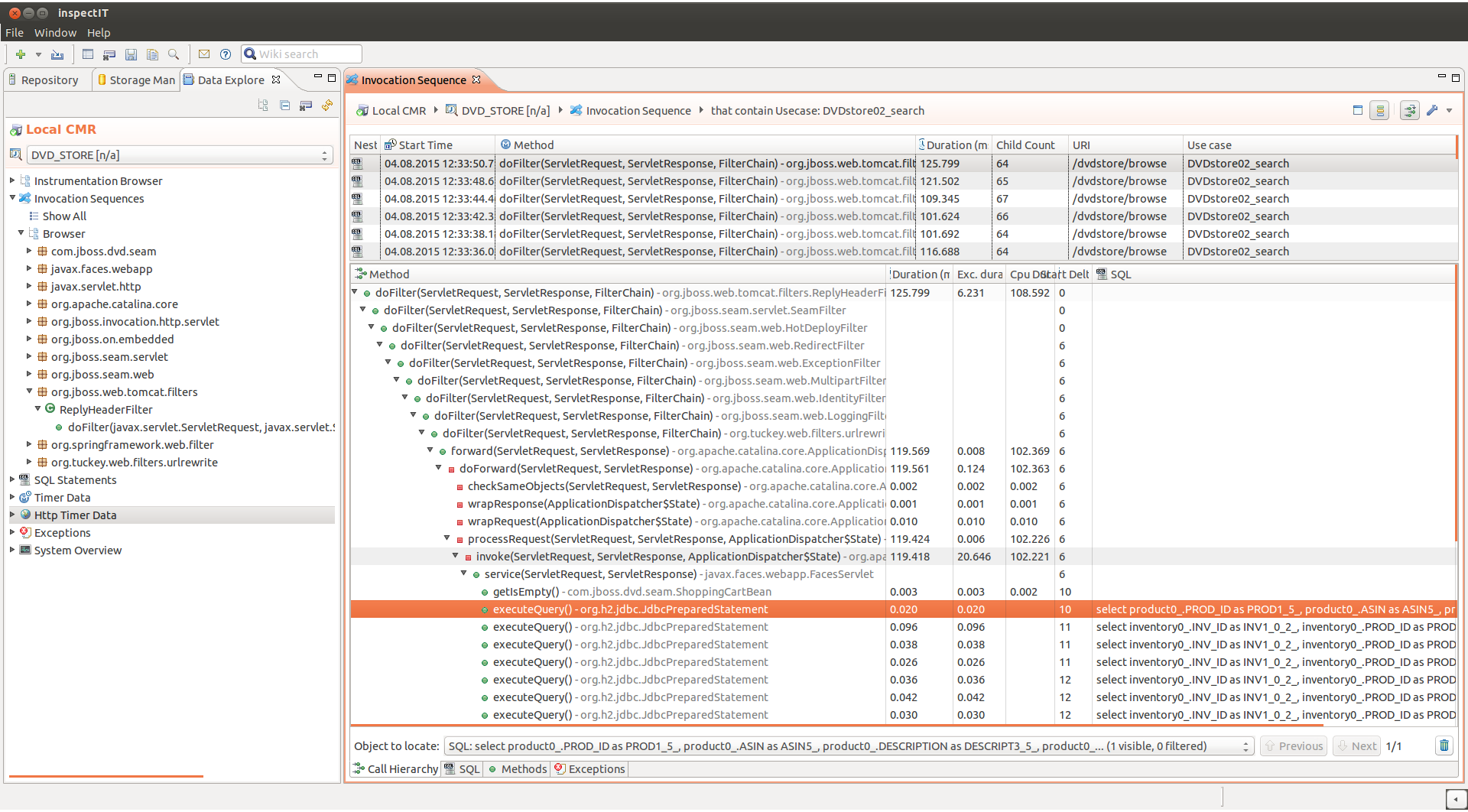
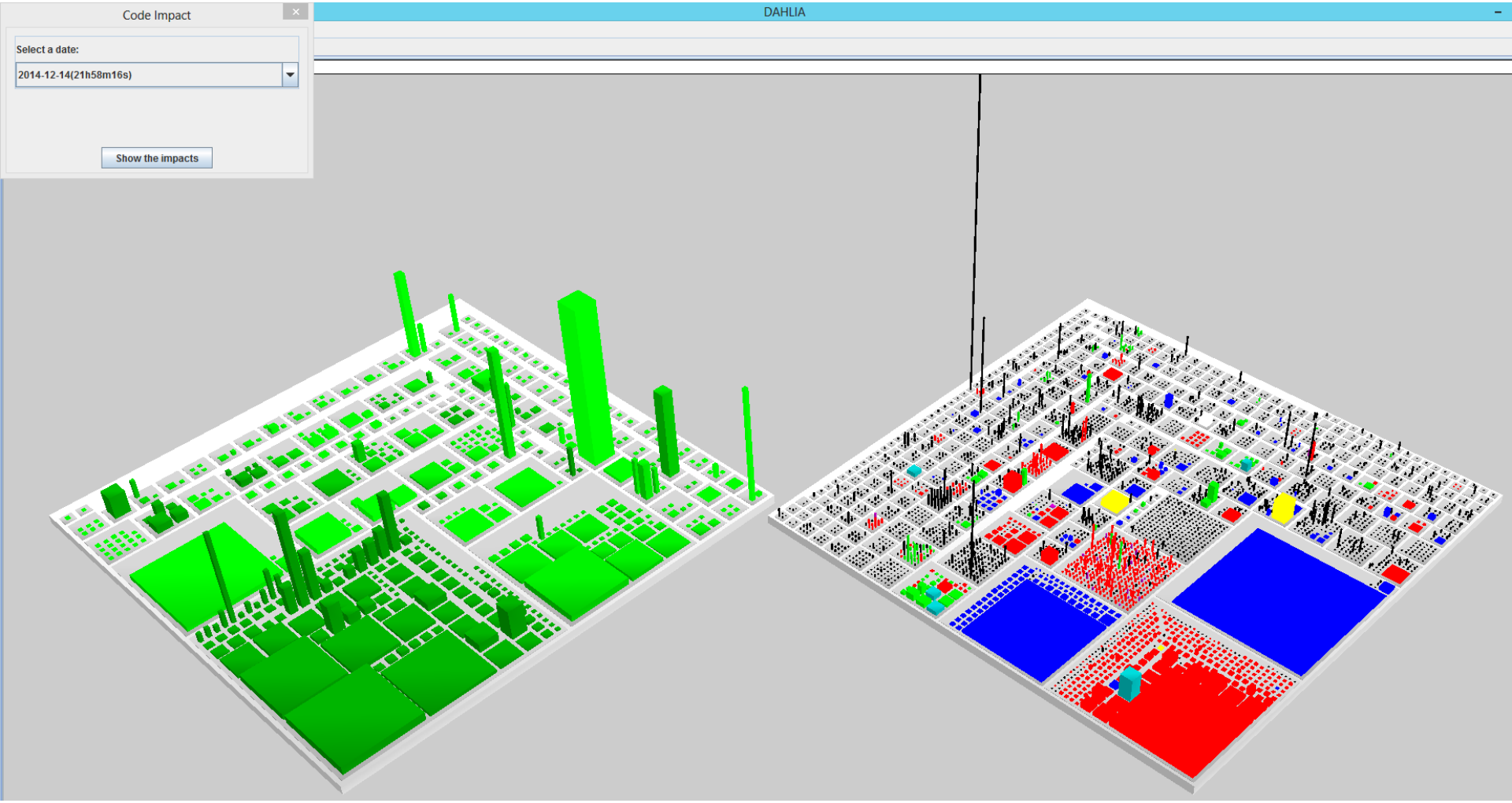


Related Work

DAHLIA 2.0

https://staff.info.unamur.be/lme/DAHLIA



Conclusions & Open Questions

Conclusions

- Lack on database monitoring in long-living systems
  - Based on…
    - obsolete technologies and platforms
    - poor documentation
    - insufficient knowledge
- Presented an approach as a solution
  - Live database trace visualization for large software landscapes
  - Adresses developers and operators
  - Early work in progress – open for feedback and suggestions

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