Christian-Albrechts-Universität zu Kiel
Technische Fakultät

Towards a Dependability Control Center for Large Software Landscapes

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2014-05-14

ExplorViz

Fully-Automatic Systems

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- Dependability: manual management tedious in large systems (e.g., clouds)
- Automatic techniques proposed
- Operators often mistrust fully-automatic systems

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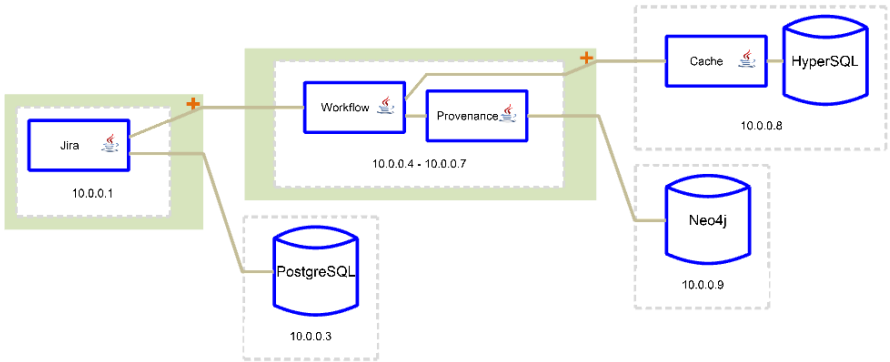
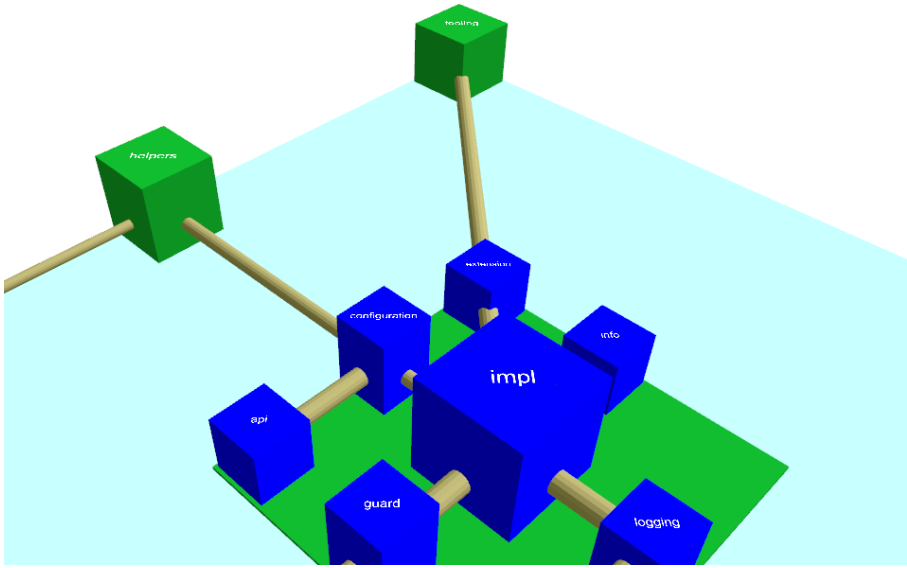
- Automatic techniques proposed
- Operators often mistrust fully-automatic systems
- **Vision: semi-automatic control center**

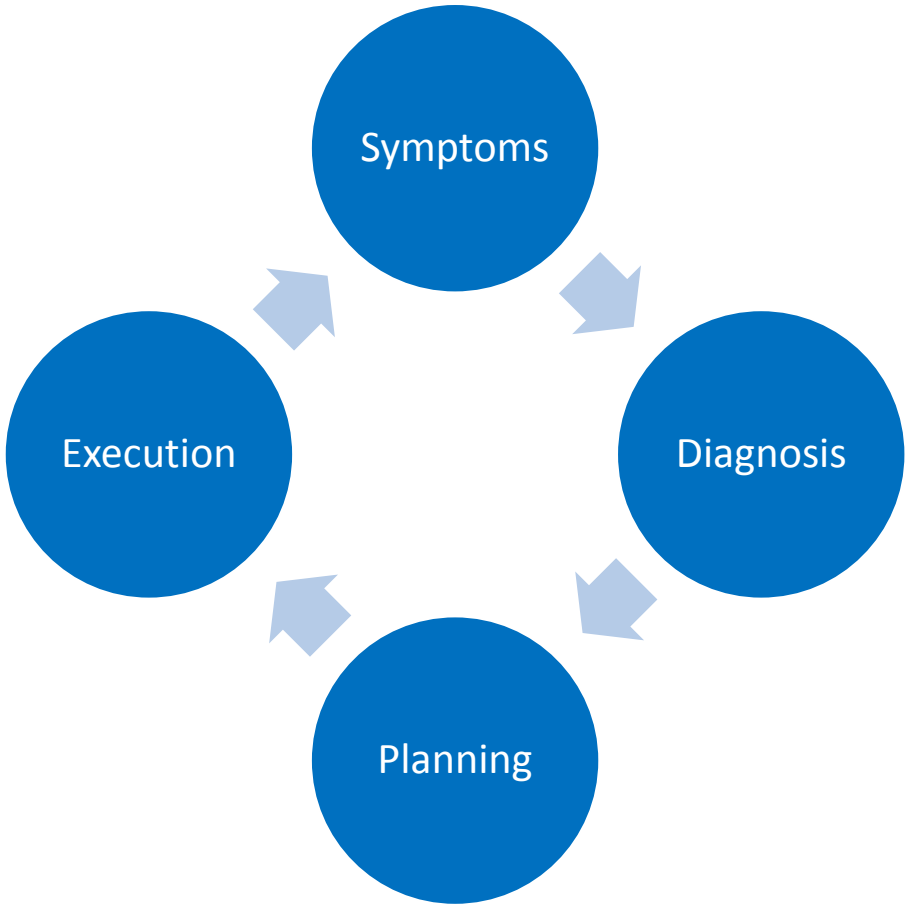
ExplorViz





- Interactive approach for the live, explorable visualization of software landscapes [FWWH13]

- Four perspectives:



1. Phase: Symptoms

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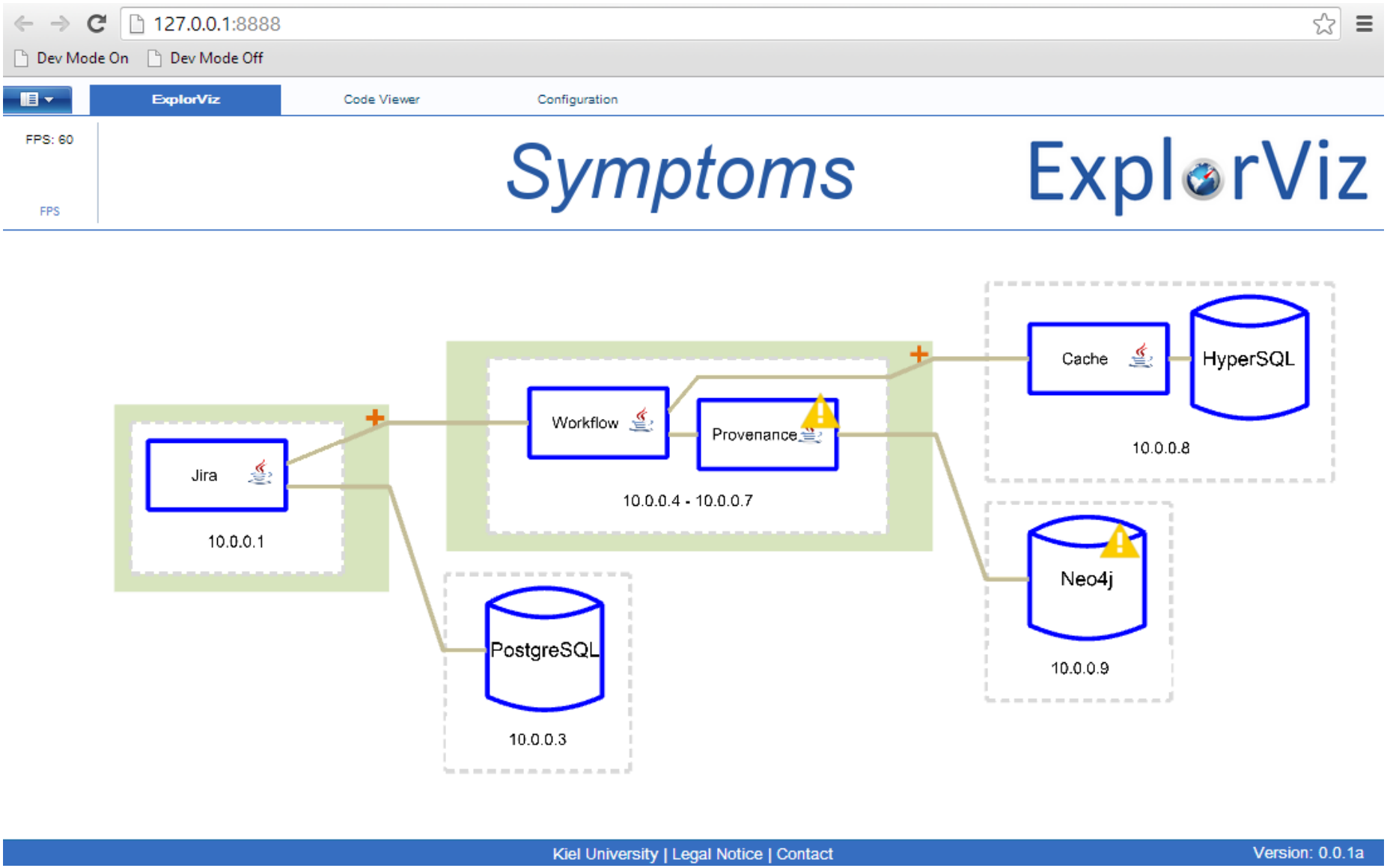
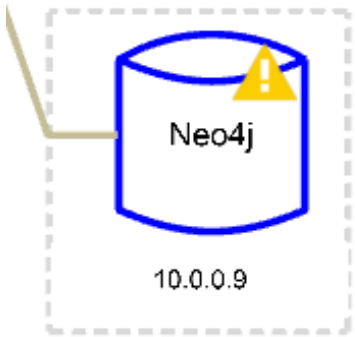
Envisioned Control Center



2. Phase: Diagnosis



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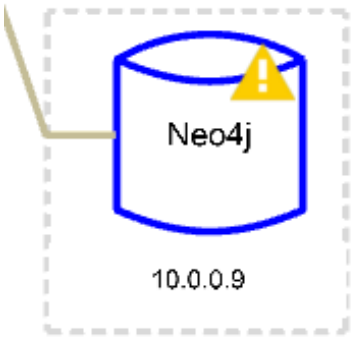

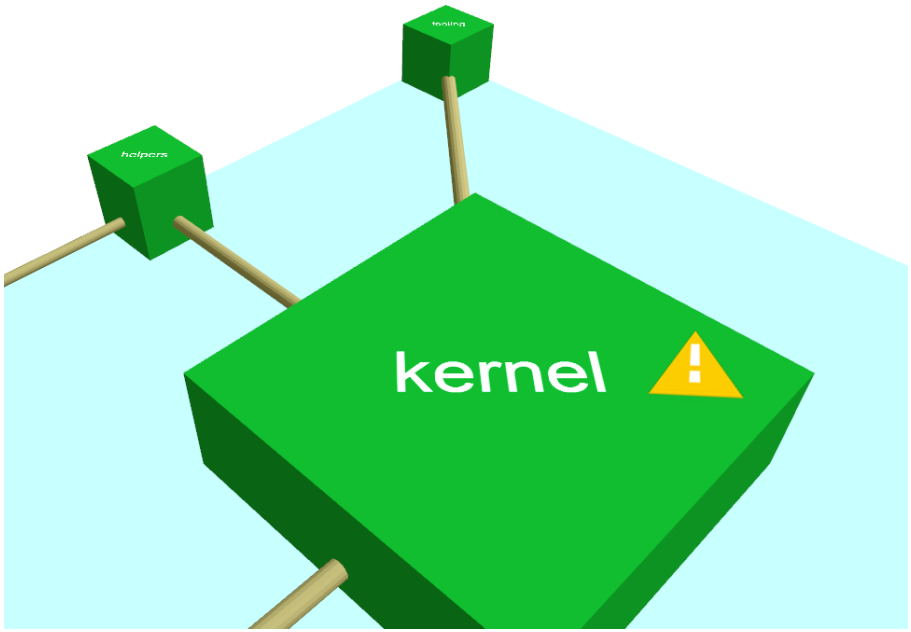

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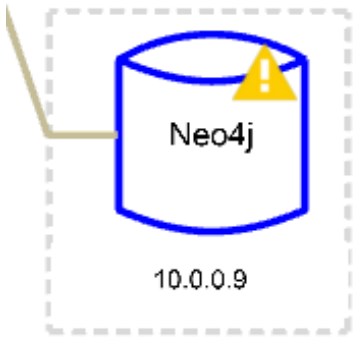
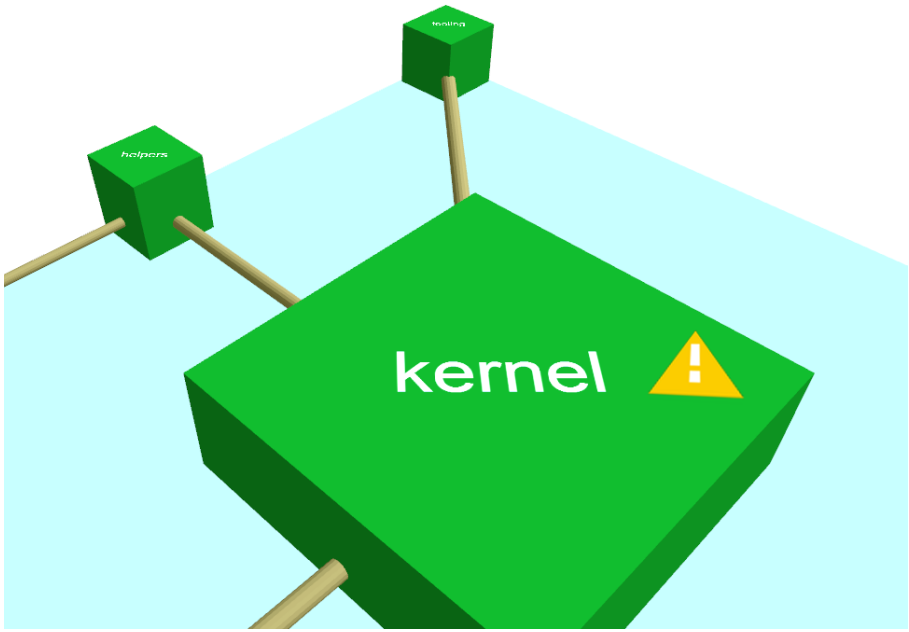
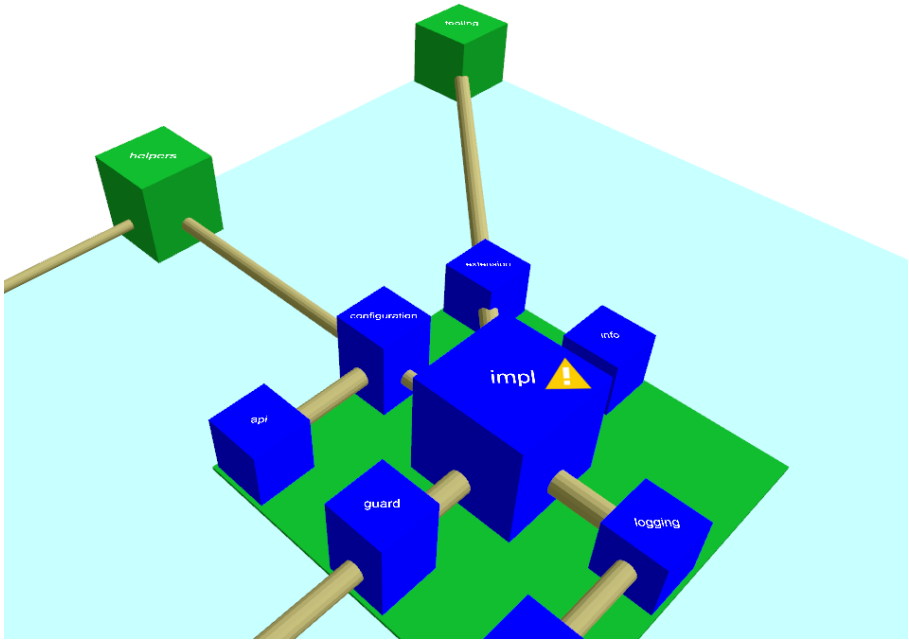
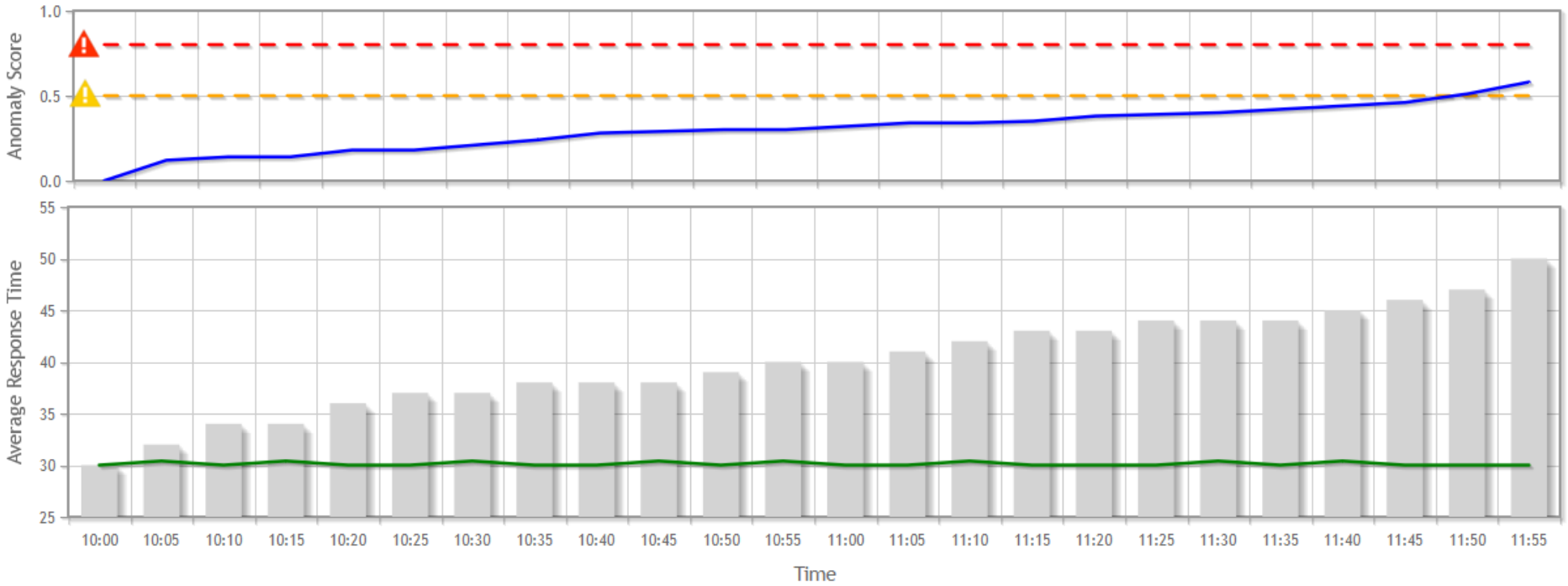


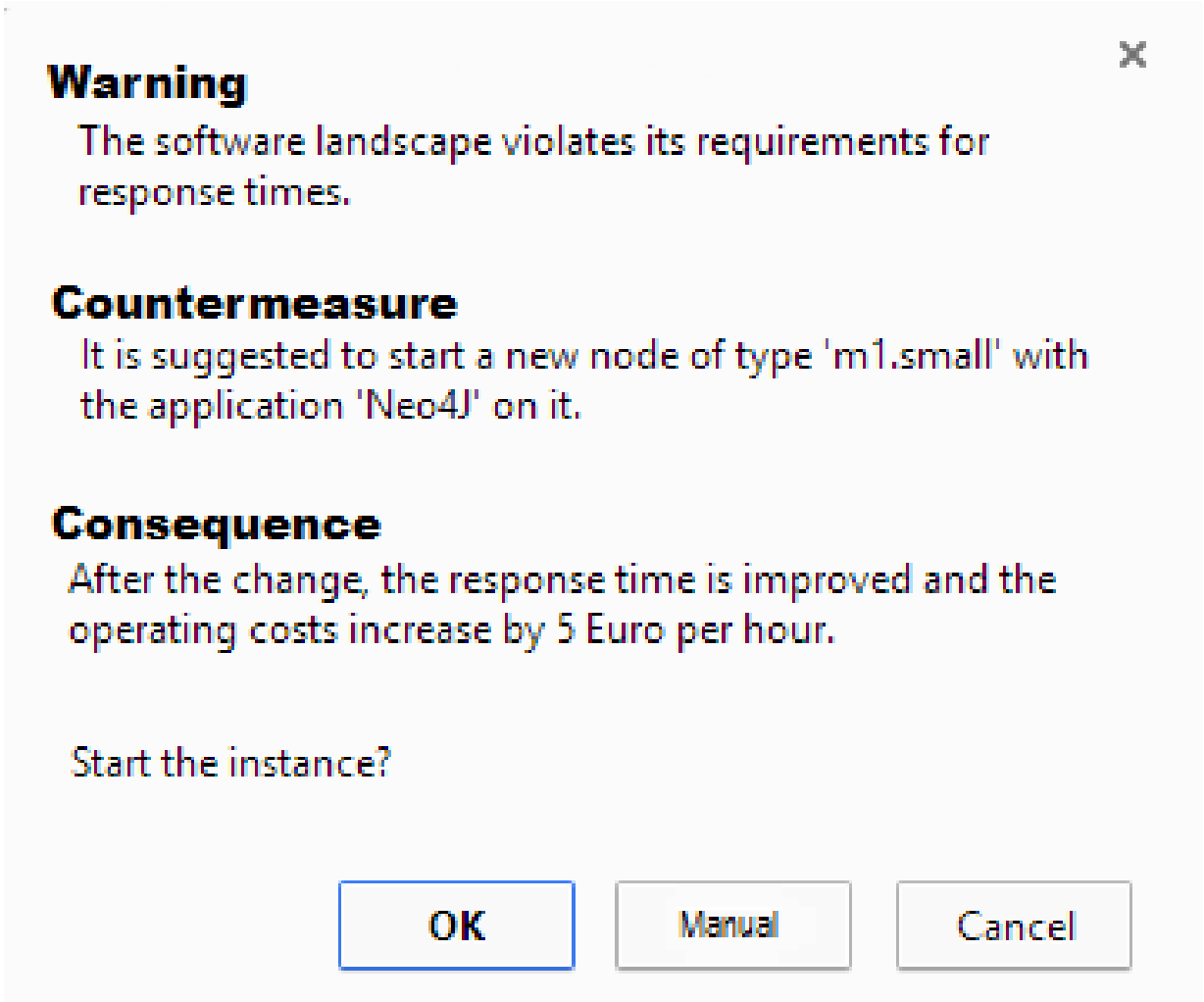




2. Phase: Diagnosis (cont'd)

Envisioned Control Center

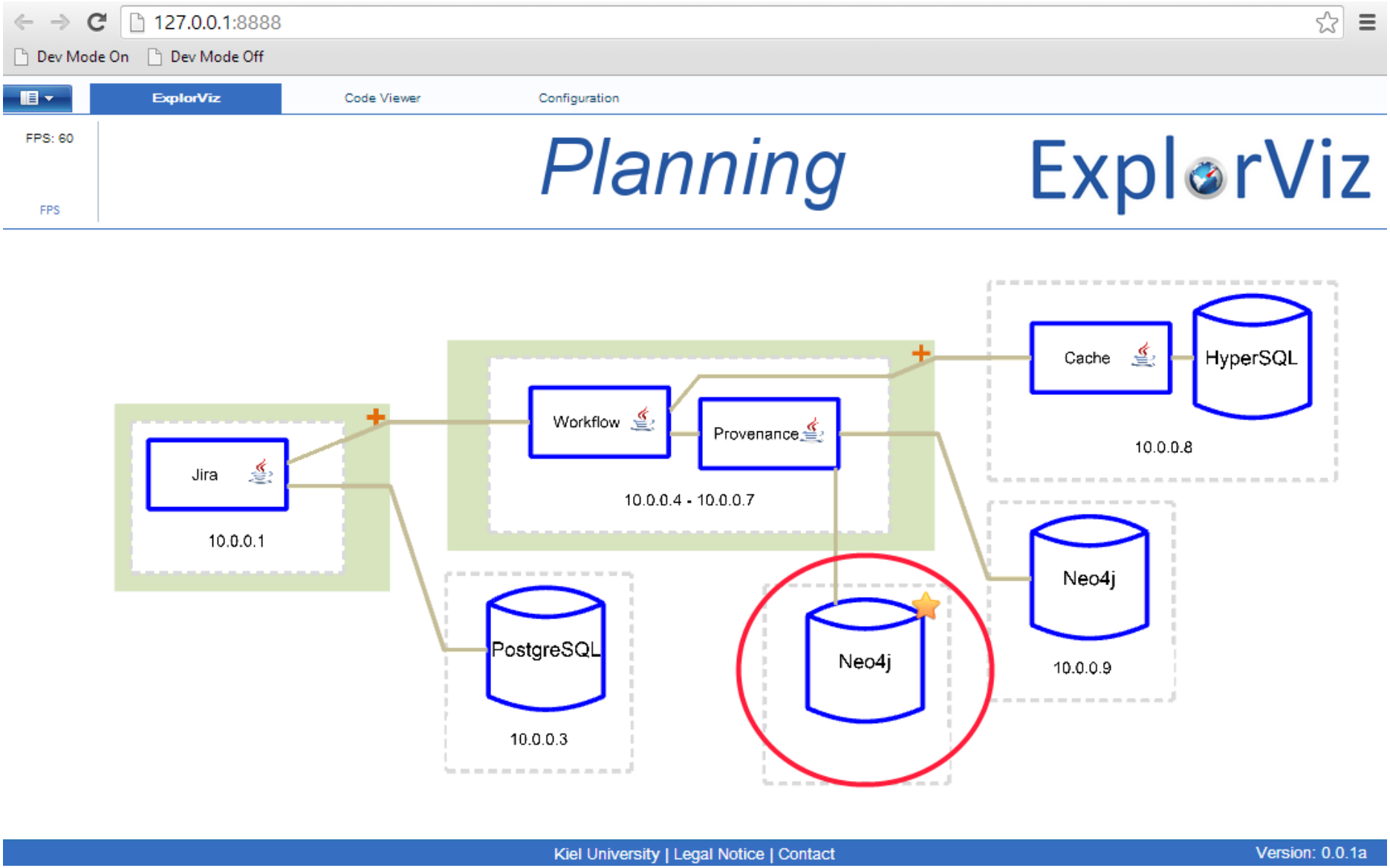


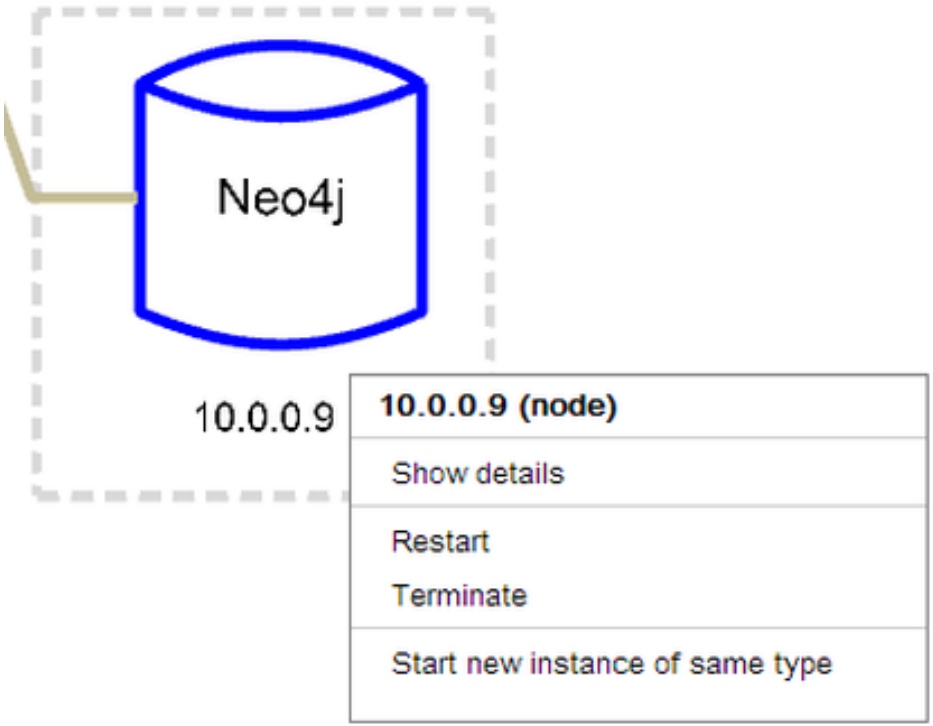


Automatic change dialog

3. Phase: Planning (cont'd)

Envisioned Control Center





Node context menu

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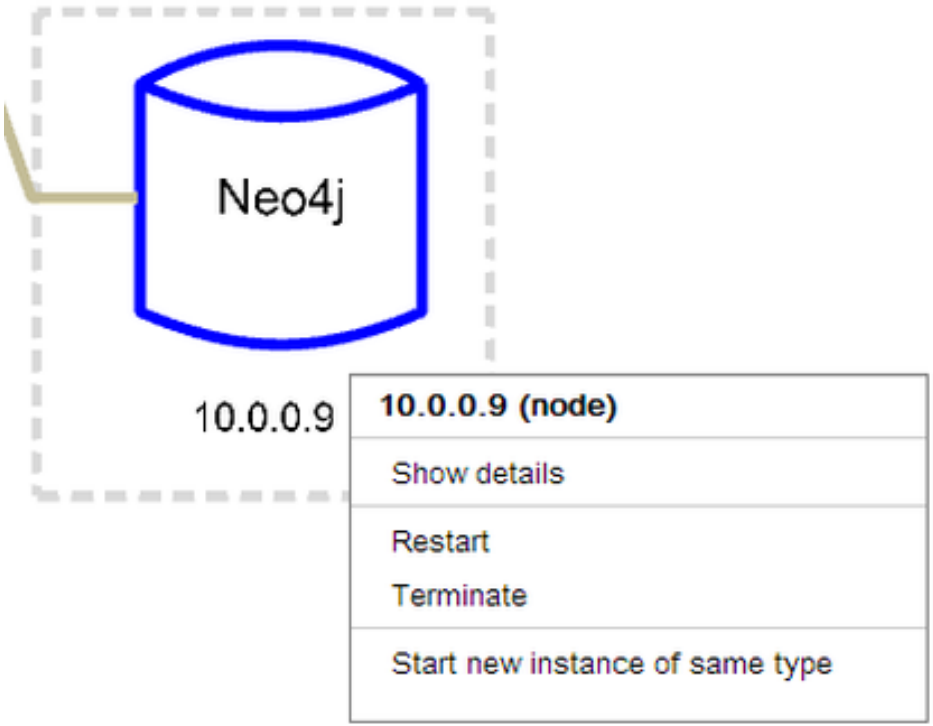

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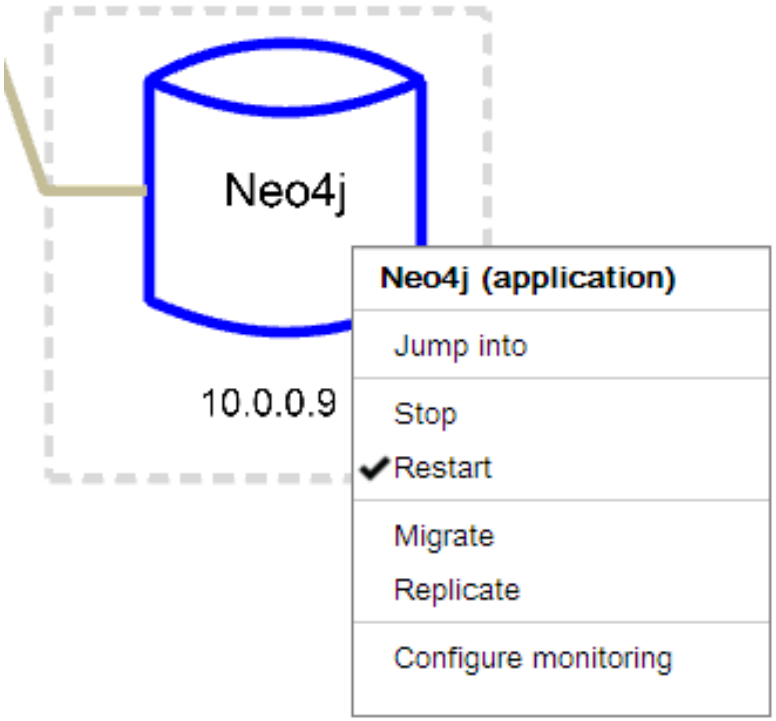

Application context menu

- Pushing execute button in the planning perspective
- Execution perspective is opened
- Shows **what is planned** and **what has already been conducted**

- Monitoring
  - Kieker [vHWH12]
- Online performance anomaly detection
  - ΘPAD [Bie12, Fro13]
- Root cause localization
  - RanCorr [MRvHH09]
- Online capacity management
  - SLAstic [vMvHH11]

Related Work

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- Cloud management
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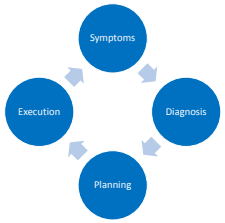
  - Most tools only provide monitoring and reactive analysis
- MAPE-K control loop tools
  - E.g., Rainbow [GCH+04] or TRAP
  - Large part focuses on automatic adaptation

Summary

- Envisioned semi-automatic control center for cloud dependability basing on ExplorViz[1]
- Open source tool ExplorViz available at `http://explorviz.net`
- Visual plug-in-based integration platform for dependability management approaches

ExplorViz



[1] `florian.fittkau@email.uni-kiel.de`

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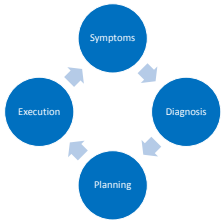

Future Work

- Provide an implementation for our control center concept
- Develop plug-ins to integrate a number of reasonable dependability management approaches

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