Approaching the Cloud
Using Palladio for Scalability, Elasticity, and Efficiency Analyses

Sebastian Lehrig
Matthias Becker
Engineering Cloud Systems

Scalability:
- Handle 12% load increase after 1 year

Elasticity:
- RT < 3 sec. at Christmas
- RT at 3 sec. after 10 min.

Efficiency:
- Marginal costs $0.01
Engineering Cloud Systems

Problem: Requirements cannot be ensured during design-time in cloud-based systems.

Scalability:
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Efficiency:
- Marginal costs $0.01
New Method

Specify SLOs & (Dynamic) Usage Scenarios → Select Template → Refine System Models & Reconfiguration Models → Simulate → Interpret

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Dynamic Usage Scenarios

• Time-dependent Workload

- Specify SLOs & (Dynamic) Usage Scenarios
- Select Template
- Refine System Models & Reconfiguration Models
- Simulate
- Interpret

[SLO not fulfilled]
Select Template & Refine

Specify SLOs & (Dynamic) Usage Scenarios → Select Template → Refine System Models & Reconfiguration Models → Simulate → Interpret

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Simulate & Interpret

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[SLO not fulfilled]

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Tool Demo
Conclusion & Future Work

1. Template-Based Method
   - Descriptive Language
   - Improved efficiency by reuse

2. Extended Analysis
   - Scalability
   - Elasticity
   - Efficiency

3. Integrated Palladio Extensions
   - Architectural Templates
   - LIMBO
   - SimuLizar