A Simulation-Based Approach to Software Performance Modeling

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Performance Evaluation of SA

- Early identification of performance problems in Software Architectures is very useful
  - Costs of changing the design increases as the software development process proceeds

- Performances of SA can be evaluated with
  - Measurement-based approach (requires a running system)
  - Model-based approach (can be done at early stages of the software development process)
Model-based approach

- UML Model
- Simulation Performance Model
- Results and Feedback
- Model Implementation and Execution

Feedback
Simulation for Software Performance Evaluation

• Simulation not considered a solution technique for other performance models, but a performance model itself

• Advantages
  – Mapping between Software Model and Performance Model should be immediate
  – No constraints on the Software Model
  – Easy to report feedback into the Software Model
Proposed approach

**UML Model**
- Use Case Diagrams
- Activity Diagrams
- Deployment Diagrams
- Tagged Values

**Performance Model**
- Workloads
- Processing Steps
- Resources
- Model Parameters
- Simulation Results
Sample Annotated Activity Graph...
...And the corresponding simulation model
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Additional informations on the poster