Sebastian Lehrig

### **The Architectural Template Method**

Engineering of Software-as-a-Service Cloud Applications





















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### **Related Work**

[Pahl et al. "Ontology-based Modelling of Architectural Styles", 2009]

ACME

RAPIDE

<u>ADLs Supporting</u> <u>Architectural Constraints</u> <u>(for Templating)</u>



Palladio

**D-KLAPER** 

SimuLizar

**Design-Time Analyses** 

[Abowd et al. "Formalizing style to understand descriptions of software architecture", 1995] [Happe et al. "Parametric performance completions for model-driven performance prediction", 2010]



## **Evaluation**



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## **Time Plan**



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#### Conclusion Analyze, Detect, **RESPONSE TIME** and Resolve **Quality Issues** Architect WORKLOAD **Select Template** Fill with Implement from Catalog **Application-**& Test **Specific Parts** @Middle @Presentation @Middle @Data @Presentation @Data 8 \$ WWW Logic DB **Varying Workload Google App Engine Google App Engine Varying Workload** 3-Layer Google App Engine Template SaaS Cloud Application Model **Benefits: Contact Me** Sebastian Lehrig@upb.de **Reusable Best** Efficient. www.cloudscale-project.eu **Practice** Declarative Templates Analyses Engineering

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### Literature

[1] Becker, M., Luckey, M., Becker, S. **Model-driven performance engineering of self-adaptive systems: a survey**. In: *Proceedings of the 8th international ACM SIGSOFT conference on Quality of Software Architectures*. pp. 117-122. QoSA '12, ACM, New York, NY, USA. 2012.

[2] Eusgeld, I., Freigeld, F., Reussner, R. **Dependability Metrics**. LNCS Volume 4909, Springer, Germany, 2008.

[3] Happe, J., Becker, S., Rathfelder, C., Friedrich, H., Reussner, R. **Parametric performance** completions for model-driven performance prediction. In: Perform. Eval. 67, no. 8, 2010

[4] Koziolek, H. **The SPOSAD architectural style for multi-tenant software applications**. In: *Proc. 9th Working IEEE/IFIP Conf. on Software Architecture*. pp. 320-327. IEEE. Jul 2011.

[5] Riebisch, M. Vorgehen bei der Architektur und Komponentenentwicklung. In: *Handbuch der Software-Architektur*. dPunkt.verlag Heidelberg, 2 edition, Dec. 2008.

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[6] Smith, C., Williams, L. Performance solutions: a practical guide to creating responsive, scalable software. Addison Wesley Longman Publishing Co., Inc., 2002.

#### July 1, 2014The Architectural Template (AT) Method