# Using Knowledge Graphs to Detect Enterprise Architecture Smells

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## **Enterprise Architecture Smells**

Enterprise Architecture Debt depicts the deviation of the currently present state of an enterprise from a hypothetical ideal state.

 $\rightarrow$  Smells as tool to measure symptoms



## **EA Smells Catalogue**



https://swc-public.pages.rwth-aachen.de/smells/ea-smells/



	Enterprise Architecture Sm	ells Q Search					• 63/63
This website serves as a knowledge base for Enterprise Architecture Smells.		Ambiguous Viewpoint		Architecture by Implication		Big Bang	
Categor	у	Analysis and design models	are often presented	This antipattern is charact	terized by the lack of	A strategy often prefe	rred by large vendors where an
	technology	without clarifying the viewpoi model. Mixed viewpoints dor	int represented by the	architecture specifications	s for a system under architects responsible for the	entire Enterprise Arch	itecture Model is built "at once".
	business	separation of concerns, confusing blueprints of abstractions and implementation details.		project have experience with previous system construction, and therefore assume that documentation is unnecessary.			
	application						
	Understandability Problem	C2	<b>•</b> •• ~	F2		<b>F</b> 7	
	Semantic Error		······································		······································		······································
	Rule-related defects	Business Process Forever		Chatty Service		Combinatorial Explosion	
	Data-flow related defects						
	Control-flow Problems	Business processes have been strictly defined and are		A high number of operations is required to complete		A subtle form of Duplication, this smell exists when	
Tags		now static and cannot be eas	siy changeu.	simple tasks that needles	sly slow down an entire	combinations of data	or behavior.
	III						
	Process	[2]	□ " <	12	<b>□ " &lt;</b>	[2]	<b>□</b> " <
	The Bloaters		· · · · · ·				· · · ·

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#### **Research Objectives**

Transforming Enterprise Architecture models into Knowledge Graphs

Using Knowledge Graphs to automatically detect EA Smells



## **CM2KG Architecture**





https://github.com/borkdominik/CM2KG



#### **Transformation**





#### **Exemplary Queries**





## Findings





#### Performance





#### **Conclusion and Future** Work



CM2KG

https://swc-public.pages.rwth-aachen.de/smells/ea-smells/

https://github.com/borkdominik/CM2KG

	-(	Contribution	
		<ul> <li>Automatized analysis of EA Smells</li> <li>Generic</li> </ul>	
		•Extensible •Analysis of 347 ArchiMate model	
	_	Limitations	
		•Qualitative assessment •Other notations	,
Г	-	Further Development	
		<ul> <li>Extend catalogue</li> <li>Integration with Archi</li> <li>Deployment of platform</li> <li>Provision of REST API</li> <li>Empirical experiments with practitioners</li> </ul>	
	-	Collaboration	
	C	Several master theses ongoing	

•We are open to collaborations

