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Development of a Generator for EAM - Data

Master Thesis Proposal-Talk

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- Goals:
 - Make complexity of an enterprise governable
 - Business IT alignment
- Gives an holistic view over the enterprise







• Algorithm development (shortened):



- Testing and evaluation is difficult, because EAM data is classified:
 - Don`t publish results
 - Anonymize results
 - Write own test data ?!
 - \rightarrow not suitable, time-consuming or questionable





- Development of a reference data set for EAM
- cf. KDD Cup Set:
 - Real data
 - Measurements
 - Consumer data
 - etc.
- Real data is not available ightarrow construct synthetic data set





How to generate a synthetic EAM Dataset?

- Synthetic data generation:
 - Basic data available
 - Construct statistical model
 - Generate new data
- Graph construction:
 - Start with empty graph
 - Insert nodes
 - Insert edges with a pre defined probability
- EAM dataset construction (prototype):
 - Start with empty EA
 - Insert artifacts and attributes
 - Insert values according to some criterion





	name	users
Business Application	Fire_Insurance	300
sers:int	 Privat_Insurance	700
)n	Dog_Insurance	12



name

users



- Development of a reference data set for EAM
- Data set should represent a meaningful EA
- Data set should be configurable ightarrow Built-in flaws
- \rightarrow Some notion of quality for EA required





Quality of an EA

- Idea: use key performance indicators (KPIs)
- KPIs measures how effectively EAM goals are achieved

Application continuity plan availability

A measure of how comple drawn & tested up for the	tely IT continuity plans for business critical a IT's application portfolio.	applications have been	Goals Ensure compliance Foster innovation Improve capability
Business application 1	Calculation The number of critical applications where tested IT continuity plan available divided by the total number of critical applications.	Improve project execution Increase disaster tolerance Increase homogeneity Increase management satisfaction Increase transparency	
Interpretation	Good if >80% Normal 60%-80% Problematic if <60%		Reduce operating cost Reduce security breaches

[Mat+12]

• 52 KPIs: \rightarrow Choose a meaningful subset





Mini EA Prototype based on KPIs – Datamodel 1/3

Application continuity plan availability

_	Information mod	el —			
		01			
		1*	covered by >	01	
	Business application				IT continuity plan
	isCritical:boolean[11]				isTested:boolean[11]
	. ,				

Business Application	covered by	IT continuity plan
name:String[11] isCritical:boolean[11]	1* 0.	1 name:String[11] isTested:boolean[11]





Mini EA Prototype based on KPIs – Datamodel 2/3

Project performance index

Information mode	┌ Information model ────		
	IT project isInTime:boolean[11]		
	isInBudget:boolean[11] isInQuality:boolean[11]		

IT project
name:String[11]
isInTime:boolean[1:1]
isInBudget:boolean[11]
isInQuality:boolean[11]

Business Application			IT continuity plan
name:String[11]	covere	<u>d by</u> ►	name:String[11]
isCritical:boolean[11]	1*	01	isTested:boolean[11]





Mini EA Prototype based on KPIs – Datamodel 3/3







Mini EA Prototype based on KPIs – Dataset (cf. 2/3)

	<u>name_ITP</u>	isln Time	isIn Budget	isIn Quality	isCaused ByBadSpec
IT-Projects:	Project_A	no	no	no	no
,	Project_B	no	no	no	no
	BadSpec	yes	yes	no	yes

	name_BA	isCritical
Business-	Application_A	yes
Applications:	Application_B	no
	Application_C	yes

	<u>name_BA</u>	name_ITC
Covered_by:	Application_A	Plan_A
	Application_C	Plan_B

	<u>name_ITC</u>	isTested
II-Continuity	Plan_A	yes
Pidn:	Plan_B	no

KPI: 1/2 → EA is problematic





Prototype EA

- Okay for proof of concept, but not realistic at all
- Building a complete EA from scratch is not feasible
- Idea: combine "Reference Architecture" with data model (mapping required)
- Reference archicture would then be enriched with attributes necessary for KPIs and filled with data
- Maybe cooperation with other research team possible (e.g. Uni Rostock)



- Development of a reference data set for EAM
- Data set should represent a meaningful EA
- Data set should be configurable \rightarrow Built-in flaws
- → Create a configurable data generator that allows creation of high or low quality EA data sets





Plan

- Literature research
- Construct mini prototype
- Define quality for EA according to KPIs
- Construct full prototype (manual)
- Implementation of configurable data generator (using benerator)
- Evaluation





- Future work:
 - Generate EAM data based on one reference architecture
 - Automatically generate data for arbitrary reference architectures
 - Use generated data as input for EA evolution simulator





Open questions

- Which level of detail (artifacts/attributes)?
- Which KPIs to choose?
- Most KPIs do not have an interpretation
 - How to interprete these?
- KPIs feasible as quality measure?
 - Alternatives? (EAM Patterns?)
 - Answer possible at end of work?





References

- [MAT+12]: F. Matthes, I. M. Ivan, A. Schneider, and C. Schulz. <u>EAM KPI Catalog</u> v 1.0. Tech. rep. Munich: Chair for Software Engineering of Business Information Systems. Technische Universität München., 2012.
- [wikipedia]: https://en.wikipedia.org/wiki/Enterprise_architecture_fr amework



