Tool Support for Federated EA Model Management – An Industrial Case Study


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Agenda

1. Motivation
2. Context of this Work
3. Research Methodology and Questions
4. Challenge of Real-World Data
5. Demonstration of ModelGlue Functionality
6. Conclusion and Outlook
Motivation

Current problems in EA model maintenance:

EA documentation is still being done manually…

…and thus costly, resulting in models of low quality.

Goal: High quality of data, up-to-date information, little collection effort

Retrieve reliable data basis from federated, autonomous information sources

### Type of collection % of all
- Manually from applications/databases 76.00%
- Manually via interviews 68.00%
- Manually modeled in workshops 52.80%
- Manually via questionnaires 36.80%
- Partially collected automatically 35.20%

### Challenge % of all
- Huge data collection effort 55.00%
- Low EA model data quality 55.00%
- Insufficient tool support 34.29%

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09.12.13 Kirschner – MA Introductory Presentation

[Ro13a]
Research History

Problem Domain: EA Documentation

Survey by Grunow et. al. [Gr12]: Data quality for automated EA documentation

Buschle et. al. [Bu12]: Coverage to which productive data can be used for EA documentation

Survey by Hauder et. al. [HMR12]: Challenges for automated EA documentation

Survey by Farwick et. al. [Fa13]: Appropriateness of information sources for EA documentation

Survey by Roth et. al. [Ro13a]: Current practices in EA documentation

Technical Fundament: Hybrids and Visualisation Framework

PhD Thesis Neubert [Ne12]: Concept and implementation of Hybrid Wikis

Schaub et. al. [SMR12]: Framework for interactive EAM visualisations

Conflicts and Conflict Resolution

[Ro13c], [Ha13e]: Conflict Resolution of Models for Automated EA Documentation

[Ro13e]: Collaborative Evolution of EA Models

2012

2013
Context of this Work

**My Guided Research:**

“Towards a Federated EA Model Management: N-Way Merge of Models for Repositories with Loosely Coupled Schema and Data” (accepted at MKWI2014)

- Extension of the Tricia role and responsibility concept
- Implementation of model merge functionality
- Tasks as a means for conflict resolution

**Bachelor’s Thesis Tobias Schrade:**

- Graphical visualisation of merge results
- Holistic visual conflict resolution dashboard
- Collaborative conflict resolution facilities

**ModelGlue**

**My Master’s Thesis:**

“Tool Support for Federated EA Model Management - An Industrial Case Study”

**Goal:** Evaluation of ModelGlue in the industry

**Evaluation in the industry**

- Improvement of ModelGlue based on feedback
- Model differencing functionality
1. Does the concept of federated EA model management reflect industry needs?
   1. Have all relevant use cases been identified?
   2. Are there other potential application scenarios for this concept?

2. How does ModelGlue support EA practitioners who seek to automate EA model maintenance?

3. What are technical industry constraints and what are technical implications?
   1. How frequently are information sources synchronised with the EA repository?
   2. What amount of data is relevant in EA models?
   3. Does ModelGlue scale considering realistic data loads?

4. Does the implementation of ModelGlue (behaviour, UI, …) meet user expectations?
Research Methodology: Case Study

Evaluation in the insurance industry

- Import of real-world industry data
- Adaption of ModelGlue to realistic data loads

Semi-structured interviews

Goal: Evaluation of ModelGlue

Application / refinement

Cross-check findings in iterative interviews with second industry partner

Conceptual assessment

- Usefulness of solution
- Relevance of application scenarios
- Adaption by users

Technical assessment with regard to

- Completeness of merge results
- Correctness of output
- Performance facing realistic amounts of data
Federated Model Management for the HUK

Three federated information sources

Goal: consolidate into master EA model

Dimensions: < 10 Types
500 – 3000 Elements

Abstraction gap
Federated Model Management for the HUK

Holistic EA Model

Import into Tricia

Three federated Information sources

1. Import
2. Branch to initially create master EA Model
2.1. Reference
3. Reference (for element matching)
4. Import (do element matching logic; There might/will be inconsistencies afterwards)
4.1. Do manual preprocessing in WS
5. Merge (find conflicts/inconsistencies)
6. Save Reference
8. Merge

Anwendungsentwicklung Workspace (AE-KZS)

AE-ZKS

Asset Management Workspace

Asset Manager

CMDB Workspace

CMDB

1. Import
2. Branch to initially create master EA Model
2.1. Reference
3. Reference (for element matching)
4. Import (do element matching logic; There might/will be inconsistencies afterwards)
4.1. Do manual preprocessing in WS
5. Merge (find conflicts/inconsistencies)
6. Save Reference
8. Merge

EAM Workspace
Live Demonstration Use Cases

<<< already prepared

Demonstration >>>

I as-is state

[Ac13]
Live Demonstration Use Cases

Goal: Introduce an ERP system
Live Demonstration Use Cases

Goal: Replace old mainframe servers

I as-is state

II planned state

modelling

branch

III

IV

branch

V planned state

<<< already prepared

Demonstration >>>

[Ac13]
Live Demonstration Use Cases

- I as-is state
- II planned state
  - modelling
  - branch
- IV
- V planned state
  - branch
- VI

<<< already prepared
Demonstration >>>
Live Demonstration Use Cases

<<< already prepared

Demonstration >>>

I as-is state

II planned state

modelling

branch

IV

VII

branch

evolution

branch

V planned state

VI

merge

[Ac13]
Live Demonstration Use Cases

I as-is state

II planned state

branch

modelling

III

branch

review differences

evolution

IV

V planned state

branch

merge

VI

VII

<<< already prepared

Demonstration >>>

[Ac13]
Live Demonstration Use Cases

>>> already prepared

Demonstration >>>

I
as-is state

II
planned state

modelling

branch

III

branch

merge

II
planned state

IV

V
planned state

evolution

branch

VII

merge

VI

VIII

[Ac13]
I as-is state

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modelling

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III

review differences

merge

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evolution

branch

V planned state

VI

branch

VII

merge

VIII

<<< already prepared

Demonstration >>>

[Ac13]
Conclusion

Prospects

- Evaluation of ModelGlue in collaboration with sebis industry partners (HUK and KVB)
- Adaption of feedback in several iterations
- Assessment of usefulness, correctness and performance of the solution facing real-world industry data
Timeline

October
- Role Concept
- Merge Concept and Implementation
- Differencing algorithm
- Import of HUK data
- 1st Eval. Cycle at HUK (feedback + adaption)
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking

November
- 1st Eval. Cycle at HUK

December
- Import of HUK data
- 1st Eval. Cycle at HUK
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking

January
- 1st Eval. Cycle at HUK
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking

February
- 1st Eval. Cycle at HUK
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking

March
- 1st Eval. Cycle at HUK
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking

April
- 1st Eval. Cycle at HUK
- 2nd Eval. Cycle at HUK
- 3rd Eval. Cycle at HUK
- 1st Evaluation at KVB
- 2nd Evaluation Cycle at KVB
- Benchmarking
- Write Thesis
Sources


Sources


[Ro13e] Roth, S., Hauder, M., Matthes, F.: Collaborative Evolution of Enterprise Architecture Models. 8th International Workshop on Models at Runtime (Models@run.time 2013), Miami, USA, 2013.