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

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

1. Demo of ModelGlue
2. Research Questions and Methodology
3. Visual Complexity and Filtering
4. Feedback
5. Conclusion
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

<table>
<thead>
<tr>
<th>Type of collection</th>
<th>% of all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manually from applications/databases</td>
<td>76.00%</td>
</tr>
<tr>
<td>Manually via interviews</td>
<td>68.00%</td>
</tr>
<tr>
<td>Manually modeled in workshops</td>
<td>52.80%</td>
</tr>
<tr>
<td>Manually via questionnaires</td>
<td>36.80%</td>
</tr>
<tr>
<td>Partially collected automatically</td>
<td>35.20%</td>
</tr>
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<table>
<thead>
<tr>
<th>Challenge</th>
<th>% of all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huge data collection effort</td>
<td>55.00%</td>
</tr>
<tr>
<td>Low EA model data quality</td>
<td>55.00%</td>
</tr>
<tr>
<td>Insufficient tool support</td>
<td>34.29%</td>
</tr>
<tr>
<td>…</td>
<td></td>
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</tbody>
</table>
Demo-Video

…Demonstration of ModelGlue functionality…
Research Questions and Methodology

RQ$_{1/2}$: Does the concept of federated EA model management reflect industry needs – especially for automated EA model maintenance?

RQ$_3$: What are technical industry constraints and implications?
- Import frequency? Amount of relevant data? Does ModelGlue scale?

RQ$_4$: Does the implementation of ModelGlue (behaviour, UI, …) meet user expectations?

Research Methodology: Two Intertwined Case Studies

Case A: HUK
- Time-series of real-world EA data
- Exploratory Interview
- Semi-structured Interview
- Research findings / Refinement of ModelGlue

Case B: KVB
- Semi-structured Interview
- Excerpt of current EA model data
- Semi-structured Interview
- Online Survey
Visual Complexity: Many Relationships

**Company A: HUK-Coburg**
- 10.000 employees, 10m customers
- No. of types: ~15
- Inst. per type: 1600 (Apps) – 23000 (CMDB)
- Relationships per inst. (av.): 5 - 40

**Company B: KVB**
- 1.500 employees, 10.000 members
- No. of types: <10
- Inst. per type: 200 - 1000
- Relationships per inst. (av.): 3 - 12
Visual Complexity: Many Instances
Reduce Visual Complexity: Filter…

Solution a): Classical filter UI

Solution b): Filtering via a query language (MxL: Model Expression Language)

Questions:

- Are both solutions intuitive (RQ₄)?
- Do they suffice EA needs (RQ₃)?

[Sc13, Re13]
### Feedback: Filter UI or MxL Queries?

<table>
<thead>
<tr>
<th>Company A: HUK-Coburg</th>
<th>Company B: KVB</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.000 employees, EAM team</td>
<td>1.500 empl., one enterprise architect</td>
</tr>
</tbody>
</table>

**Expressive power**
- **Filter** for simple scenarios.
- Complex queries require a query language like **MxL**.

**Intuitive comprehension**
- **Filter** is intuitive also for casual users.
- Power users like enterprise architects will learn the language **MxL**.

- **Filter** is sufficient.
- **Filter** nice and intuitive.
- Too few power users who would want to learn the language **MxL**.
Feedback on UI Aspects: Transparency

→ Careful with the transparency of overlays!

before

after
Feedback on UI Aspects: Colours

→ Use colours sparingly and only if they have a semantic reason!
Collaborative Conflict Resolution
Further Feedback…

- Relationships afflicted with conflicts should be marked as such.

- Collaboration support (Thesis Tobias Schrade) for conflict resolution
  - Vision for the next 5-10 years.
  - Looks promising, though.
  - Advantages over normal screen-sharing apps.

- Conflict resolution in a visualisation or in the table?
  - Depends…
  - ...**Visualisation** for an overview
  - ...**Table** for conflict resolution
  - ...**Visualisation** for managers
  - ...**Table** for architects and model experts

What for?
Who uses the tool?
Evaluation results

- EA diff and conflict visualisations help to assure EA model quality
- Filtering is vital for the reduction of EA model complexity
- Tasks for conflict resolution require a solid user base
- Some features (like the collaboration support) are ahead of their time
Technical Limitations

- **Layouting**: no influence on the distribution of schema elements (3rd party library)
- **Productive features**: model manipulation in visualisations
- **Conflict detection**: Only immediate neighbourhood is considered

Study Limitations

- Thorough evaluation of different conflict strategies (strict, tolerant)
- Include more users and different viewpoints (business stakeholders)
Conclusion

Future work

- Field studies (behaviour studies, ...)
- Collaboration incentives
- Implement visual model manipulation functionality
- Explore adaptation of conflict resolution strategies
- Develop new strategies to learn from user interaction
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.


