

The Problem of Consolidating RE Practices at Scale: An Ethnographic Study*

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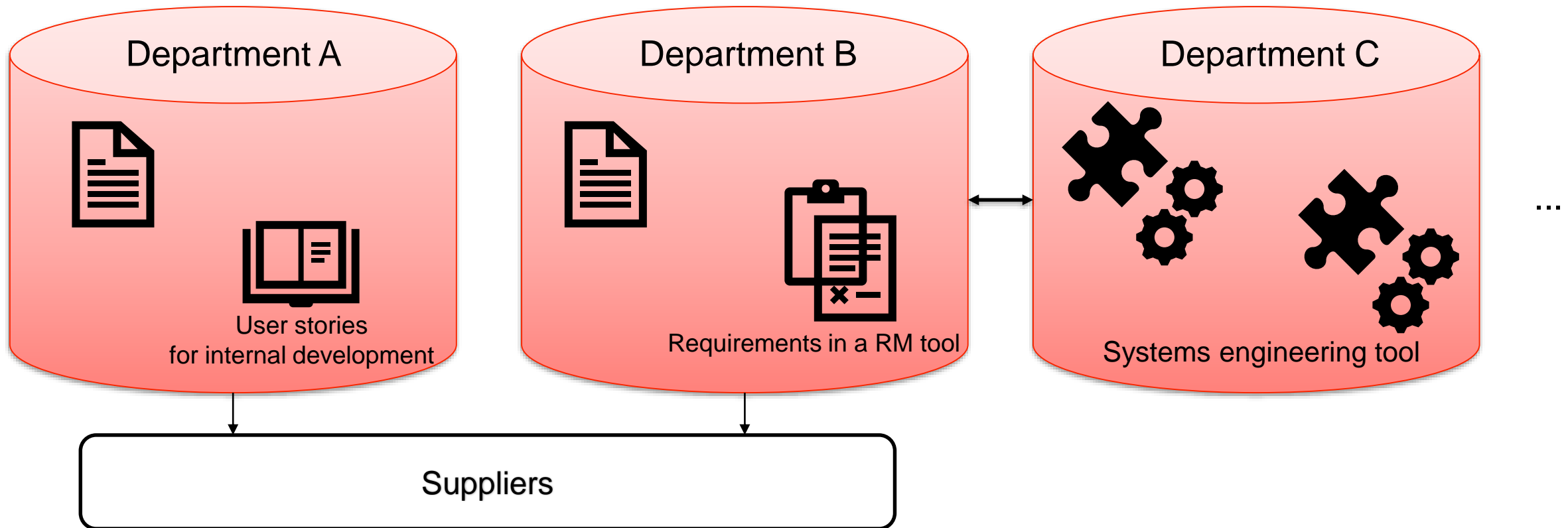
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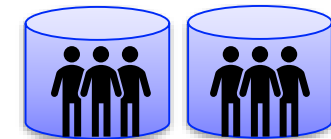
* Read the article at https://doi.org/10.1007/978-3-319-77243-1_10

Context: RE practices in a large-scale automotive company



Company context

- **> 10,000 employees**
- **Distributed across 5 countries**
- **Departments related to traditional architectural decomposition**



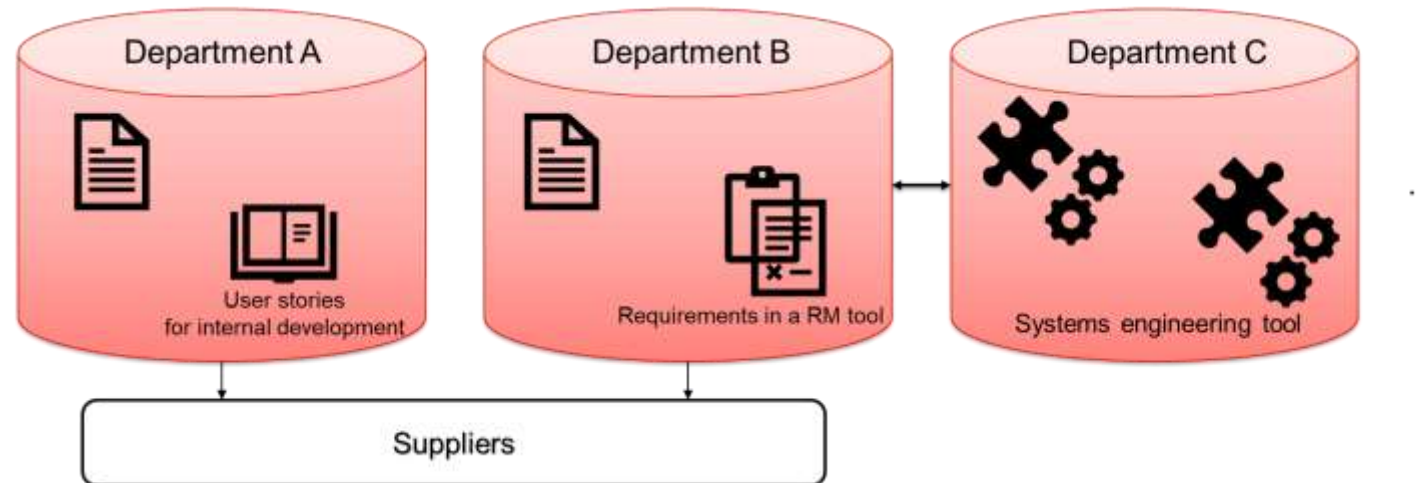
Diversity vs alignment of teams and practices

Diversity

Self-organizing teams making local decisions have been observed to be successful [3] and allow organizations to scale [4]

Alignment

Need to develop **one** integrated and aligned product
Traceability complicated by the use of different tools
Sufficiently aligned RE practices needed [5]



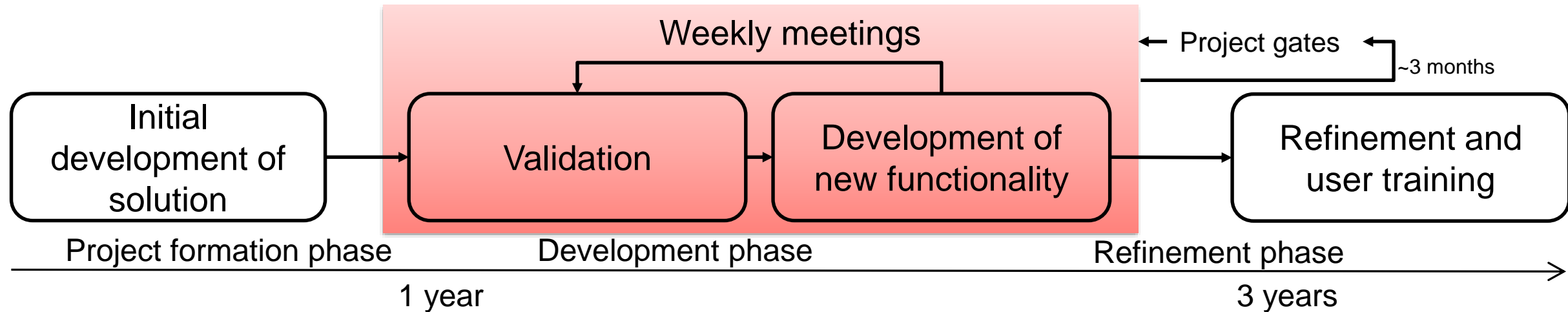
[3] Fricker, S.: Requirements value chains: Stakeholder management and requirements engineering in software ecosystems. In: REFSQ'10, Essen, Germany (2010) 60–66

[4] Feiler, P., Gabriel, R.P., Goodenough, J., et al.: Ultra-Large-Scale Systems: The Software Challenge of the Future. Software Engineering Institute (2006)

[5] Knauss, E., Yussuf, A., Blincoe, K., Damian, D., Knauss, A.: Continuous clarification and emergent requirements flows in open-commercial software ecosystems. Requirements Engineering Journal (REEN) (2016)

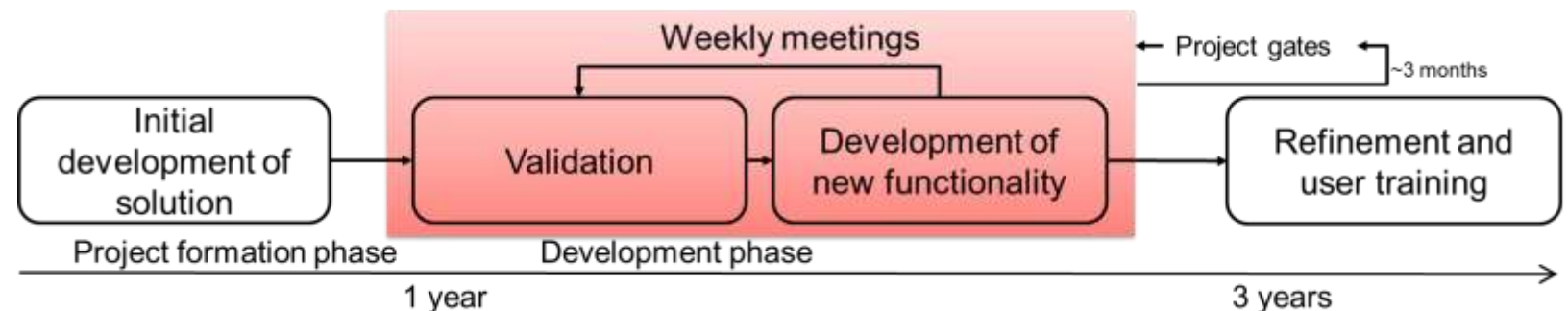
Project to align RE practices

- Idea: Align RE practices and support them with a systems engineering tool



Ethnography

- Immersion in cultural group as an „outsider“ and „insider“ over an extended period of time
- Participant-observer: Application engineer at a tool vendor
 - Collecting notes, emails, meeting notes, documentation, and data from interviews

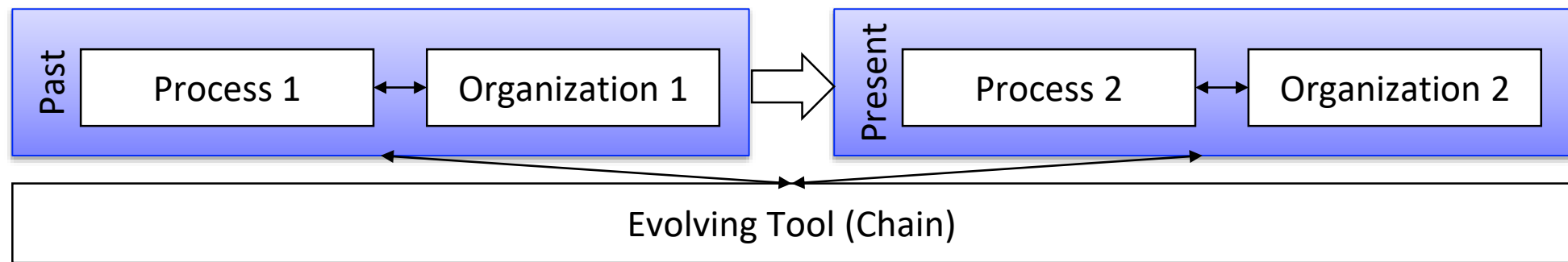


Research Questions

- **RQ1:** What are **challenges and their consequences** when trying to consolidate RE practices in large-scale industrial systems engineering contexts?
- **RQ2:** What are **mitigation strategies** when trying to consolidate RE practices in large-scale industrial systems engineering contexts?

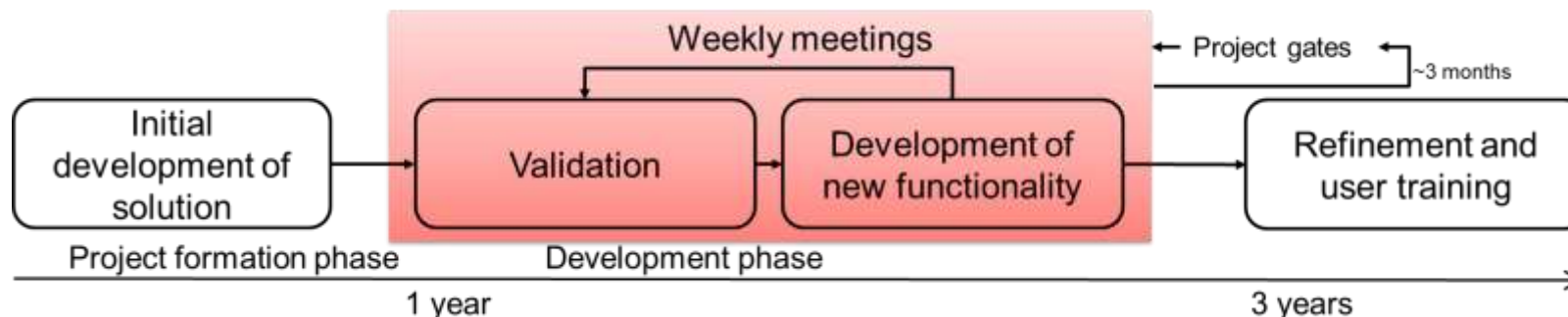
Change initiative to align RE practices

- **Goal:** Align RE practices and support them with a systems engineering tool
- Impacts on processes, organization, and tooling



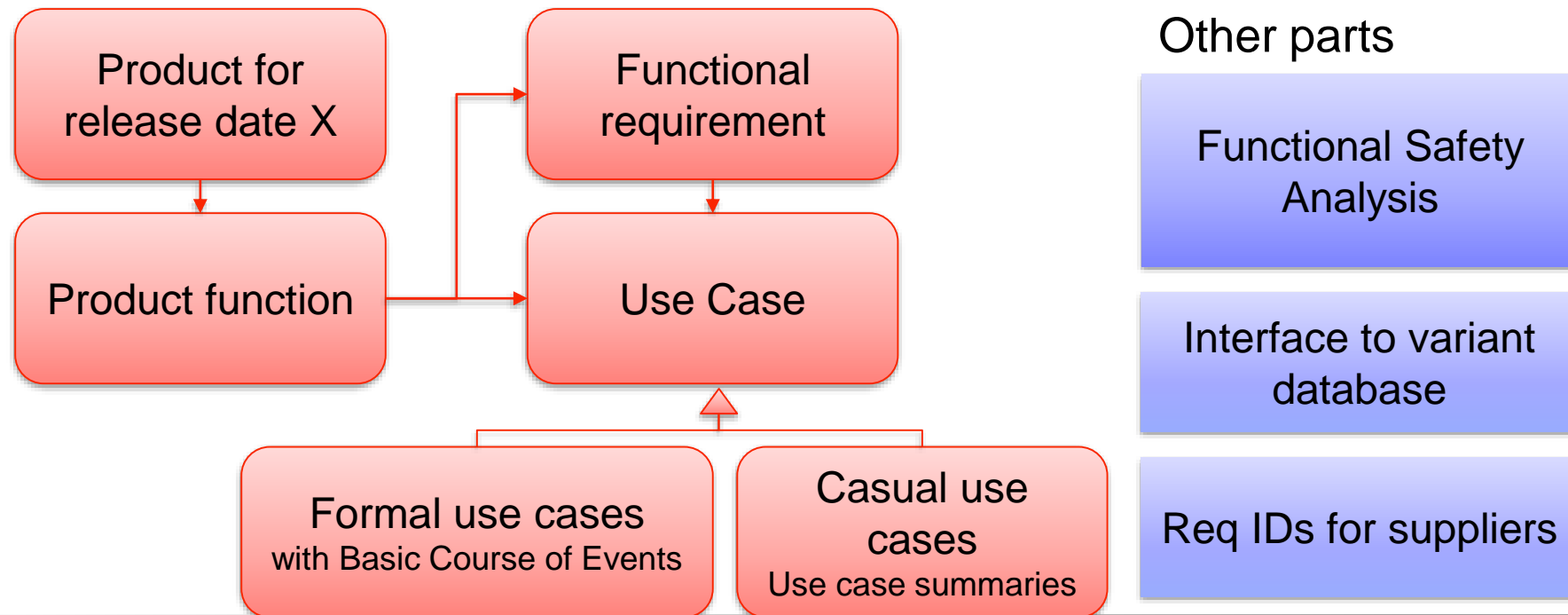
Experiences in change initiative to align RE practices

- **Development starts while still identifying stakeholders**
- Weekly meetings: Demo of new features/changes, **tendency to repeat discussions again and again**
- **New stakeholders have strong opinions, sometimes off-topic**
- **Decisions frequently revoked as rationales had been forgotten**

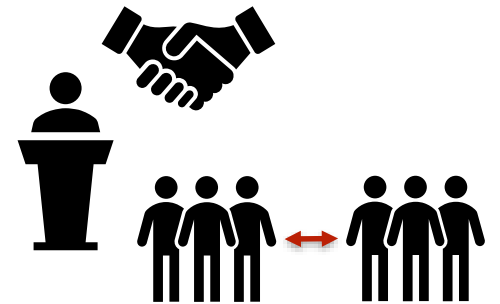
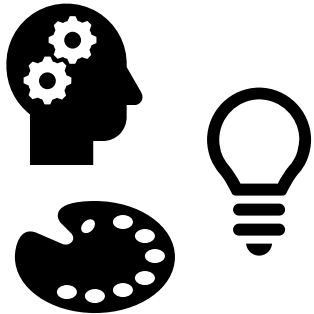
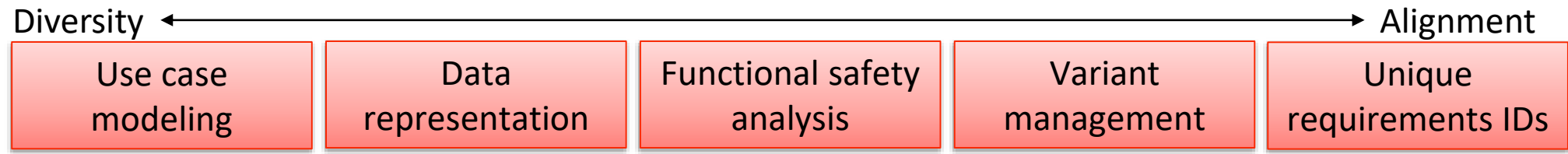


Establishing a tool to align RE practices

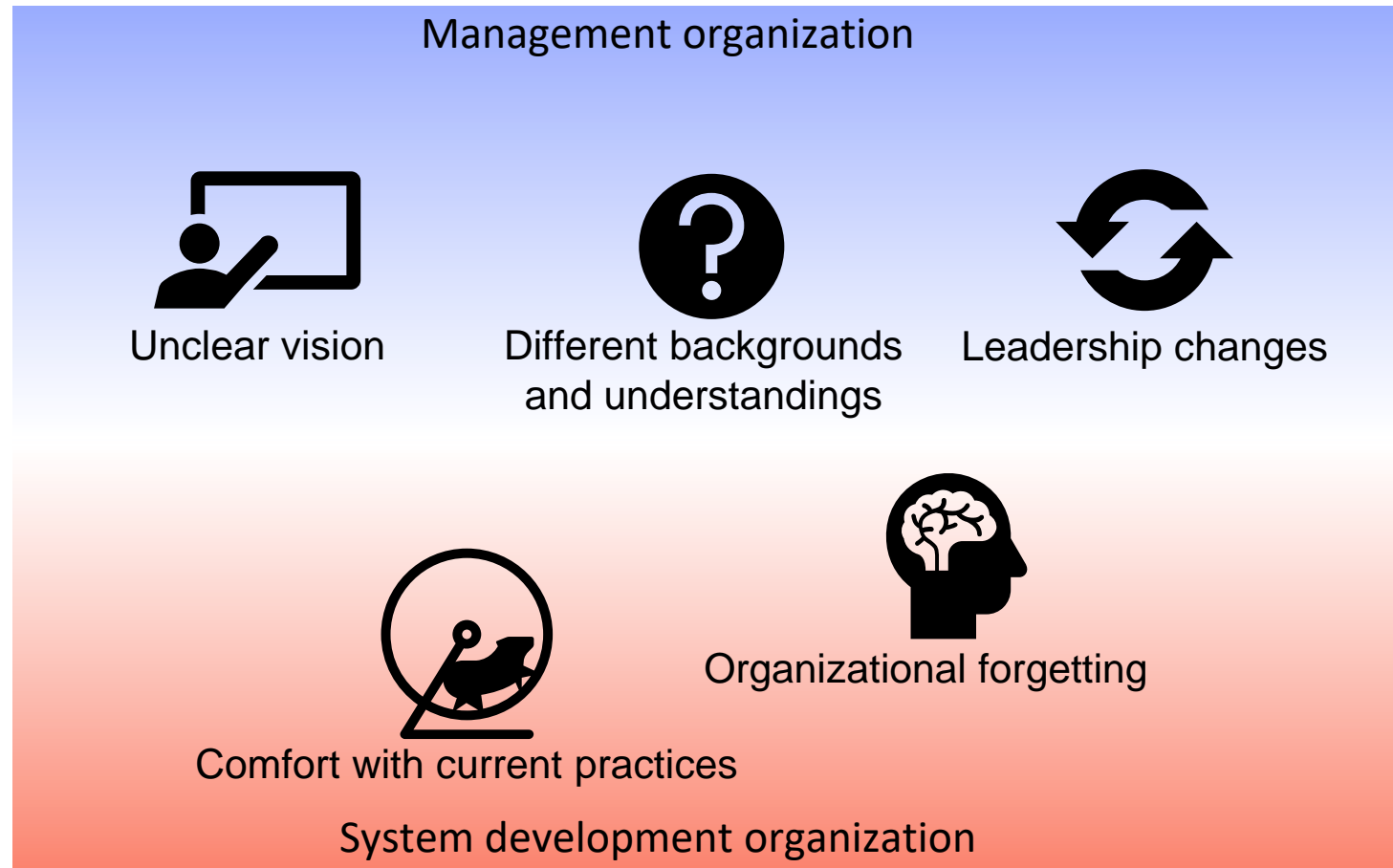
- Model-based systems engineering tool with configurable views
- Example metamodel



Diversity vs alignment of tool/method aspects



Organizational challenges



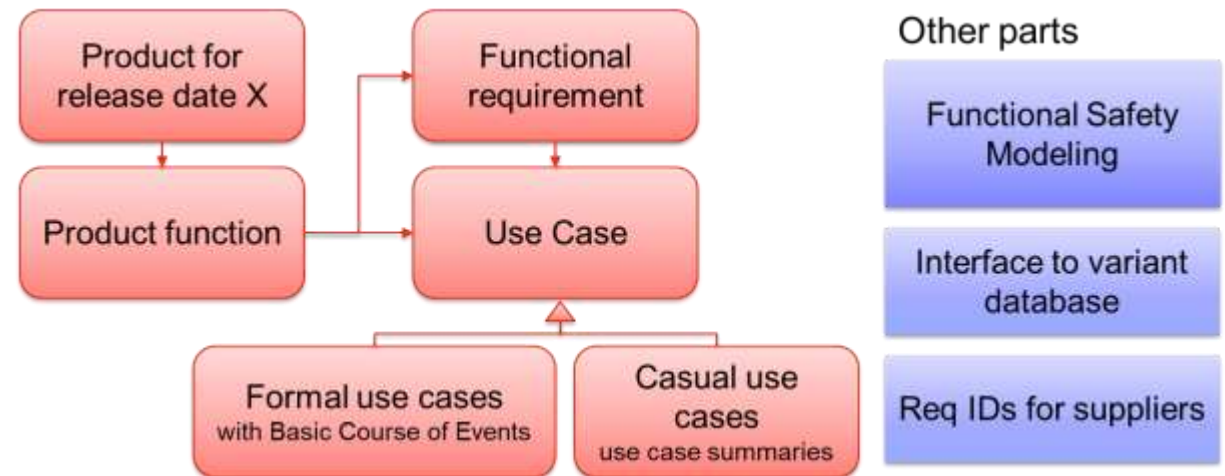
Mitigation Strategies (1)

- Involve the right stakeholders
- Engage all participants and make decisions with data
- Focus on a final objective
- Add incentives to teams and leaders who support and meet objectives in the organizational transformation

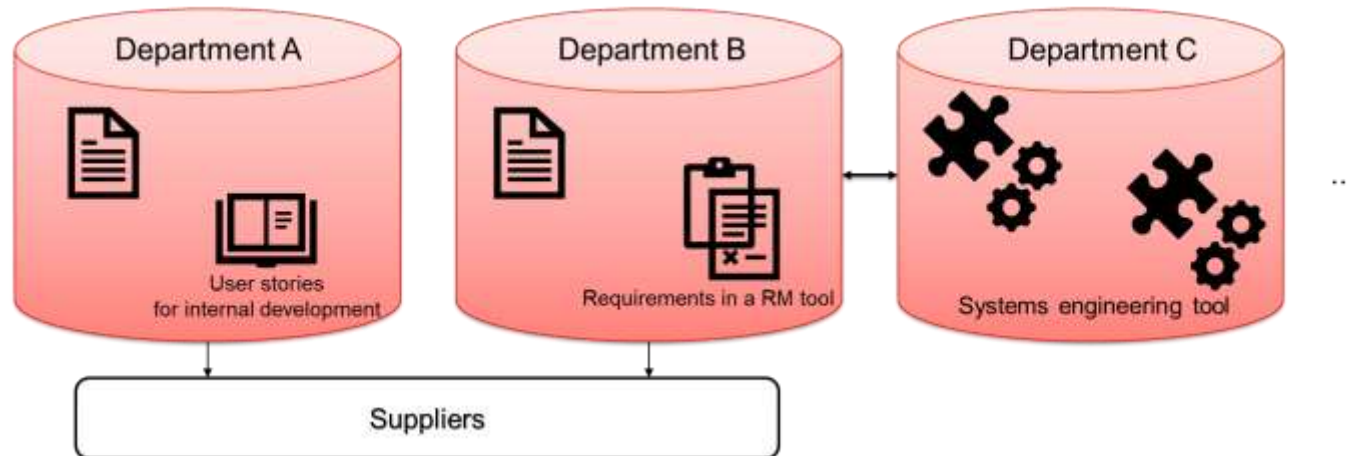


Mitigation Strategies (2)

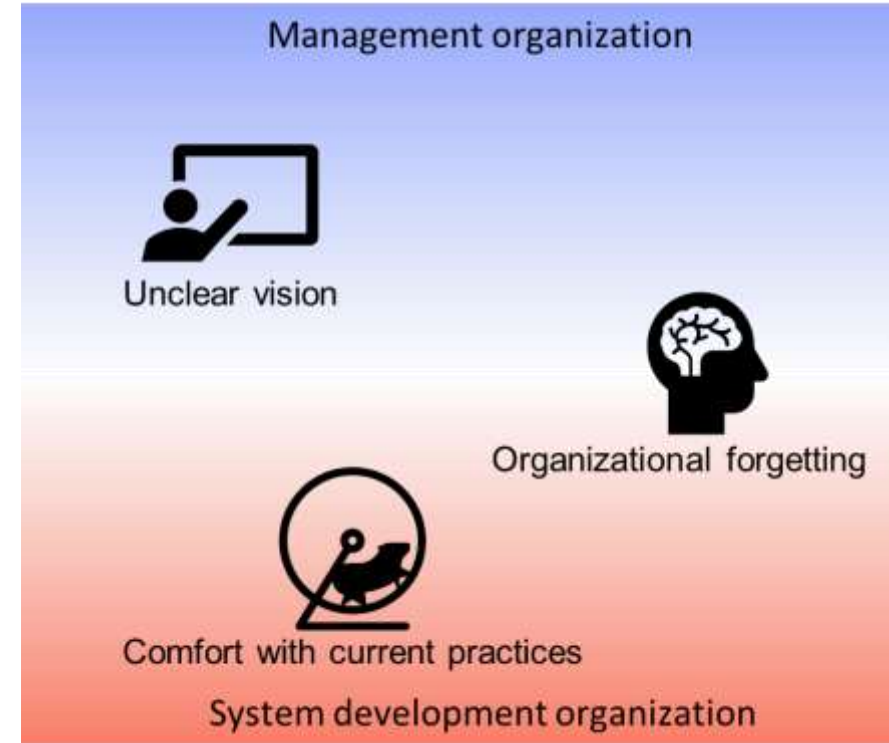
- Try to enforce aligned practices only if you have good reasons
- Carefully assess what to change
(and when to change back to an initial solution)
- Discuss a concrete tool solution to make people formalize their concerns
- Keep traceability in mind



Conclusion



- Ethnographic study on consolidating RE practices in large-scale automotive
 - Allow diversity / alignment where beneficial
 - Create awareness of this problem



Thank you!
Questions? Comments?
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