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Outline

1. Background
2. Scope
3. Research question
4. Product Software Knowledge Infrastructure
5. PSKI illustrated by case studies
6. Conclusions
7. Workshop discussion

1. Background

- Software is more and more developed and commercialized as a **standard product**
- **Product software companies** are highly dependent on the maturity of their software development processes
- Many examples of **performance failures** of product software releases
- Need for **methodical support**
2. Scope - software product management

- Much practical attention, but research in this area is fragmented

- Specific challenges compared to existing product management
  - organization of requirements and tracking of changes
  - high release frequency
  - the product manager has a lot of responsibilities regarding the product functionality, but does not have management authority over the development team

3. Research question

*How can product software companies improve product management performance using concepts of situational method engineering and evolving maturity?*
4. Product Software Knowledge Infrastructure

- A systematic collection of methodical knowledge for improving process effectiveness in a product software company

- Vision
  - Incremental method evolution
  - Company condition
  - Organizational culture

PSKI

- Feedback
- Experiences (case studies)
- Existing methods (books, articles, online resources)
- Method Base
  - Method fragments
  - Situational knowledge
  - Assembly rules
- Product Software Knowledge Infrastructure
- Need & situation analysis
- Selection of process alternatives
- Assembly of process advice
5. PSKI illustrated by case studies

- 2 case studies at 2 product software companies
  - Interviews
  - Document study
  - Tool study

- Focus on release management and requirements management
Need

- Help with choosing requirements for the new release

Situational factor analysis

- Which situational factors influence the method evolution?
  - Size
  - Requirements rate

<table>
<thead>
<tr>
<th>Company</th>
<th>Size</th>
<th>Age (y)</th>
<th>Req. rate</th>
<th># customers</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRM Software</td>
<td>24</td>
<td>4</td>
<td>30-50 per month</td>
<td>600</td>
<td>Magic eContact, Mercury TestDirector</td>
</tr>
</tbody>
</table>
### Capability analysis (1)

<table>
<thead>
<tr>
<th>Capability</th>
<th>PM maturity level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Regulatory acceptance for release</td>
<td>x</td>
</tr>
<tr>
<td>Re-active customer needs determination for release</td>
<td>x</td>
</tr>
<tr>
<td>Distribution partner determination</td>
<td>x</td>
</tr>
<tr>
<td>Scope change management</td>
<td>x</td>
</tr>
<tr>
<td>Release promotion determination</td>
<td>x</td>
</tr>
<tr>
<td>Prioritization of requirements</td>
<td>x</td>
</tr>
</tbody>
</table>

### Capability analysis (2)

<table>
<thead>
<tr>
<th>Capability: Prioritization of requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad hoc</td>
</tr>
<tr>
<td>Release oriented</td>
</tr>
<tr>
<td>Product oriented</td>
</tr>
<tr>
<td>Organization oriented</td>
</tr>
<tr>
<td>Externally oriented</td>
</tr>
</tbody>
</table>
Alternatives

i. Prioritization using integer linear programming
ii. Prioritization using the analytical hierarchy process
iii. Prioritization using a voting round with the stakeholders
iv. ...

Prioritize wishes

Product Software Company

Need & situation analysis

Selection of process alternatives

Assembly of process advice

Method administration

Method Base

Experiences (case studies)

Existing methods (books, articles, online resources)

Feedback

Process need

Advice

Product Software Knowledge Infrastructure
Method assembly

Conclusions

How can product software companies improve product management performance using concepts of situational method engineering and evolving maturity?

- Vision on situational capability maturation in product software companies
- Introduction of the Product Software Knowledge Infrastructure
- Case studies provided us with:
  - method fragments to fill the method base
  - insight in the dependencies between maturity, method fragments and capabilities
Workshop discussion

- Which quality features are addressed by the paper?
  - process effectiveness

- What is the main novelty/contribution of the paper?
  - PSKI, incremental method evolution

- How will this novelty/contribution improve RE practice or RE research?
  - improvement of RE processes by incremental extension with best practices

- What are the main problems with the novelty/contribution and/or with the paper?
  - limited cases, no tool support yet

- Can the proposed approach be expected to scale to real-life problems?
  - yes, in case the PSKI can be implemented at full scale