A Contribution Management Framework

for Firms Engaged in Open Source Software Ecosystems – a research preview

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This presentation is available here:
`http://github.com/bjornregnell/ossre`

1 Research goal

2 Background

3 Methodology

4 Results

5 Conclusions and future work

Research goal

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→ Our research **goal** and **focus**:

Deep understanding of, and **effective support** for:
Contribution management in OSSRE

Background

Johan Linåker

Johan Linåker's **licentiate thesis**:

- **"Towards Strategic Support for Requirements Engineering in Open Source Software Ecosystems – What to reveal, when and to whom?"**

  `http://cs.lth.se/johan-linaaker/`

- Systematic literature review on Open Innovation with OSS
- Network analysis of stakeholder contributions in OSS repos

On-going **doctoral thesis** project:

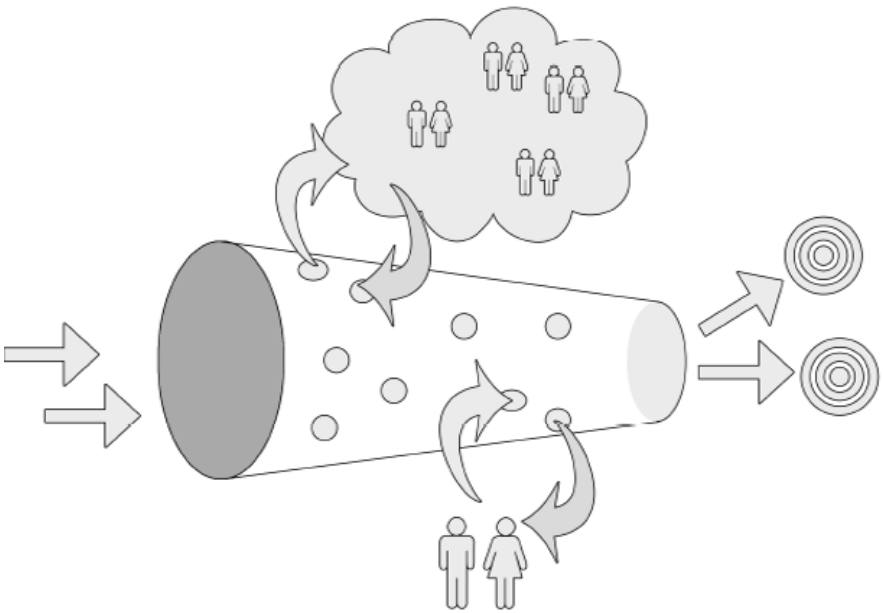
- Contribution Management Framework

[1]

[1] J. Linåker, P. Rempel, B. Regnell, and P. Mäder, "How firms adapt and interact in open source ecosystems: analyzing stakeholder influence and collaboration patterns," in *Requirements Engineering: Foundation for Software Quality*, Springer, 2016, pp. 63–81.

Open Innovation and Open Source Software

Open Innovation modelled as a funnel with permeable border:[2]



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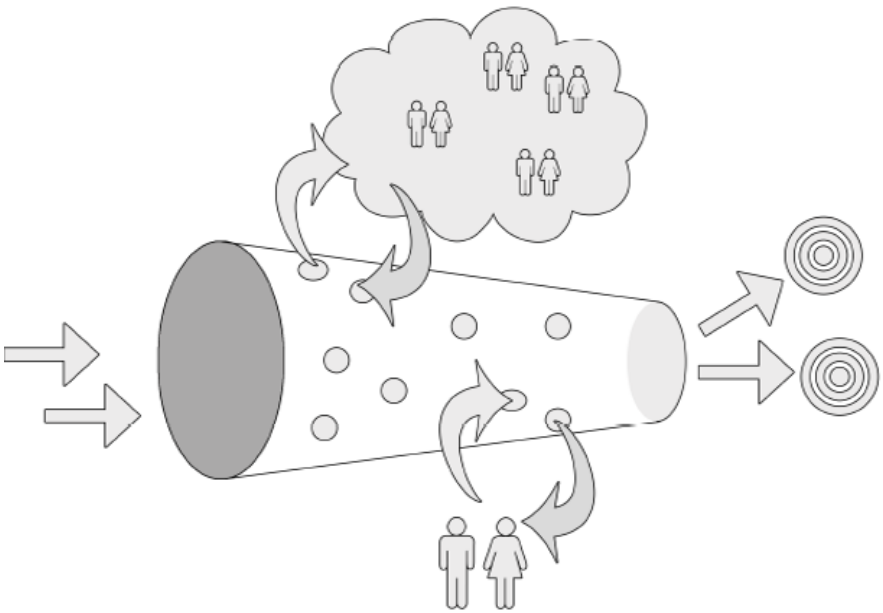

- RE process complexity:
  - Internal RE: inside the focal firm
  - External RE: in the community

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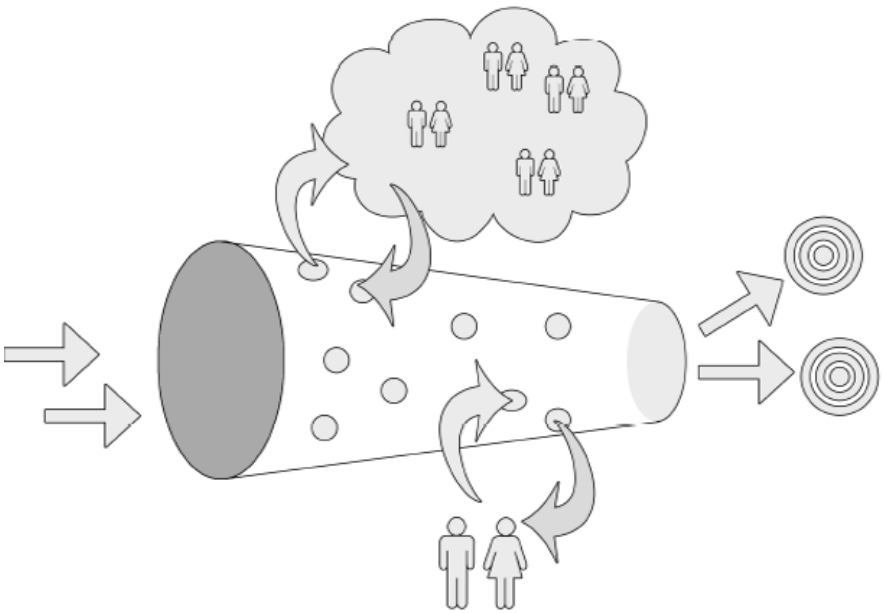

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OSS is a major approach to Open Innovation (OI) in the software industry.

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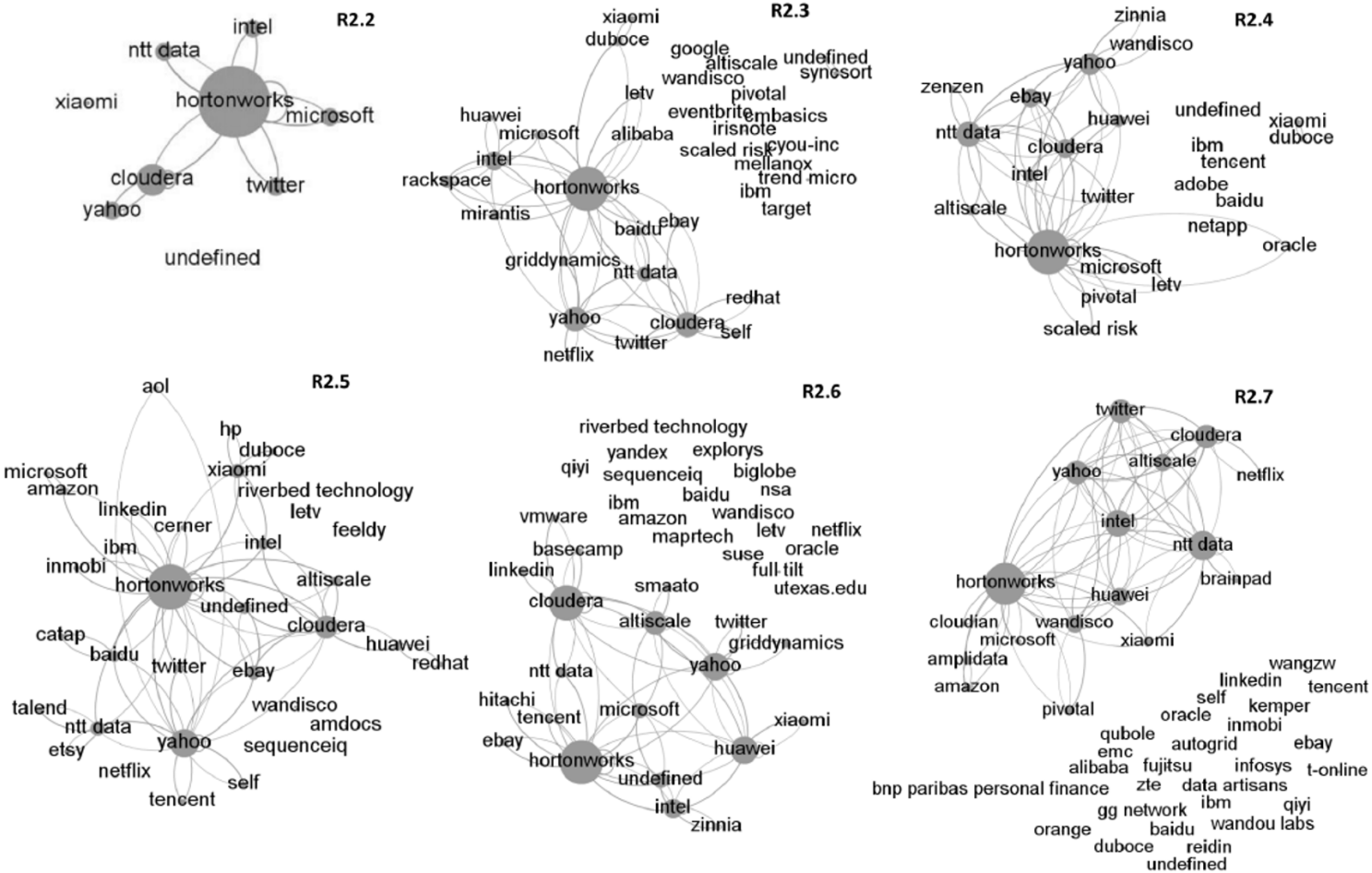
Stakeholder Network Analysis (Apache Hadoop)



[J. Linåker, P. Rempel, B. Regnell, P. Mäder; REFSQ2016, pp. 63-81]

Figure 3: Network distribution of releases R2.2-R2.7

Research methodology

- **Design Science** approach, see Wieringa (2014)[3]

[3] R. J. Wieringa, *Design science methodology for information systems and software engineering*. Springer, 2014.

[4] H. Munir, K. Wnuk, and P. Runeson, "Open innovation in software engineering: a systematic mapping study," *Empirical Software Engineering*, pp. 1–40, 2015.

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- Definition of the **design problem**: (abbreviated, see paper)

> **Design a framework and tools for OSS contribution management to effectively support product planning in OSSRE.**

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- First iteration:
  - Initial framework based on findings in previous research[4][5]
  - Initial validation: interview with industrial OSS expert

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Contribution Management Framework

Stakeholders → Contributions → Time Horizons

Example of questions that the framework may help to answer:

- Who are the stakeholders in the focal OSS community?
- Which stakeholders have the same interests as our firm?
- How to collaborate with the OSS community?
- What to contribute & when?
- Which actions are most important to take in a short-, medium-, and long-term view?
- ...

General goal: How to maximize return-on-investment.

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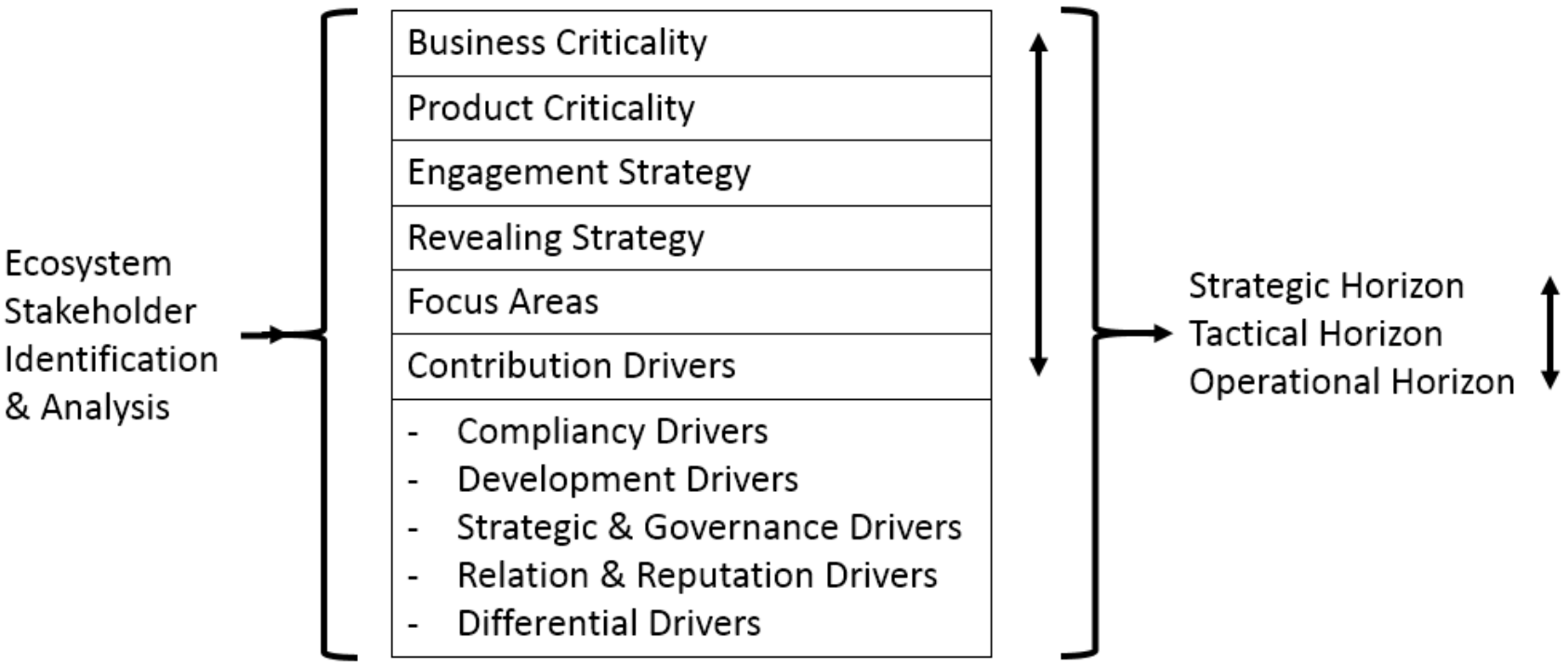

Contribution Management Framework

Candidate framework "levels": from business goals to product contributions

- **Business Criticality**: Level of value drawn from the community.
- **Product Criticality**: Level of integration with internal product plan/dev.
- **Engagement Strategy**: {Parasitic | Commensalistic | Symbiotic}
- **Revealing Strategy**: Licensing, {Selective revealing | Full transparency}
- **Focus Areas/Modules**: Selection of product modules to share
- **Contribution Drivers**:
  - Compliancy
  - Development & Maintenance
  - Strategy & Governance
  - Relationship & Reputation
  - Differentiation

Conclusions and future work

- Initial validation indicates utility of the proposed framework
  - **Correctness**? Are the framework parts relevant & needed?
  - **Completeness**? Are there missing relevant/needed parts?
  - **Transferability**? Is the framework useful in other contexts?
- Further iterations in the design science cycle:
  - More **qualitative data collection** from interviews with industrial OSS experts
  - Design a process for developing contextual **guidelines**
  - Study **different contexts**: start-ups vs mature firms etc.
  - Design a **team workshop** process where the framework is applied in collaborative sessions
  - Design **software tools** for strategic descision-making, e.g. stakeholder network analysis tools based on open data.
- Validate the frame-work ”live” in real-world contexts.

Q&A