

Social Networks for Stakeholder Identification and Analysis

Caroline Lottenbach & Maria Herdt

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Why do project fail?

1. Overlooking of stakeholders (SH) during elicitation phase
2. Involvement of individuals who lack knowledge, time or interest

Result: missing requirements & products not matching the customer expectations and needs, leading to immense reworking costs or even project cancellation

Existing Methods (1)

- Semi-structured
 - Asking context free questions
E.g. Who are the customers? Who interacts with the system? Who has interest in the success or failure of the system?
 - Answers are broad and chance of missing stakeholders specific to a project is high
- Checklist-based
 - Checklist of generic stakeholder roles
 - Supports the specification of stakeholders of a project
 - Project specific stakeholder roles are not included and can be overlooked

Existing Methods (2)

- Interviews

- Interview obvious SH to learn about other possible SH
- Repeat interviews with newly identified stakeholders
- A lot of SH can be identified, but stakeholders are not prioritized
- Difficult to scale to large projects

- Search

- Identification of an initial set of SH
- Additional SH are found by considering parties
 - that provide information or support tasks of these SH
 - who process or inspect their products
 - who interact or support them and vice versa
- Repeat this identification for each newly found SH
- No way to prioritize the SH is provided

Problems of current stakeholder analysis methods

- Likely to miss our SH
- Include irrelevant parties or “non-SH”
- Often all SH are treated equally influential
- Group representatives are often treated as equally suitable

It is difficult to scale the regular SH analysis methods on big projects where several thousands of stakeholders are involved.

System of systems project

System of Systems is a class of complex projects with numerous (complex) constituents-systems and a large number of stakeholders.

Unique problems of System of Systems:

- evolutionary nature
- emergent behavior
- operational & managerial independence
- geographical distribution of their constituent systems



Classical SH analysis methods are not suitable or very expensive to use, therefore new dynamic, emergent, adaptive methodology proposition.

StakeNet

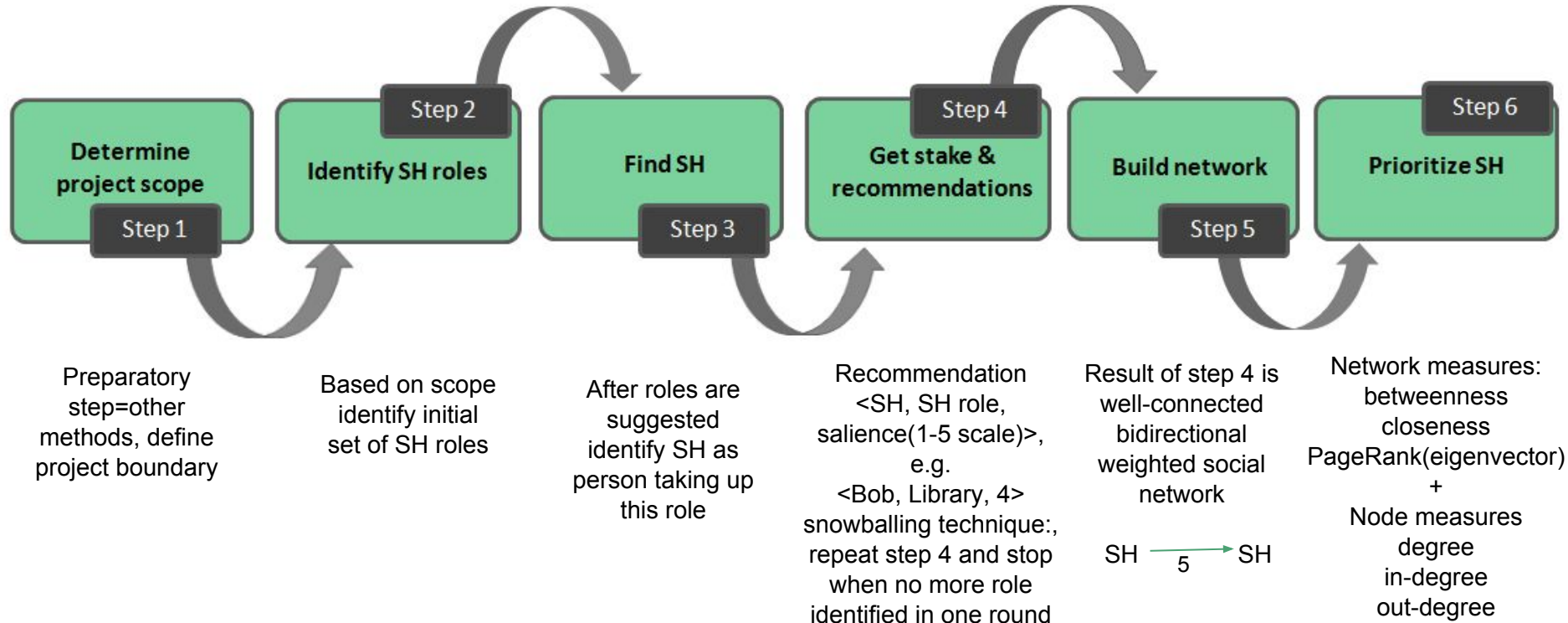
Approach to analyse
Stakeholders of Large-Scale
Software Projects

StakeNet- key idea



- Combines crowdsourcing + social network analysis
- Assumption: all SH are socially related
- Identifying & prioritizing SH can be done based on their relations
=> ask SH to recommend other SH
- Build social network: SH = nodes, recommendations = edges, weight= salience
- Prioritizing can be done based on social network measures
- The whole process requires 6 steps

StakeNet- process



StakeNet real-life evaluation

- Empirical project RALIC /Replacement Access Library and ID Card/: replacement access system at University College London (30.000 user-system)
- 4 years after project completion
- Response rate 81%
- Ground truth: existing complete & prioritized list of SH
- Identifying & prioritizing performance for each single network measure
- Identifying & prioritizing for all network measures combined
- PageRank showed the highest accuracy (78%)



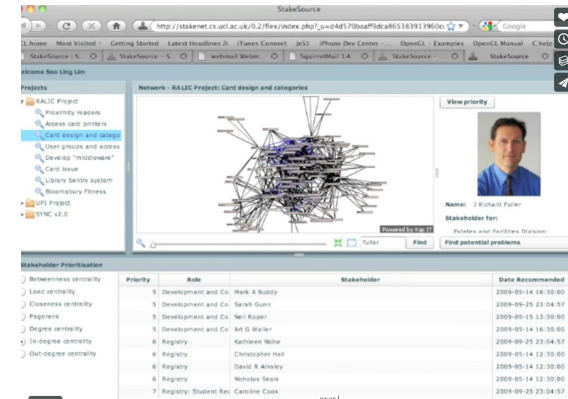
Result: StakeSource software tool based on StakeNet approach was developed & used in real-life projects

StakeSource

Software tool based on Social
Networks and Crowdsourcing for
Stakeholder Analysis in System of
Systems Projects

StackSource: web-based app for IT- & non-IT projects

- Analyst sets up the project (details, scope & constituent systems)
- Identifies initial SH and provides their details (name, role, email-address)
- StakeSource contacts initial SH via email, provides project description & invites them to recommend other SH
- Recommendation: <SH name, role, level of influence, email address>
- New identified SH are connected and asked for recommendations
- Possibility to identify “non-SH” or unsubscribe
- SH recommendations are visualized as social network
- Analysts can perform SH analysis & SH management



SH analysis & SH management

- SH analysis
 - Who are the SH?
 - Who are the most influential SH?
 - Which SH may have problems during the project?
 - What do we know about stakeholders?
- SH management
 - view details, priority, comments & position of single SH
 - communication with single SH or SH groups

Lessons learned while using StackSource

- StackSource was easy to use and learn by analyst and stakeholders
 - Reduces cost & time for participating in the project
- Willingness of stakeholders to share information is crucial for the success of a project
 - Not suited for high security domains or projects involving highly competing constituent systems
 - Project needs to be supported by on-site acquisition leaders
- Unsubscribe function revealed changes in stakeholders
 - This feature was often when stakeholders changed their role, moved on, or had no longer time or interest to participate in the project
- StackSource method is scalable to complex systems
 - Relations within systems as well as the whole system of systems are shown
 - Suitable to support stakeholders from distributed locations

Additional Group Task:

1. Did you or members of your team use social computing approaches for Requ. Eng.?

- Using classical technique and asking for SH recommendations in interviews
- Distributing survey through social networks

2. **Benefits:** Cost and time saving, mitigates risks of omitting important SH(groups), early identifying SH withholding information or unsupportive to project.

Limitations: Not appropriate approach for high security domains or projects with highly competing constituent systems; failure of one of the constituent systems relying on other system can lead to chain reaction

3. What does existing social software lack to support Requ. Eng.?

- StakeSource software is primarily suited for SH analysis & management and not for the requirement elicitation and negotiation
- Only for projects where a concrete person can be identified for each role

Questions:

1. If you were a SH and would be invited to participate in SH recommendation process, which incentives would you need to not just unsubscribe?
2. Do you think the participation of a SH depends on the person he was recommended by?
3. How do the social concepts of trust and reputation influence the engagement of SH?
E.g. Would you reveal more information if your boss would have recommended you?