

Social Networks for Stakeholder Identification and Analysis

Cristian Anastasiu
Samuel Liniger
Fabian Hofstetter



Where does it fit?

Social Networks for
Stakeholder
**Identification and
Analysis**

Social Software for
Requirements
**Elicitation and
Negotiation**

User Feedback for
Continuous **Software
Evolution**

[illegible][illegible]

Agenda

- Challenges
- StakeNet
- StakeNet used in RALIC
- Results
- Observations

Challenges

- Existing methods used for stakeholder analysis:
 - Semi-structured
 - Checklist based
 - Interviews
 - Search
- Likely to omit stakeholders, or return non-stakeholders
- Consider all stakeholders equally influential

- Many **projects fail** because they overlook stakeholders or involve individuals who lack knowledge, time or interest for project involvement
- Overlooking stakeholders gives rise to missing requirements, which leads to:
 - Building the wrong product
 - Increasing number of change requests
- Limited resources and time constraints require to focus analysis on high-influence stakeholders

Questions

- New method proposed - StakeNet
- How can stakeholders be identified using StakeNet?
- What are the experiences and lessons learned?



Context

- **RALIC project** (Replacement Access, Library and ID card)
 - Replace the existing access control systems at UCL (University College London) and consolidate the new system with library access and borrowing.
 - 30.000 system users
- Data collected from surveying and interviewing 68 stakeholders

StakeNet

- Find Stakeholders
- Prioritize roles and stakeholders

StakeNet

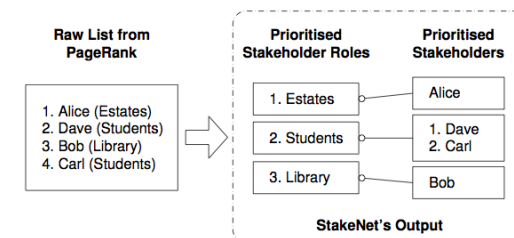


Main steps:

- Identify stakeholders [2,3] and ask them to recommend other stakeholders and stakeholder roles [4]
- Build a **social network** whose nodes are stakeholders and links are recommendations [5]
- Prioritize stakeholders using a variety of **social network measures** [6]
- „**Snowball**“ effect

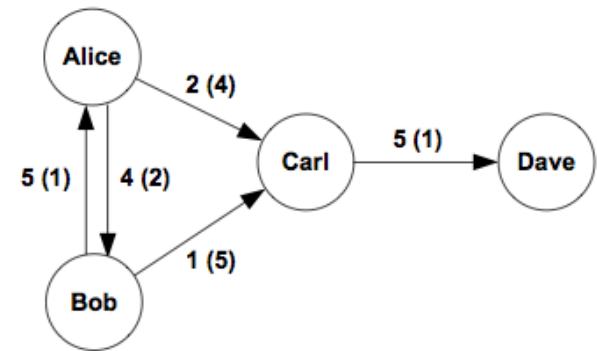
For each measure, StakeNet produces 2 lists:

1. Prioritised stakeholder roles
2. For roles with more than one stakeholder, the stakeholder with higher rank is returned

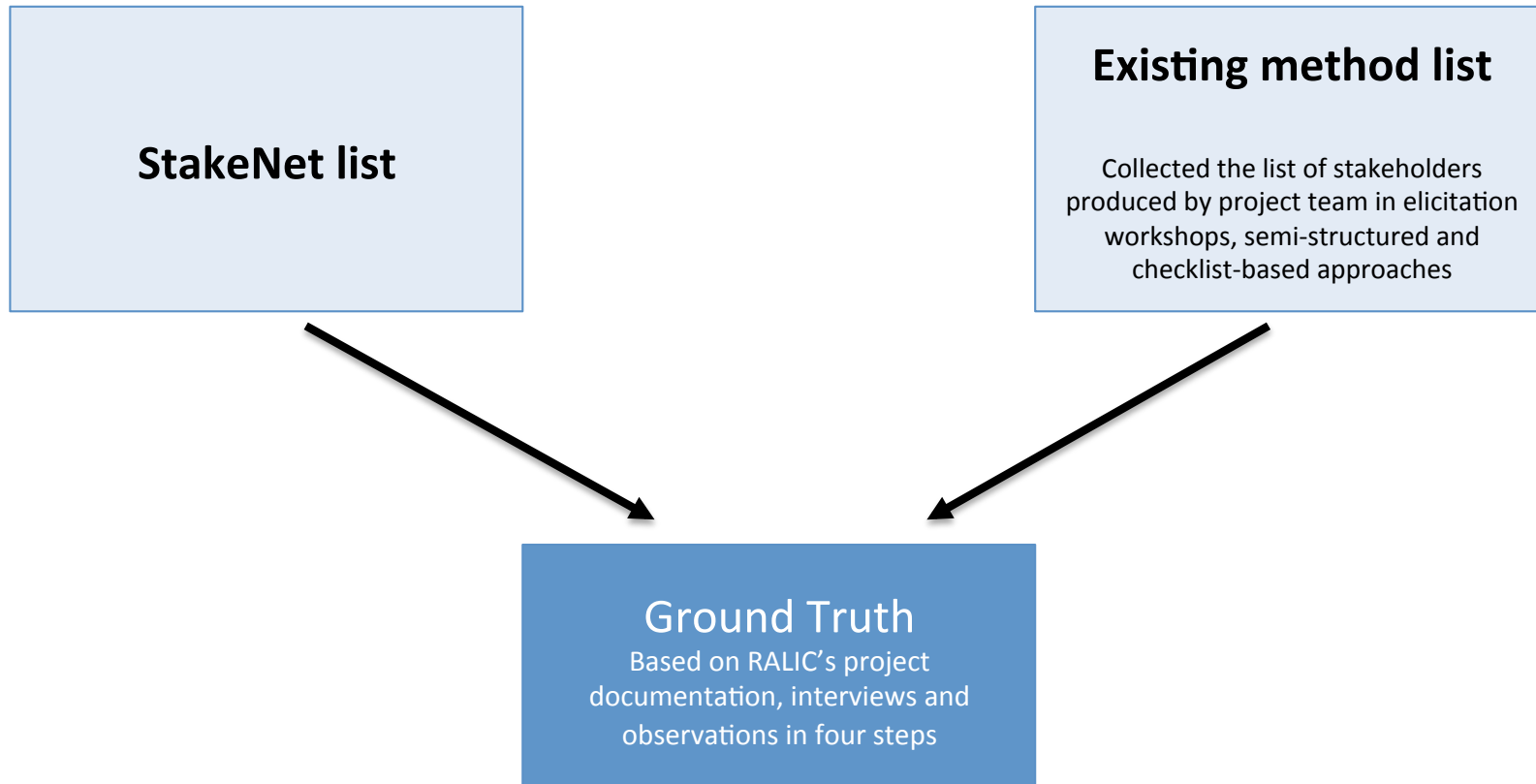


Social Network Measures

- **Betweenness centrality** - ranks S based on S's ability to act as a broker between disparate groups of stakeholders
- **Closeness centrality** - ranks S based on the inverse average shortest path distance from S to all other reachable stakeholders
- **Page rank** - ranks S in terms of S's relative importance to all other stakeholders
- **Degree centrality** - ranks S based on the number of incoming and outgoing recommendations S has and the weights of the recommendations
- **In-degree centrality** - ranks S based on the number of stakeholders that recommend S and recommendation weights
- **Out-degree centrality** - ranks S based on the number of recommendations makes and the weights of the recommendations



Evaluation



Applying StakeNet

(a) Q1. Please complete the following information about yourself.

Name:
Position: IT DIRECTOR
Department: ISD

Q2. What is your role in the RALIC project?
OWN THE BUDGET / PAY FOR IT / INFLUENCE ON DEVELOPMENT

(b) Scope 4: Define user groups and default access rights

Name of Stakeholder and Role; or only Name of Role if Stakeholder unknown	Please circle the level of salience.				
	High		Medium		Low
HR - <u> </u>	(5)	4	3	2	1
REGISTRY - <u> </u>	(5)	4	3	2	1
UCL LIBRARY - <u> </u>	5	(4)	3	2	1

(c) Q1: Who are the stakeholders for the RALIC project?

The following is a list of names in alphabetical order.
Check all that apply and circle their level of salience.

Name	←	High salience					Low salience					→
A <u> </u> To <u> </u>	☒	10	9	8	(7)	6	5	4	3	2	1	
A <u> </u> Hi <u> </u>	☒	(10)	9	8	7	6	5	4	3	2	1	
A <u> </u> Wi <u> </u>	☒	10	(9)	8	7	6	5	4	3	2	1	

(d) Q2: For all the stakeholders that you have checked in Q1, please rank them by their order of salience (1 being the most salient).

1. R Fu 11. R BA
2. M DA 12. C Co

Stakeholder
details

Open-ended recommendations
(OpenR)

Closed-ended recommendations
(ClosedR)

Individual prioritisations

Methods and Results

Identify stakeholder roles

How many SH roles identified by StakeNet are actual stakeholder roles? (**precision**)

How many of the actual stakeholder roles does StanNet identify? (**recall**)

Prioritizing stakeholder roles

How accurately do StakeNet social network measures prioritise SH roles? (**accuracy**)

Combining measures will improve accuracy?

Identifying and prioritising stakeholders

How many of all actual stakeholders are identified? (**recall**)

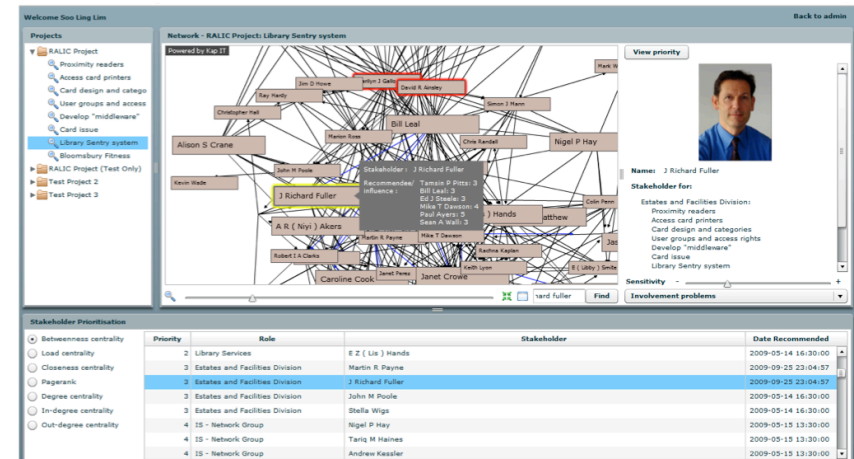
How accurately does Stakenet prioritise the stakeholders inside a role? (**accuracy**)

Methods and Results (continued)

- **OpenR vs CloseR**
- **Stakenet vs Individual Stakeholders**
 - Prioritisations done by individual stakeholders ($p = 0.360$) were less accurate compared to Stakenet
- **Survey response**
 - Response rate was 81%

StakeSource

- Web based tool
- Stakeholders are contacted over email
- Recommendations are done online
- Well suited for supporting stakeholders in different locations
- Stakeholder network visualization and stakeholder information
- Stakeholder management
- Ability to rate and comment requirements



Observations

- StakeNet (StakeSource) is efficient in discovering new stakeholders and prioritizing them.
- Combining social network measures leads to better results
- Manual cleaning of data – open vs closed recommendations?

Observations (continued)

- Participants need a common understanding. How to avoid misunderstandings?
- Success depends on willingness of people to share information
 - Works well on open collaboration projects
 - Less suited for high security domains or projects involving highly competing constituent systems
- Success depends on participation rate
- In case of changes, data needs to be up to date. How to motivate stakeholders?

Q & A