UiO : InterMedia

Det utdanningsvitenskapelige fakultet

Social network analysis of a social media technology

Renate Andersen, PhD-student.

Agenda

- What is social network analysis? (SNA)
- Why use social network analysis?
- Collecting data for SNA analysis
- Practical example from my PhD project where I have used SNA analysis
  - Different approaches to using SNA
  - The role of SNA

What is social network analysis?

- Focusing on structural patterns of relationships between and among social actors in a network

- Two main units of analysis: ties and nodes

- These relational data can be collected, stored and prepared for SNA analysis

Why use social network analysis? (1)

- Learn about the structure of a community's communications

- Discuss patterns of social relations or ties

- Describe different types of social relations and exchanges between members of an online community

- Compare community structures and communication flows between online and face to face communities

Why use social network analysis? (2)

- Study actual patterns and content of online community communications
- Study flows of communication and connection between different forms of online communities

  (Kozinet, 2010)

The organization of relational data

- All social research must be held in some kind of data matrix
  - Case by affiliation matrix (incidence matrix)
  - Case by case matrix (adjacency matrix)

Example of case by affiliation matrix

Label	Add notification prefere	Allow for an ideas o	Allow moderators th	Better rate-limiting	Clean up the topic pa	Close replies	
Champion_1	1	0	0	0	0	0	
Champion_2	0	0	0	0	2	0	
Champion_3	0	0	0	0	2	0	
Champion_4	0	0	0	0	0	0	
Champion_5	0	0	0	0	0	0	
Champion_6	0	0	0	0	0	0	
Developer_10	0	0	0	0	0	0	
Developer_11	2	3	0	2	2	0	
Developer_12	2	0	0	0	2	0	
Developer_13	0	0	0	2	0	0	
Developer_14	0	0	0	0	0	0	
Developer_15	0	0	0	0	0	0	
Developer_16	0	0	0	0	0	0	
Developer_7	1	0	1	0	0	3	
Developer_8	0	0	0	0	0	0	
Developer_9	0	0	0	0	0	0	
Employee1	0	0	0	0	0	0	
Employee2	0	0	0	0	0	0	
Employee3	0	0	0	0	0	0	
Employee4	0	0	0	0	0	0	
Employee5	0	0	0	0	0	0	
Employee6	0	0	0	0	0	0	
End-user_100	0	0	0	0	0	0	
End-user_101	0	0	0	0	0	0	
End-user_102	0	0	0	0	0	0	
End-user_103	0	0	0	0	0	0	
End-user_104	0	0	0	0	0	0	
End-user_105	0	0	0	0	0	0	
End-user_106	0	0	0	0	0	0	
End-user_107	0	0	0	0	0	0	
End-user_108	0	0	0	0	0	0	

Example of case by case matrix

Label	Champion_1	Champion_2	Champion_3	Champion_4	Champion_5	Champion_6	Developer_1	Developer
Champion_1	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Champion_2	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	1.000000
Champion_3	0.000000	1.000000	0.000000	1.000000	0.000000	0.000000	0.000000	1.000000
Champion_4	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Champion_5	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Champion_6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_10	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_11	0.000000	1.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_12	1.000000	1.000000	2.000000	0.000000	1.000000	0.000000	0.000000	2.000000
Developer_13	0.000000	1.000000	1.000000	0.000000	0.000000	1.000000	0.000000	1.000000
Developer_14	0.000000	0.000000	1.000000	1.000000	0.000000	0.000000	0.000000	0.000000
Developer_15	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_16	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_7	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_8	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Developer_9	0.000000	1.000000	1.000000	0.000000	0.000000	0.000000	1.000000	0.000000
Employee1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Employee2	1.000000	0.000000	2.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Employee3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Employee4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Employee5	1.000000	2.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Employee6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Different types of measurements

- Centrality degree: How many people can reach this person directly?

- Betweeness: How likely is this person to be the most direct route between two people in the network?

- Closeness: How fast can this person reach everyone in the network?

- Eigenvector: how well is this person connected to other well connected people?

Source: http://www.slideshare.net/gcheliotis/social-network-analysis-3273045

Research objective

- How can social media mediate processes of artifact co-production in cultures of participation?

Context of study

- Get Satisfaction: More than 63, 000+ communities empowered by them and more than 9.600,000 visitors a month

- Main product: Online community software

- Different types of users

The customer community

Selection of data and overview

- Support community overview:

Community Stats	Total
Topics posted	14,850
People	262,220
Employees	71

- Focus: Share an Idea and Give Praise
- I chose to make an extract of 41 discussion threads – dated back 5 months ago

A mixed methods approach

- Using a quantitative approach
  - Social Network Analysis (SNA) as a method and Discourse Network Analyzer (DNA) as a software tool (Scott, 2001; Wassermann & Faust, 1994)

- Using a qualitative approach
  - Interaction Analysis (Jordan and Henderson, 1995).

Different approaches to Social Network Analysis (SNA) for complementing and informing the qualitative data

- SNA provides structural attributes (context)
  - Co-occurence network; Freemans centrality degree
  - Co-occurence network: Closeness measurement
- SNA allows zooming in for legitimitating the choice of selection of data among a crowd of particpants and topics
  - Example of affilitation network
  - Example of ego-network

SNA as structural attribute: Centrality Degree in the network

SNA as structural attribute:
Closeness Degree in the network

SNA as a zoom: Affiliation network
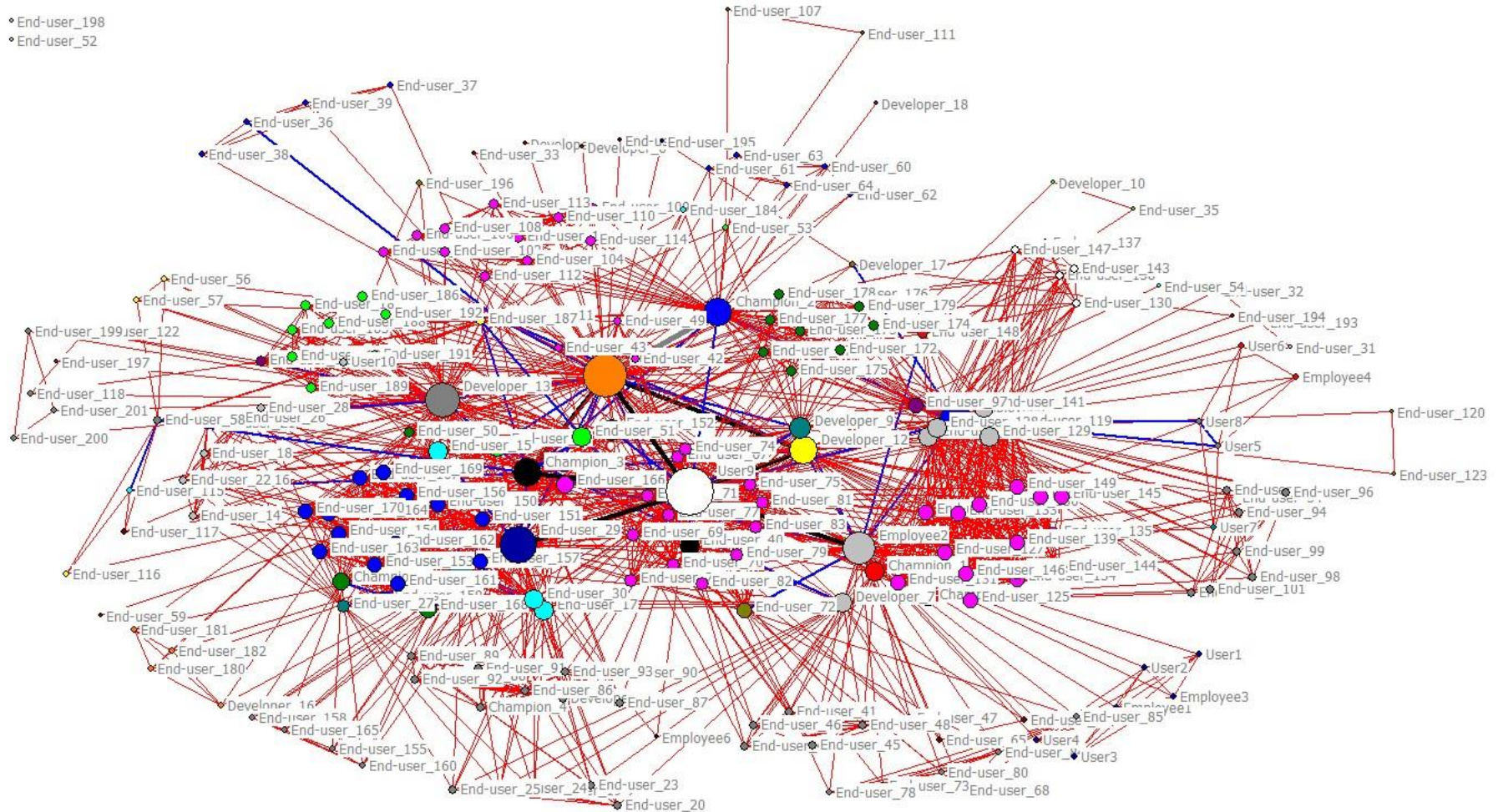
SNA as a zoom: Ego-network
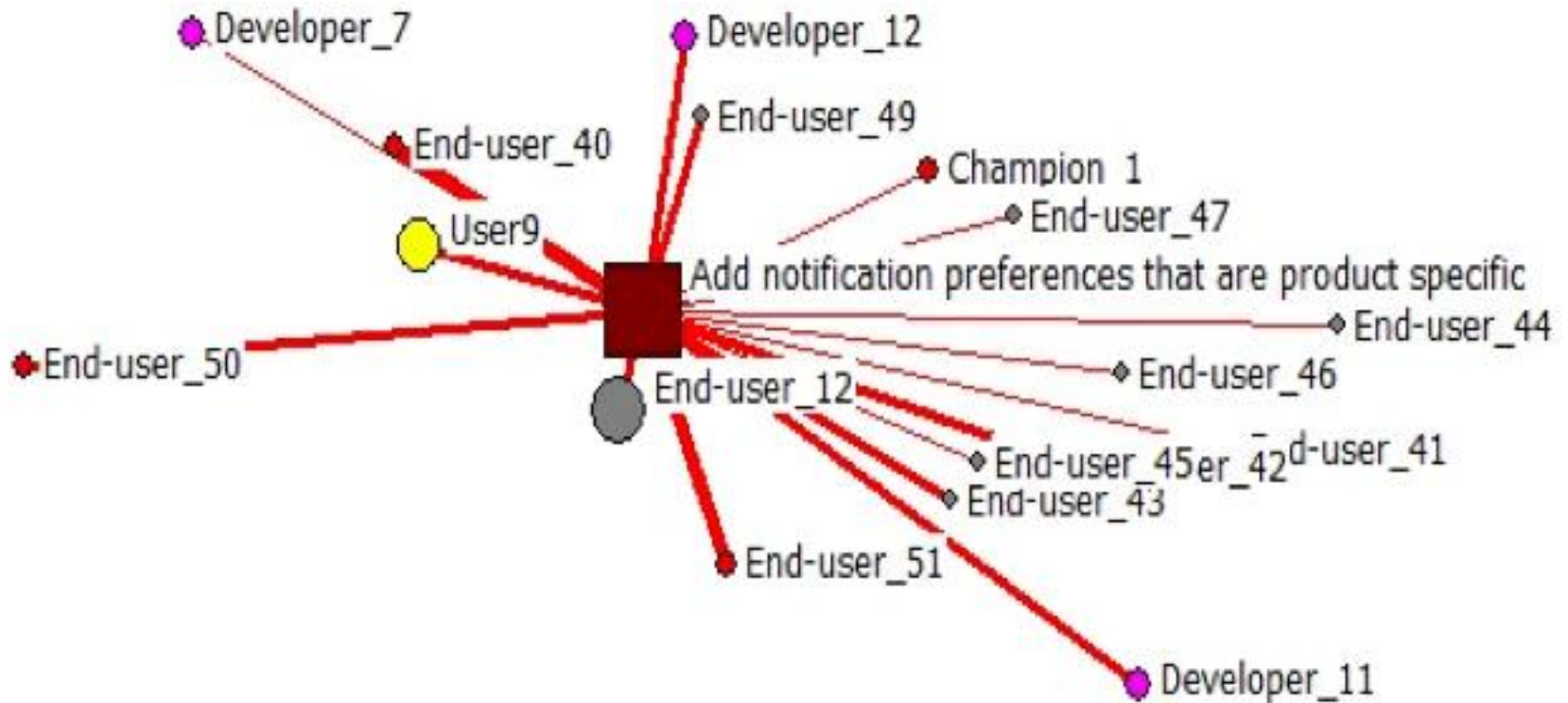
The qualitative data

- *Champion 1*: Add notifications preferences that are product specific
- *Developer_11:* I agree, Jamie. We have this as a planned feature, along with email digests for both whole community and specific products.
- *End-user 41*: You know what else would be pretty awesome and not hard to do? If the emails had the product name in the subject so I could at least set up mail filters.
- *End-user 40*: Please please please... this has been in progress for over 2 years! Come on guys... this is seriously limiting our organizations adoption of Get Satisfaction.
- *End-user 42*: I like Tony Wilkins idea. That feature would really make my life easier!!!
- *End-user 43*: Yes please!
- *Developer 12*: ": I've got this idea loaded up into our feature request queue, and I'll update all y'all once I know a bit more.

The role of SNA

- SNA can hihglight communication patterns and structural patterns

- SNA can be used as a zoom when there is a mass of data and crowd of participants

- Without using SNA I would not be able to identify the central group of participants and the the most central/active discussion threads

Thank you for listening!

- renate.andersen@intermedia.uio.no
- Twitter: @renate_andersen

Issues to discuss

- Do you participate in any online communities?
  - What kind of communities do you participate in and why?
    - Who do you contact for advice?
    - Who comes to you for advice?
  - In what ways could SNA analysis be useful for investigating what happens in the online community?
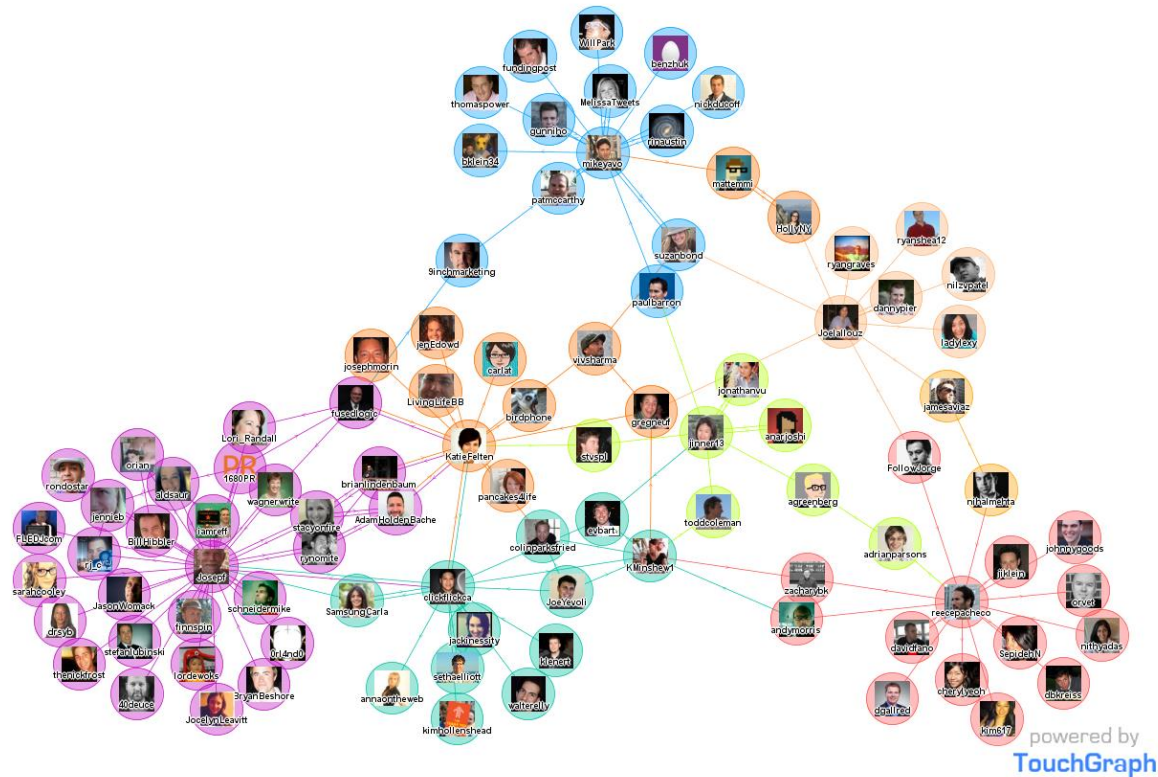
Example of LinkedIn Map
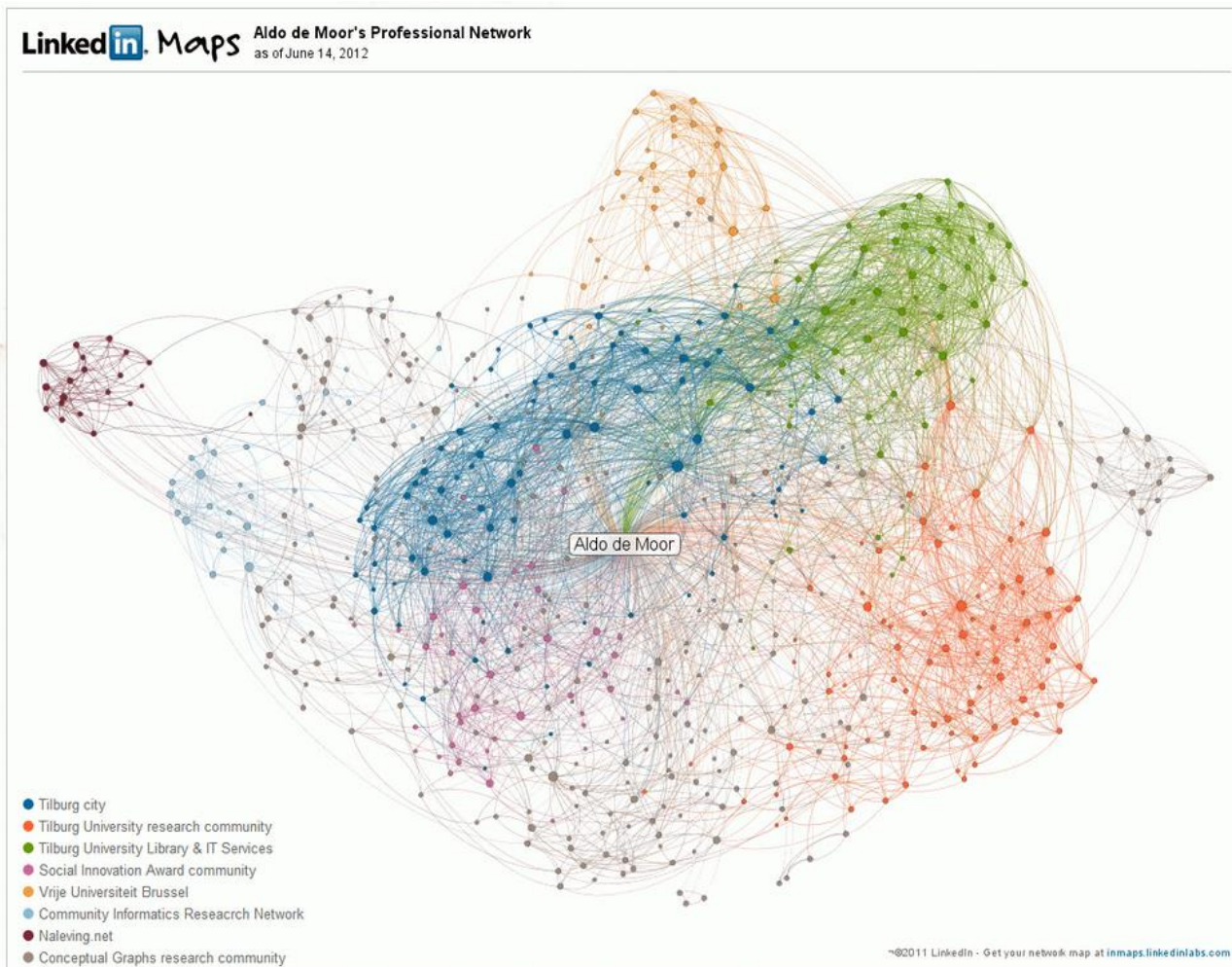
Source:
http://communitysense.files.wordpress.com/201
2/06/linkedinmap_overview.gif

Example of Facebook ToucGraph

Source: :
http://www.touchgraph.com/news