

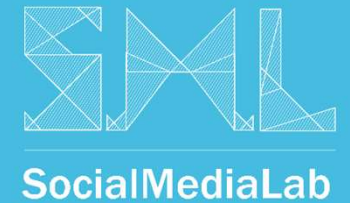
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Identifying and comparing user roles across companies in organizational social networks

Felix Sommer, François Lambotte & Philippe Dumont de Chassart

Context

- Cooperation of the SML with an enterprise
→ knowledge sharing platform provider
- Six enterprise customers
→ raw activity logs (daily live usage)
- Various customer sectors:
transportation, accounting, judicial services,
consulting, etc.
- The SML:
scientific & consulting services
→ social network data lifecycle



Context

Data - process

Methodology

Findings

Conclusion

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Data collection and processing

1) Log data of a knowledge sharing platform for organizations
→ 6 enterprise customers

2) Parsed Log entries
→ SQL database

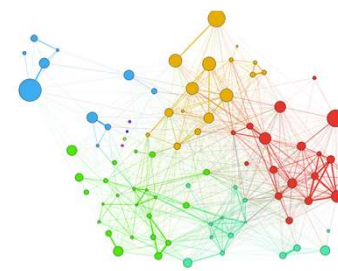
Database: user interactions
between users, groups and
the platform

3) Queries to the database:
comments and post data

commenting for the
network structure, post
for the number of posts

4) Graph generation & data
analysis : MATLAB

posting content,
commenting, liking,
joining a group, etc.



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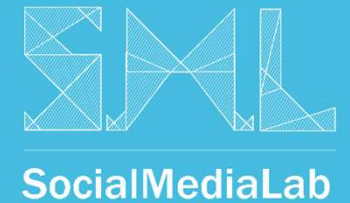
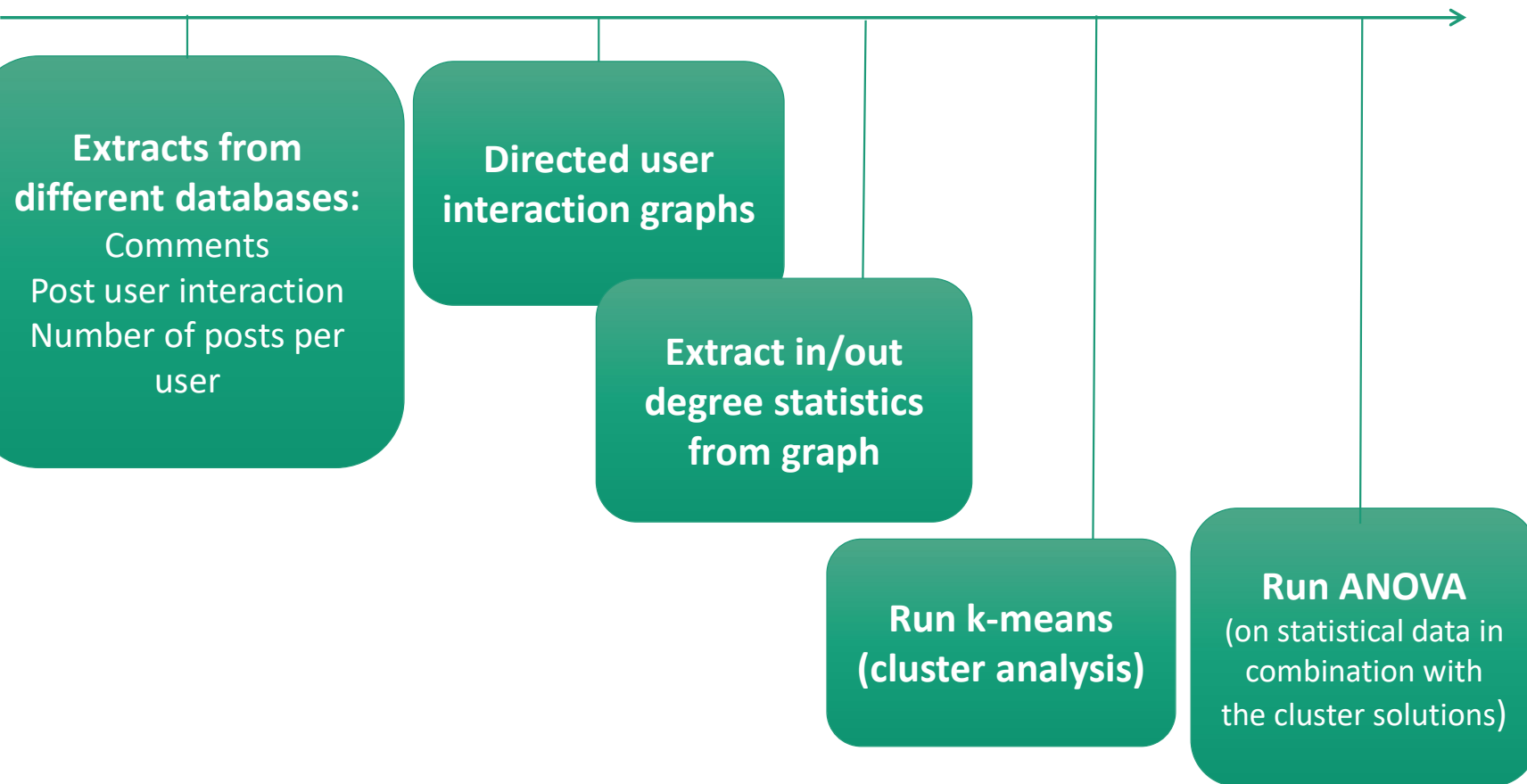


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Methodology – Our approach



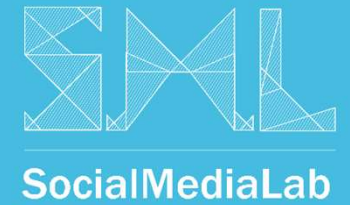
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Database graph overview

Name	Number of Nodes	Number of Edges
D	305	40983
E	81	780
ID	120	641
IE	2227	24377
S1	86	1080
S2	47	45



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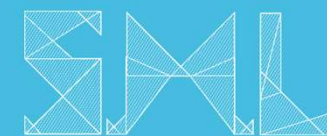
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Findings (I)

User types by Füller, et al. (2014) hold up quite well, as all databases contain:

- One or several **master** users:
 - Probably the community managers
 - Very high number of posts, in-degree and out-degree
- The majority of users correspond to passive users, i.e.:
 - **Passive commentators** (low out-degree, no in-degree, no posts)
 - **Passive idea generators** (few posts, no in-degree, no out-degree)
- The remaining classes are equally present:
 - **Idea generators** (large number of posts, moderate in-/out-degree)
 - **Socializers** (high out-degree, low in-degree, low number of posts)
 - **Efficient contributors** (moderate overall activity)

Füller, J., Hutter, K., Hautz, J., & Matzler, K. (2014). User roles and contributions in innovation-contest communities. *Journal of Management Information Systems*, 31(1), 273-308.



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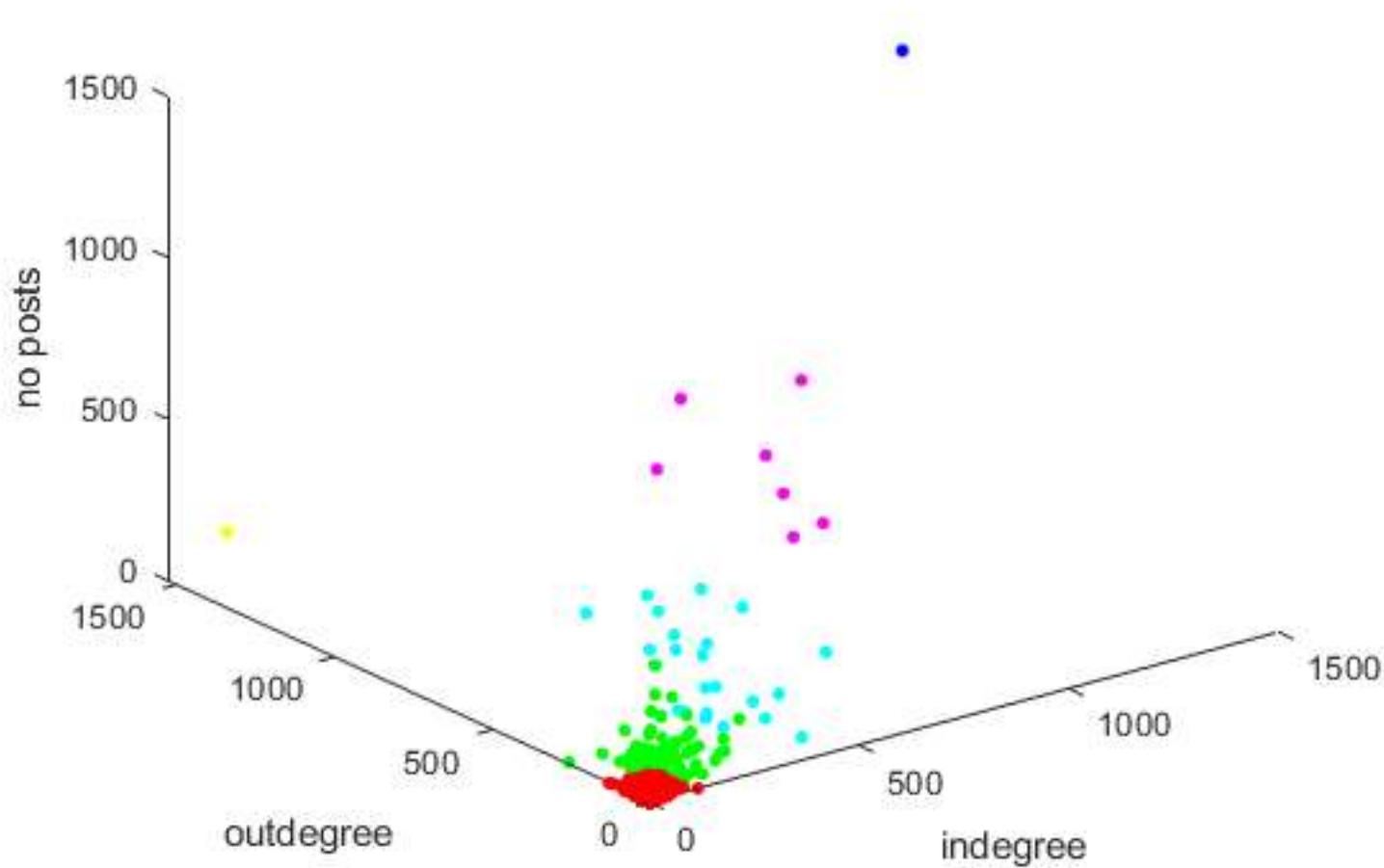
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A proposition for the visualization statistics data (in-, out-degree, number of posts)



Context

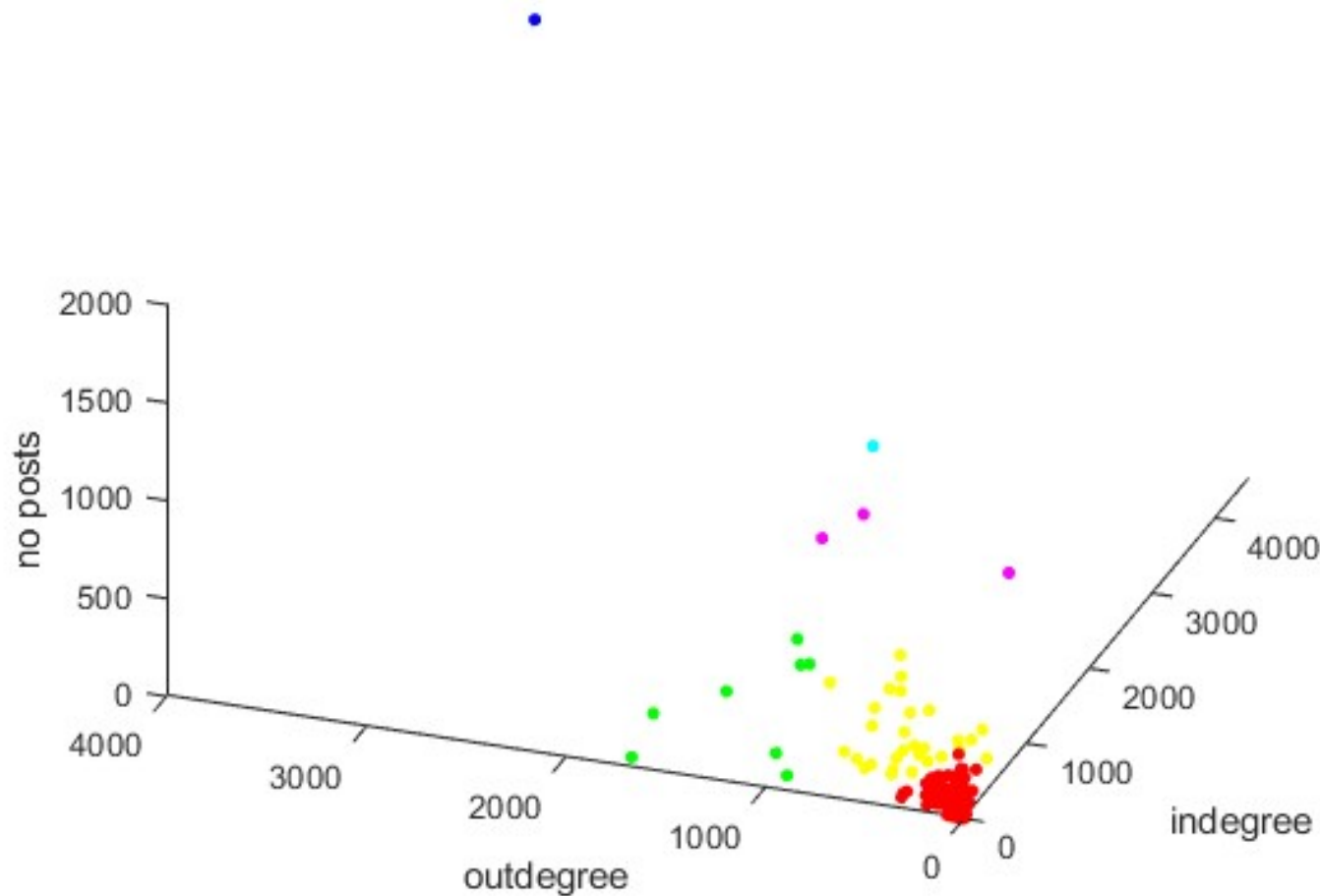
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A proposition for the visualization statistics data (in-, out-degree, number of posts)



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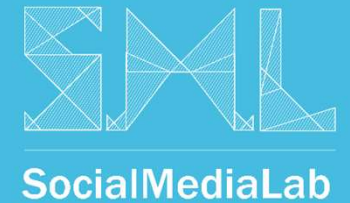
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Findings (II) – Particularities

- In every database there is typically:
 - one **extreme socializer** (extreme out-degree, low in-degree, low number of posts)
 - one or more **master users** dominating the platform (extremely high number of posts, out-degree, in-degree)
- In spite of the business environment the number of **passive users** is sometimes excessively high (90+%)
- Other data (such as **mentions**) appear to be enormous in some networks



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Conclusion

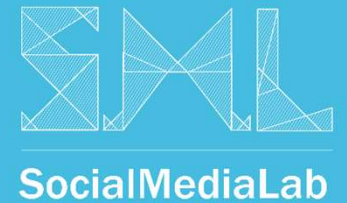
The user roles proposed by Füller, et al. appear to hold up in organizational networks:

- Network behavior appears to be **similar** and **stable** across different environments (private, public, professional)
- User activities are remarkably **similar** across organizations
- Enterprise **size** has little influence on user-roles

Drawback of our work:

- We have no **qualitative** data on the posts/comments

However, additional data, such as likes, mentions, etc. could be considered for further data analysis.



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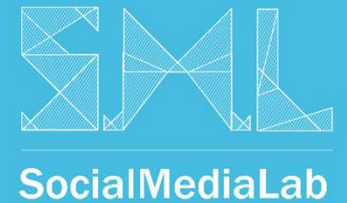
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Outlook and further research

- Use different data (we used posts and comments, but also have **likes, mentions, and follows**) or a combination of all data for network analysis
- Clustering using a different clustering approach (e.g., **kernel k-means** clustering) based on the actual graph, rather than graph statistics
- Better visualize the **network structure**
- Derive useful conclusions for social network managers, such as:
 - **Visualizations** (more than scatter plots)
 - Pinpoint influential or **key** participants
 - Derive other (easily) interpretable statistics



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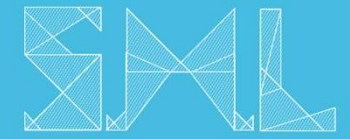
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Thank you!



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