

The Hub-bit: traits, role and influence of central nodes during a user migration

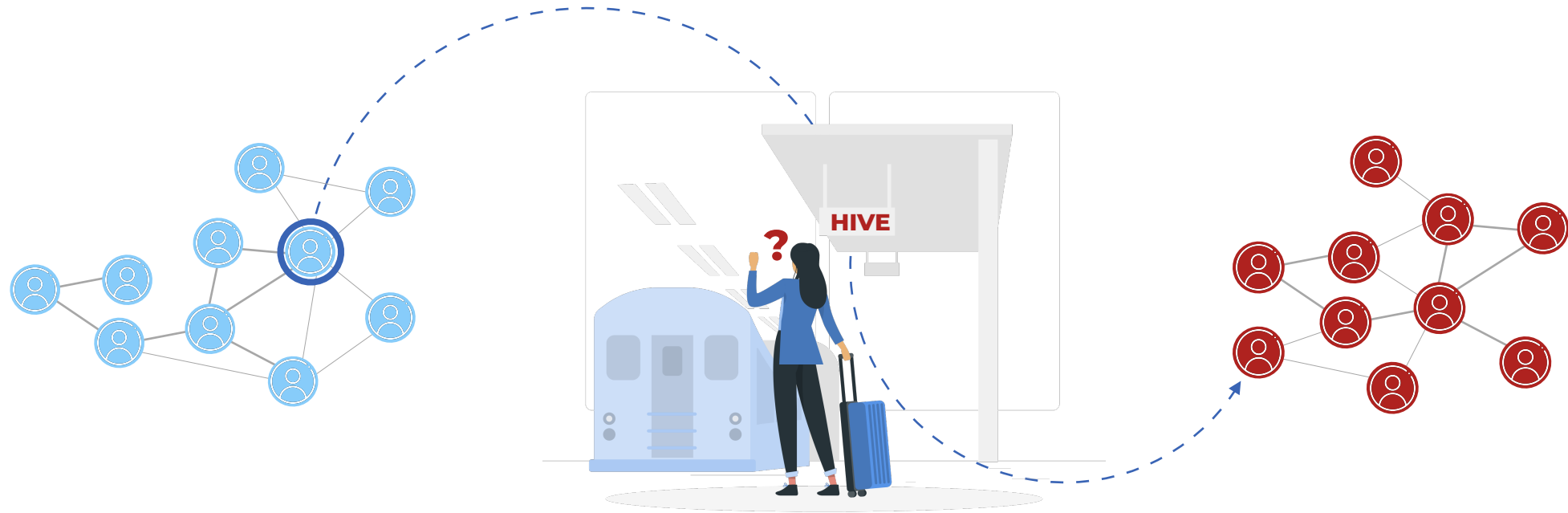
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MILANO



User migration across online social networks



Context

User migration due to split/shocking events

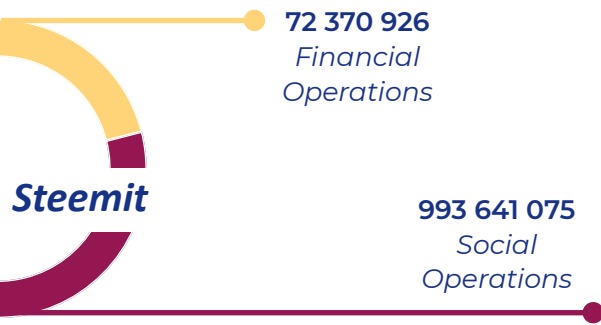
Research questions

Role of central nodes

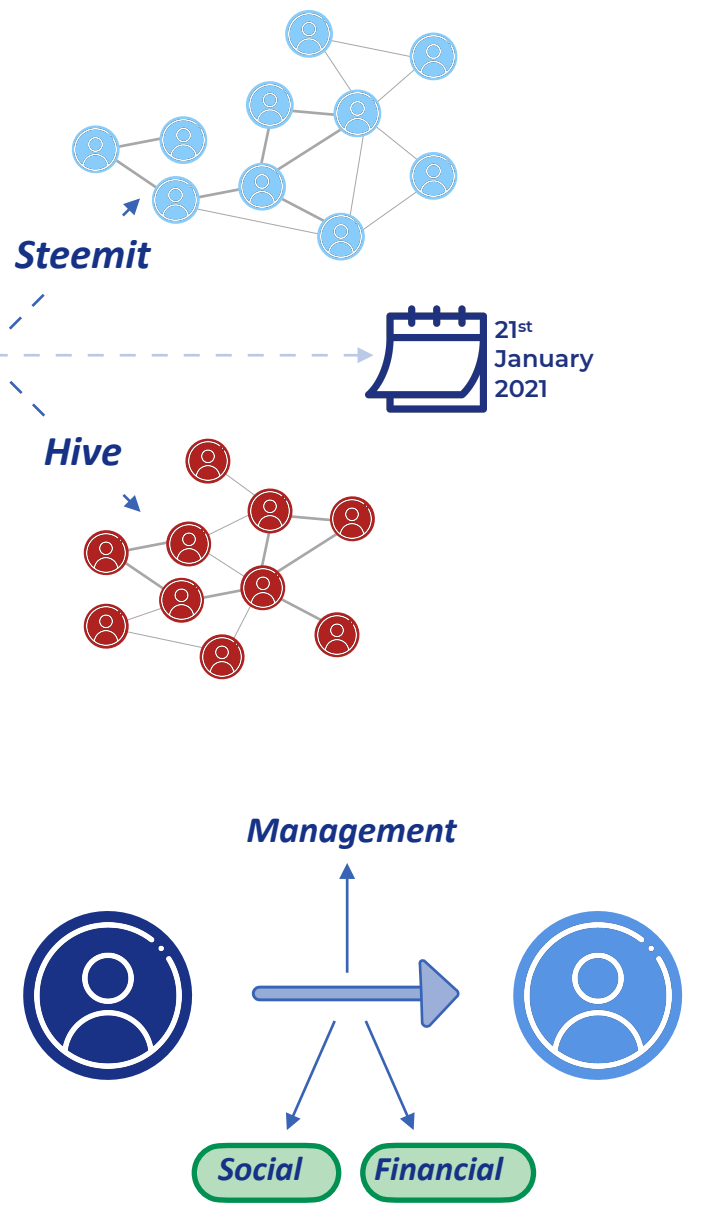
How do central nodes behave after a split event?

Does the decisions made by the central nodes whether to migrate or not influence their neighbouring nodes?

Dataset



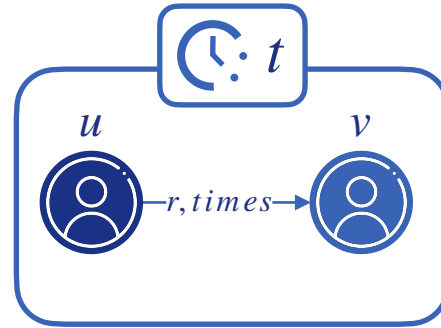
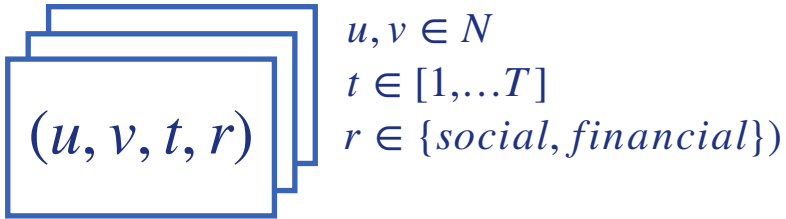
- The dataset covers four year and a half **operations** from the blockchain online social network (BOSN) **Steemit**;
- A **network split** is registered on 20th March 2020, creating a second platform, called Hive;
- The operations can be grouped in 3 classes: management, social and financial;
- We focus on the **social** and **financial** ones.



Methodology

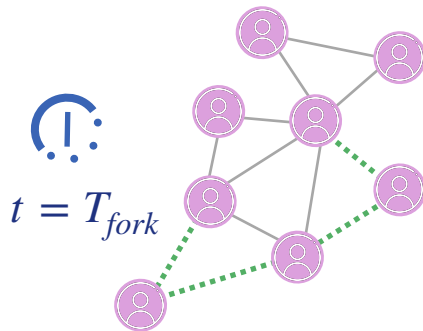
Graph modeling

From the APIs, we obtained tuples that we used to model a graph



Each tuple (u, v, t, r) builds a link from node u to node v at time t , using r as attribute. The attribute *times* indicates how many times the triple (u, v, r) occurred in the collection.

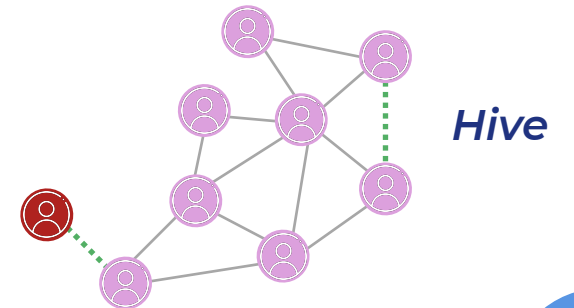
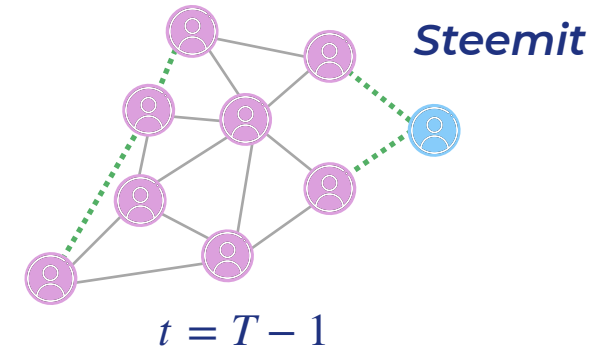
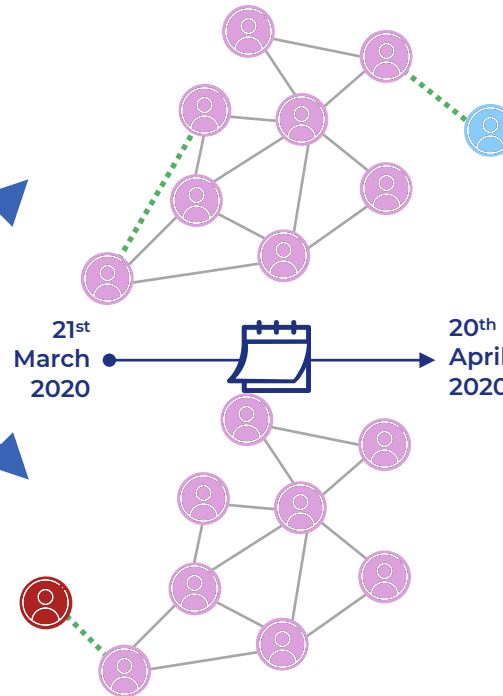
We obtained a sequence of **incremental edge-labeled multigraphs**



We denote as T_{fork} the snapshot that corresponds to the network split. After T_{fork} we have two distinct graphs' sequences.

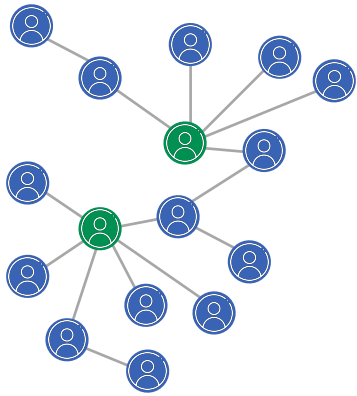


20th
March
2020

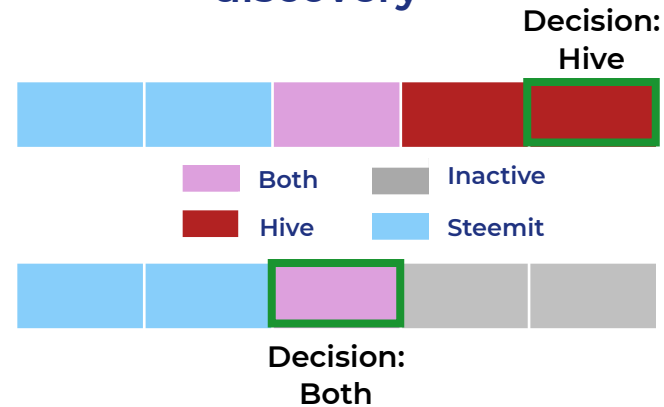


Methodology

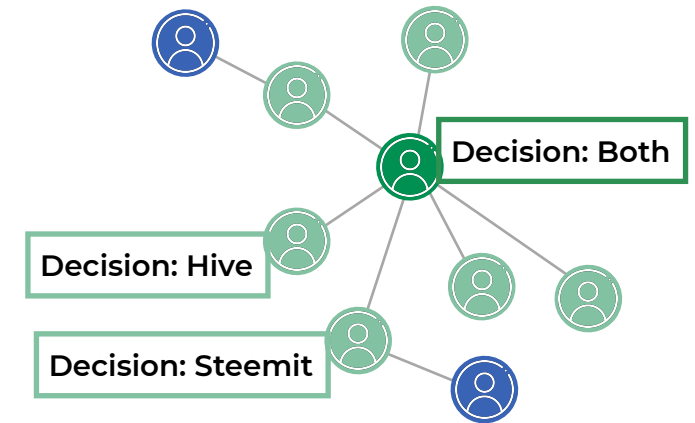
Select hubs



Hubs' decisions discovery



Hubs' neighbourhood decisions

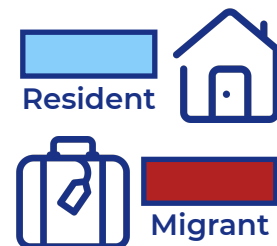


We based the hubs' definition on **degree**, selecting

- the top-20 in-degree nodes
- the top-20 out-degree nodes

On $G_{T_{fork}}$, the **last snapshot** before the split

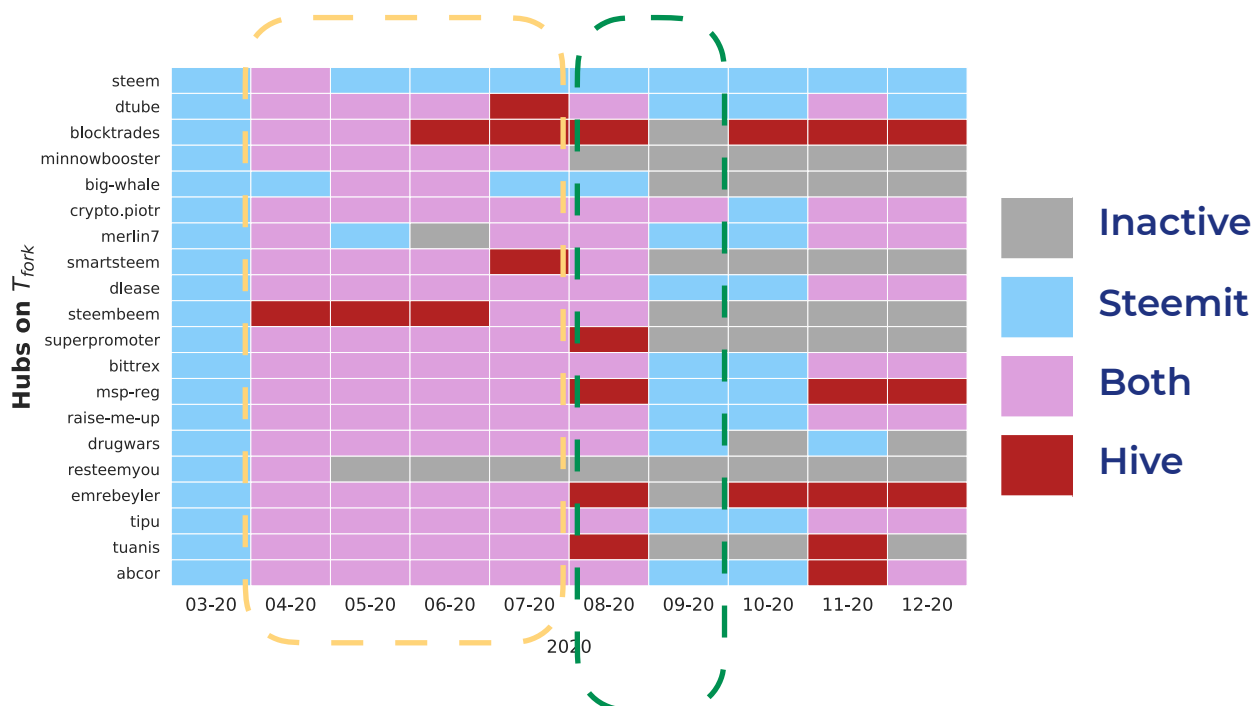
- We consider the 9 one-month-windows after the split;
- We consider as hubs' decision, the platform of the **last active window**.



- Select, for each hub its **in-neighbourhood**
- Collect the **neighbours' decisions** and consider the migrants one, of cardinality m
- Compare m with the expected value of the **null model**

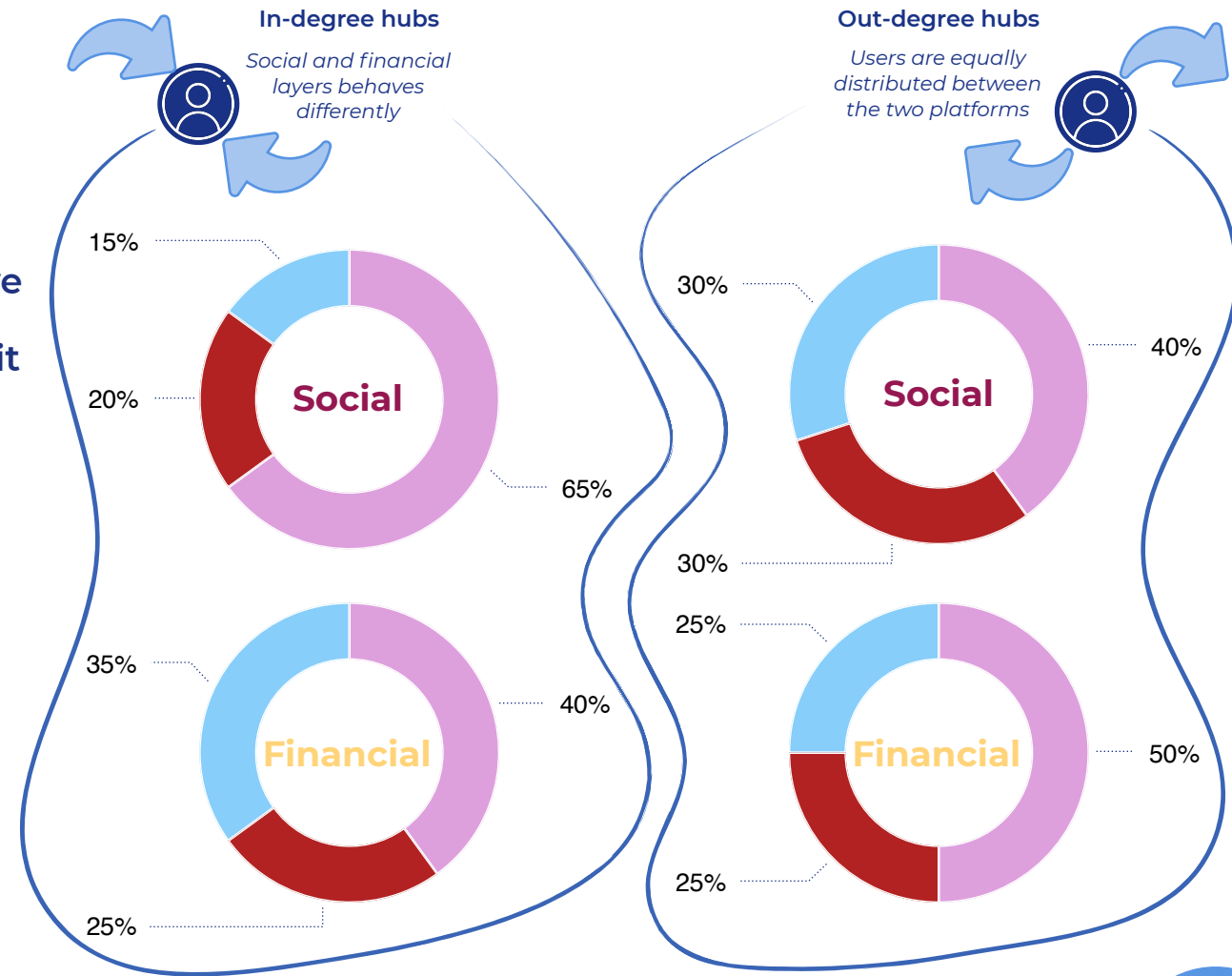
Results

Example of hubs' **decisions** discovery



- **Indecision period** where hubs tend to stay active on both platforms
- In the **next two months** many hubs choose a platform or become inactive

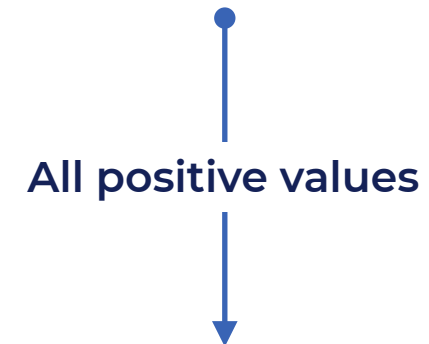
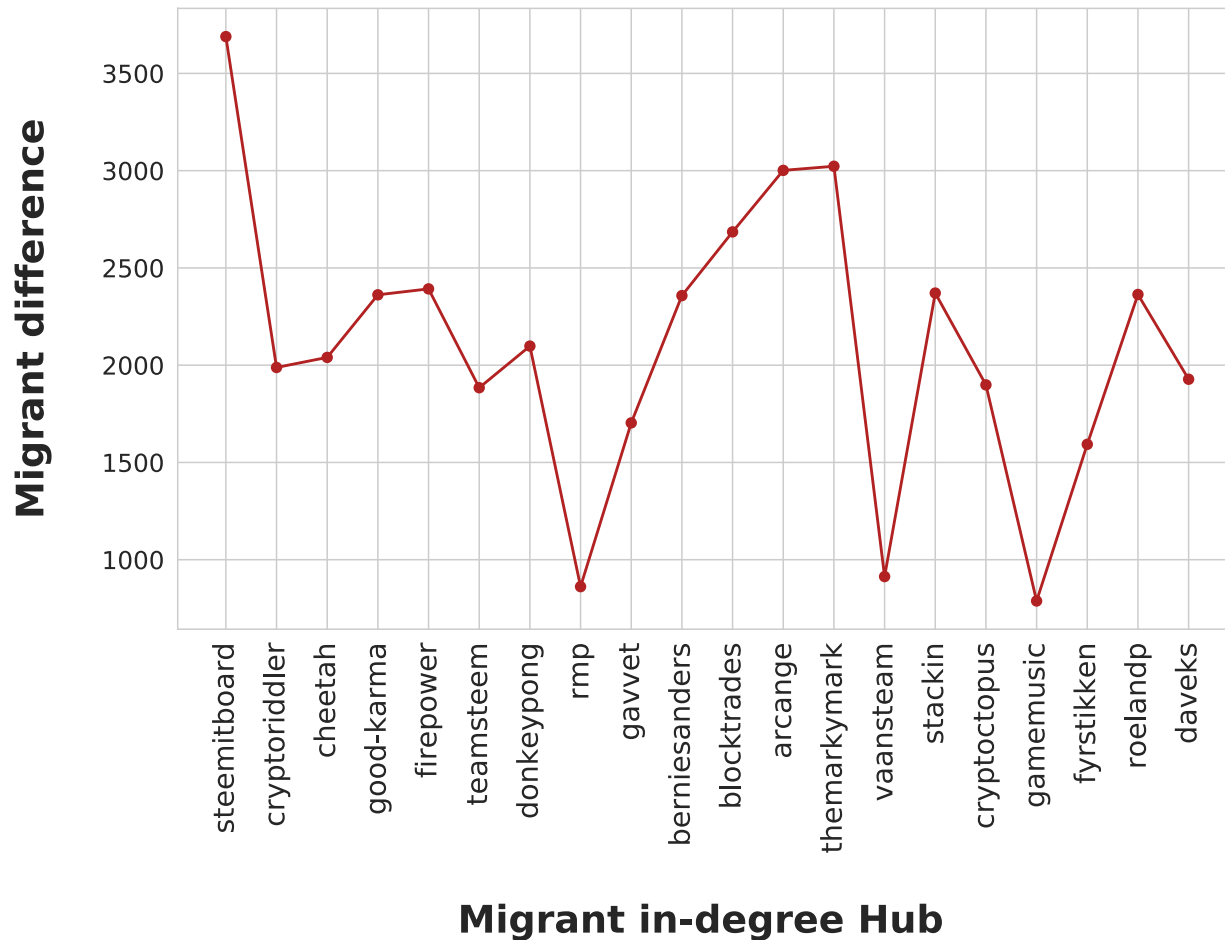
Distribution of hub's **decisions** in social and financial layers



Results

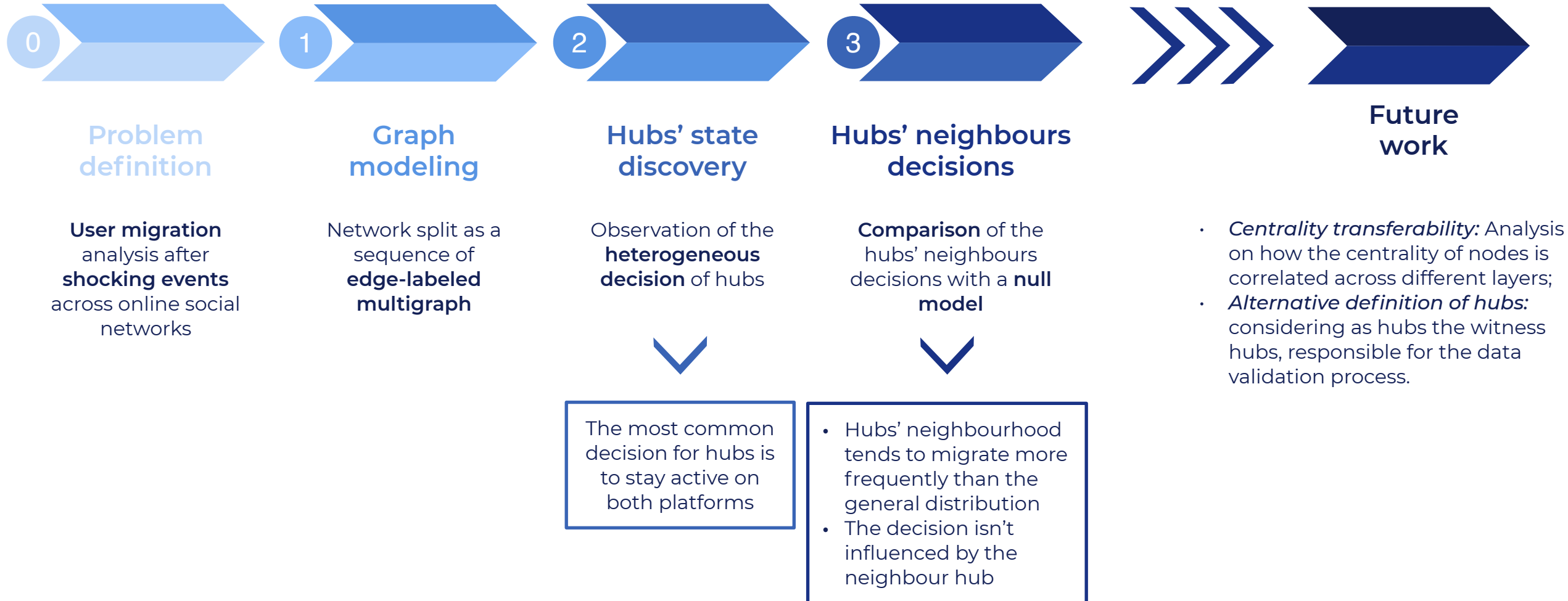
Hub's neighbourhood decisions

We observe, for each hub, the difference between the average values of migrant nodes from the null model and the actual numbers of migrant neighbours



- the hubs' decision does not influence the neighborhood.
- hubs' neighbors are more likely to migrate with respect to other users.

Conclusion





Thanks for your attention