

European Commission

June 2023

Problem with 'S.A.' node.

1 Model using hypergraphs or graphs?

1.1 Hpyergraph

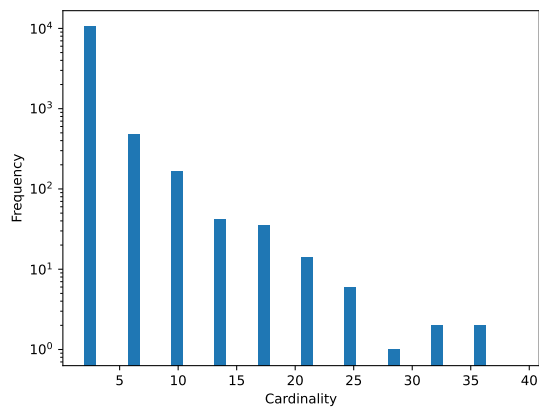
Number of hyperedges : 11214

Number of entities (nodes): 4541

Number of edges in a bipartite graph 32501

Mean cardinality : 2.90

Std cardinality : 2.25



- Correlation between centralities of hyperedges.

	Betweenness	Cardinality	Closeness
Betweenness	1.000000	0.751155	0.528181
Cardinality	0.751155	1.000000	0.417462
Closeness	0.528181	0.417462	1.000000

⇒ big hyperedges have a high cardinality

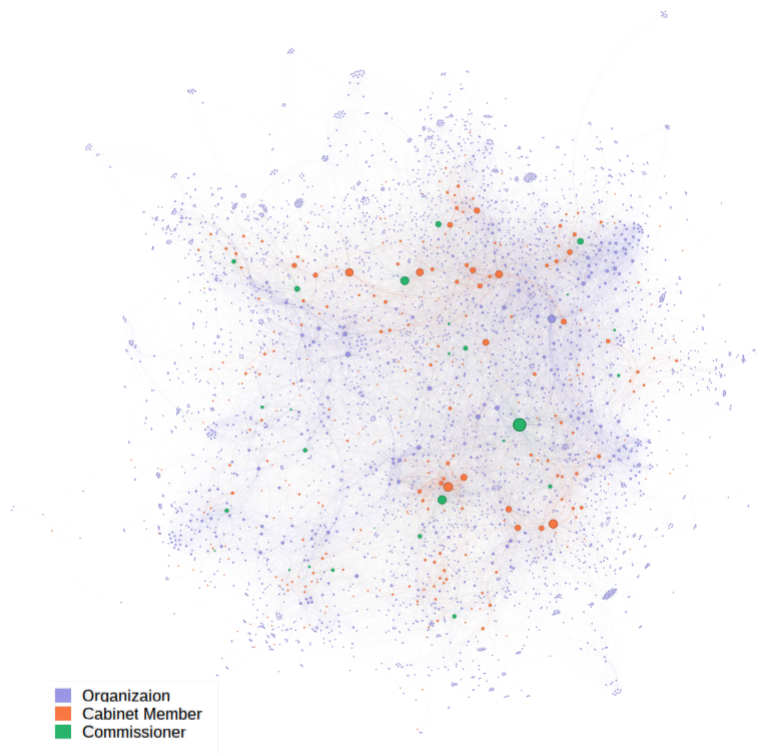
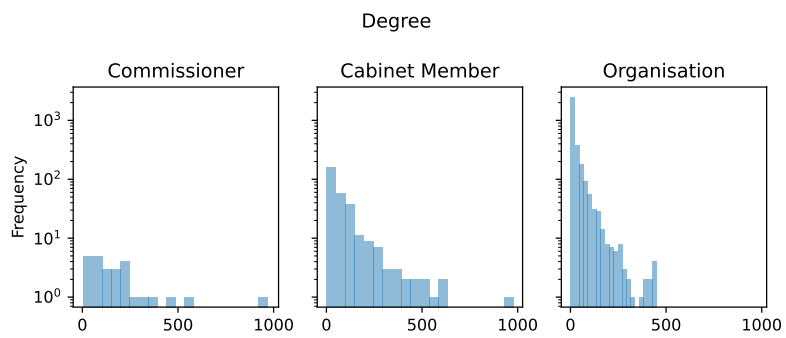
1.2 Graph

Number of entities (nodes): 4541

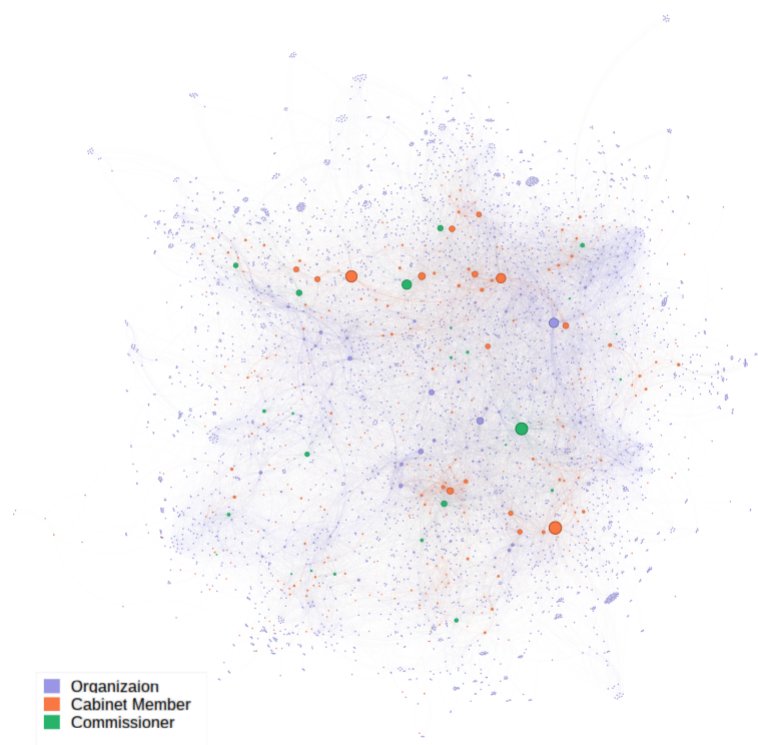
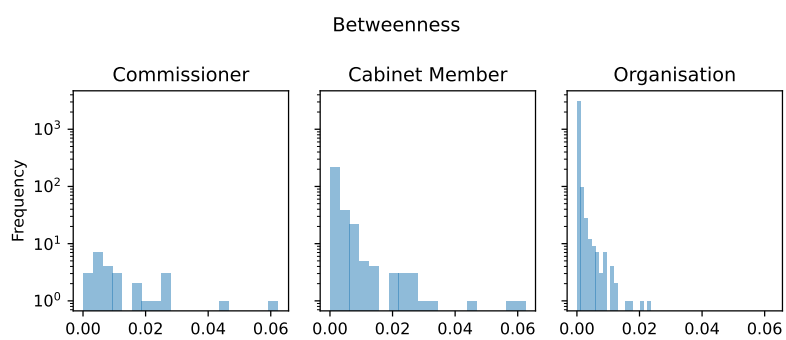
Number of edges : 35139

2 Centralities

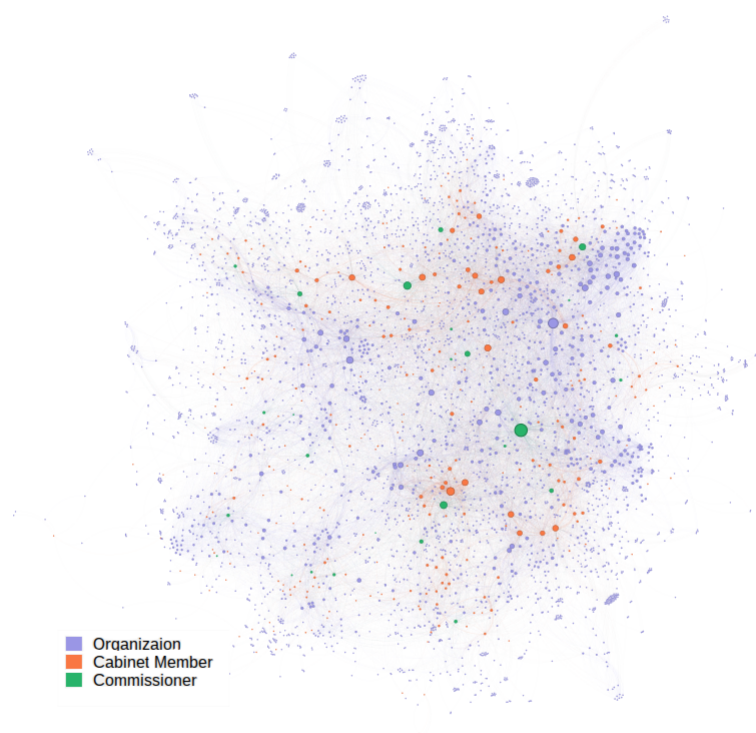
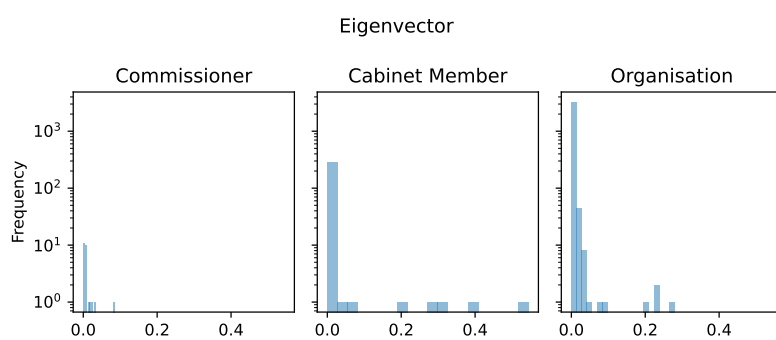
2.1 Degree



2.2 Betweenness



2.3 Eigenvector



3 Correlation between E.U. grant and centralities

restrict graph to organisation appearing the E.U. transparency register.

Number of nodes = 3637

The network still connected

	Members FTE	Eigenvector	Degree	Betweenness
E.U. Grants	0.002598	0.008545	0.028295	0.015429

⇒ No significant correlation