

A Network Approach to Spatial Data Infrastructure

Applying Social Network Analysis in SDI research

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Outline



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- A Network Approach to SDI
- Social Network Analysis
- Applying Social Network Analysis in SDI research

1. Problem statement



SDI descriptions form a substantial part of current research on SDI

Most traditional SDI descriptions suffer from certain weaknesses

1. Strong emphasis on SDI components
 - Few attention is paid to actual 'results' of SDI
 - Using *shared* data just one option to acquire data
2. Description of single SDI initiatives
 - Organisations confronted with a collection of initiatives
 - How are these initiatives related to each other?

New approach is needed to tackle these problems

2. A Network Approach to SDI



Operationalisation of SDI in terms of:

- the organisations that are producing, using and sharing spatial data (actors)
- the flows of spatial data between these organisations (relations)

SDI can then be seen as the collection of arrangements determining or influencing these organisations and their relations

Network approach emphasises that all these elements are crucial in SDI development and SDI research

To analyze SDI from this network perspective, new models and methods are needed

How can these models and methods be provided by social network analysis?

3. Social Network Analysis



Network analysis often introduced as alternative to traditional research approaches in social sciences

- "Traditional"
 - Individual actors act and make decisions without regard to other actors
 - Empirical data = actor characteristics
- "Network"
 - Relations with other actors are more significant
 - Empirical data = relations (and actor characteristics)

Any network encompasses two elements

- Actors: individuals, groups, organisations, ...
- Relations: personal contacts, exchange of goods, affective relations, ...

SNA provides methods and tools to analyse these networks

4. Applying Social Network Analysis in SDI research



SNA to describe the spatial data infrastructure in Flanders

- Actors: 234 public organisations in Flanders, at different administrative levels
- Relations: the exchange of four types of spatial data (parcel, address, road and hydrographic data)

Additional information collected

- Attribute data: *administrative level, use of GIS, data policy, organisational structure*
- Data flow characteristics: *price, legal basis, type and frequency of transfer*

Two sets of analysis can be distinguished:

- Mathematical: calculations and statistical analyses
- Graphical: visual representations of networks

Mathematical analysis



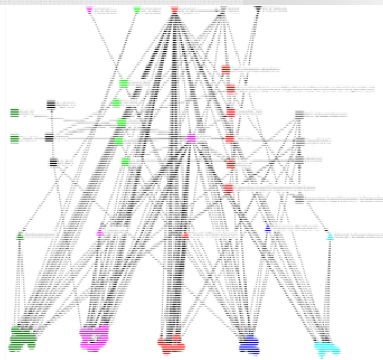
Density of four networks

	Density
Parcel data	0.0119
Address data	0.0062
Road data	0.0046
Hydrographic data	0.0044

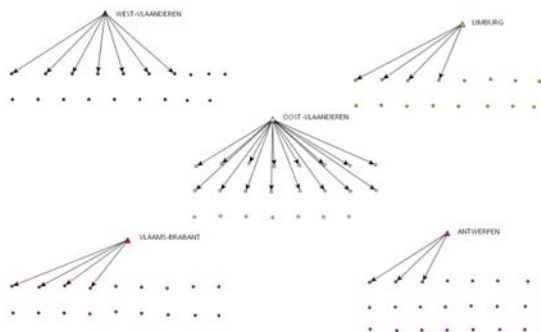
Centrality in the parcel network

	Centrality
Federal Public Service Finance	89,000
Agency for Geographic Information Flanders	62,000
Oost-Vlaanderen	17,000
R-O Vlaanderen	7,000

Graphical analysis (1)



Graphical analysis (2)



More information



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