# Implementation strategies for geo-standards in the framework of SDI

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## Outline

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- Research Questions
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- Methods
- Current Status and encountered ‘problems’



## Background

A SDI is a set of technological and non-technological set-ups [components] within and between organizations [network] to facilitate access, exchange, use and sharing of spatial data, thereby contributing to the performance of business processes.

- To make the technological components ‘talk’ with each other, they should be interoperable
- Standards are used to make this happen
- In practice, in many SDI, standards are poorly adhered to, and often interoperability problems remain

## Research Objective(s)

- The aim of the research is to get a better insight in possible implementation strategies for geo-standards.
  - We currently do not know what the impact is of the application (or not) of geo-standards on SDI performance
  - We also don't know why standards are applied (or not)
  - We don't know if there are different options/scenario's (for different stakeholders) for implementing standards
    - (i.e. if there can be any flexibility in their application without jeopardizing the SDI)



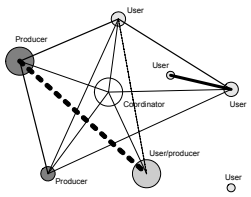
## Research Questions

1. What is the impact of the application (or not) of standards on the performance of the SDI?
   1. Which standards are used by and between SDI stakeholders in Flanders? Why are those standards used? Why are standards not used? What are the problems encountered implementing those standards?
   2. What is the impact of the use of standards on the interoperability? How can this interoperability be measured?
   3. How does the application of standards impact the SDI performance? What are the key parameters from the technological point of view that can measure SDI performance?
   4. Are there any alternatives (options) for the way standards are applied in an operational SDI environment? Are alternatives different for different types of stakeholders?



## Theoretical Approach

- Social Network Theory
  - SDI from a network perspective (see Glenn)



## Theoretical Approach

- Diffusion Theory
  - Applied to the development of SDI
    - Diffusion as a process by which an **innovation** is communicated through certain channels over time among the members of a social system (Rogers, 1983)
    - E.g. Masser (2005); Chan et al. (2001); ...
  - Model of technology diffusion applied to standards (Weitzel et al.)
    - Theory of **positive network effects** describing the positive correlation between the number of users of the network good and its utility (Katz & Shapiro, 1985)
    - Distinction is made between **direct** (exchange) and **indirect** network effects
    - **Standardisation process**: discrepancy between private and collective gains – when does it pay of
    - Link to hierarchical – market – network paradigm



## Methods

- Work on SDI in Flemish Region
- A combined approach is envisaged:
  - **Survey**(s) regarding the **data flows** and mapping of the characteristics of organizations and relationships
    - Including characteristics of the degree of technical standardization – LISI model; the degree of semantic interoperability
  - **Case research** – i.e. the analysis of 4 business processes - with in depth interviews
    - Including questions on the application of standards to gather qualitative information.
  - **Specific survey** on the application of standards amongst all the Flemish SDI stakeholders to gather quantitative information.
  - **Test** set-up of some application schemas of standards to validate the results and have an in depth view on the impact
    - See also Booz Allen Hamilton, 2005



## Status and encountered problems

- Status of the research
  - Survey and SNA – technological characteristics of the relationships between actors to be analysed
  - Analysis of business processes started – case RUP
  - Analysis of existing geo-standards and their application started (at central SDI level)
- Encountered problems
  - Challenge: bringing the different disciplines together and think/analyse in a 'common' way
  - Cases:
    - Risk of having information that is too 'fuzzy' – difficult performance measurement
    - Linking the impact of different components as part of set-ups in and between organisations

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