The impact of the application of geo-standards in business processes

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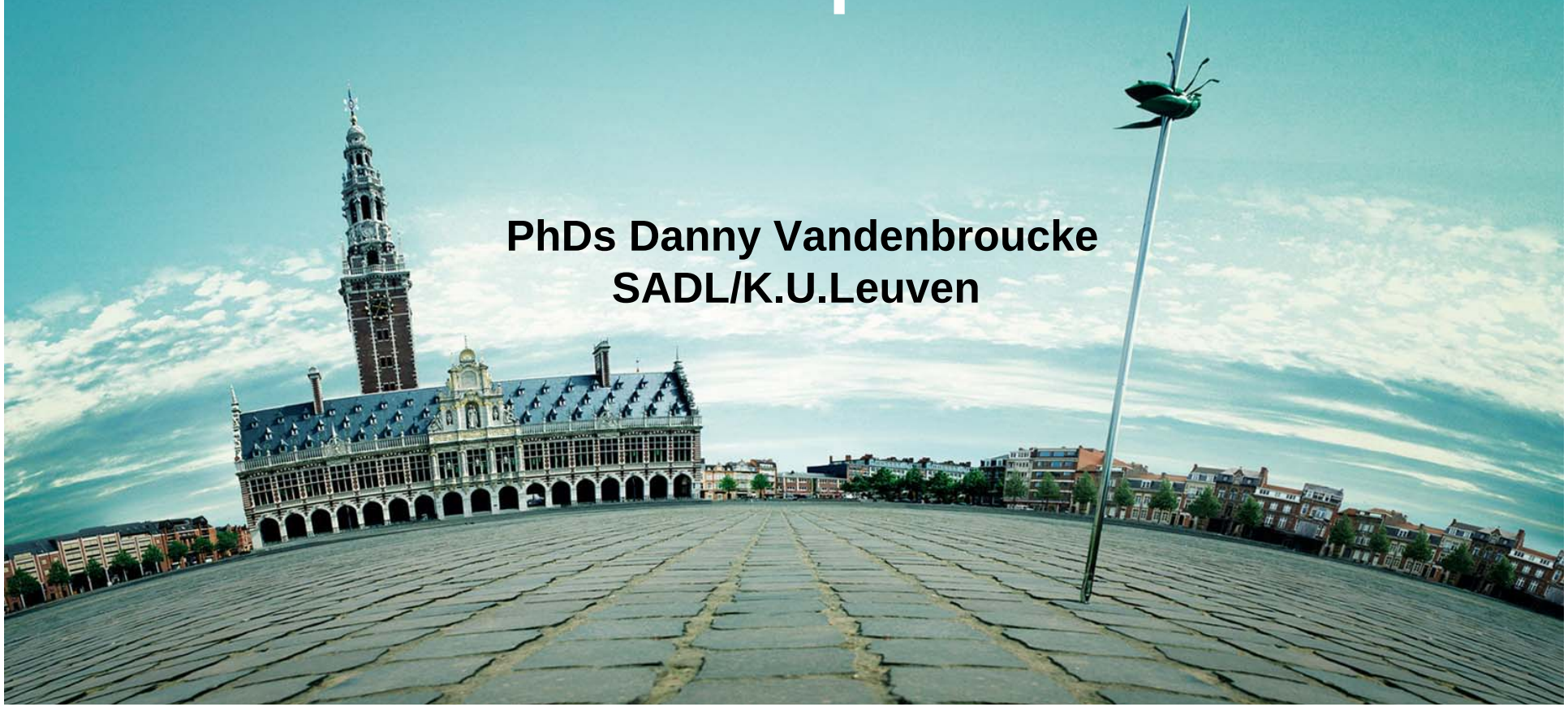


Outline

- Context and problem statement
- Research question and hypothesis
- Research design
- Status & ongoing work

Context & problem statement

- Spatial data and GIS have gained importance over the last decades
  - 80% of the data and information used by public authorities has a spatial component (Longhorn and Blakemore, 2008)
  - Many applications in different fields
- But still many barriers exist to access, use and share spatial data fluently
  - Technological barriers (data harmonisation, access, ...)
  - Non-technological barriers (conditions of use, price, ...)

☞ To overcome these barriers, SDI initiatives are taken

- ☞ SDI are mostly developed in public sector
- ☞ SDI start to emerge in private sector (e.g. oil sector)

Context & problem statement

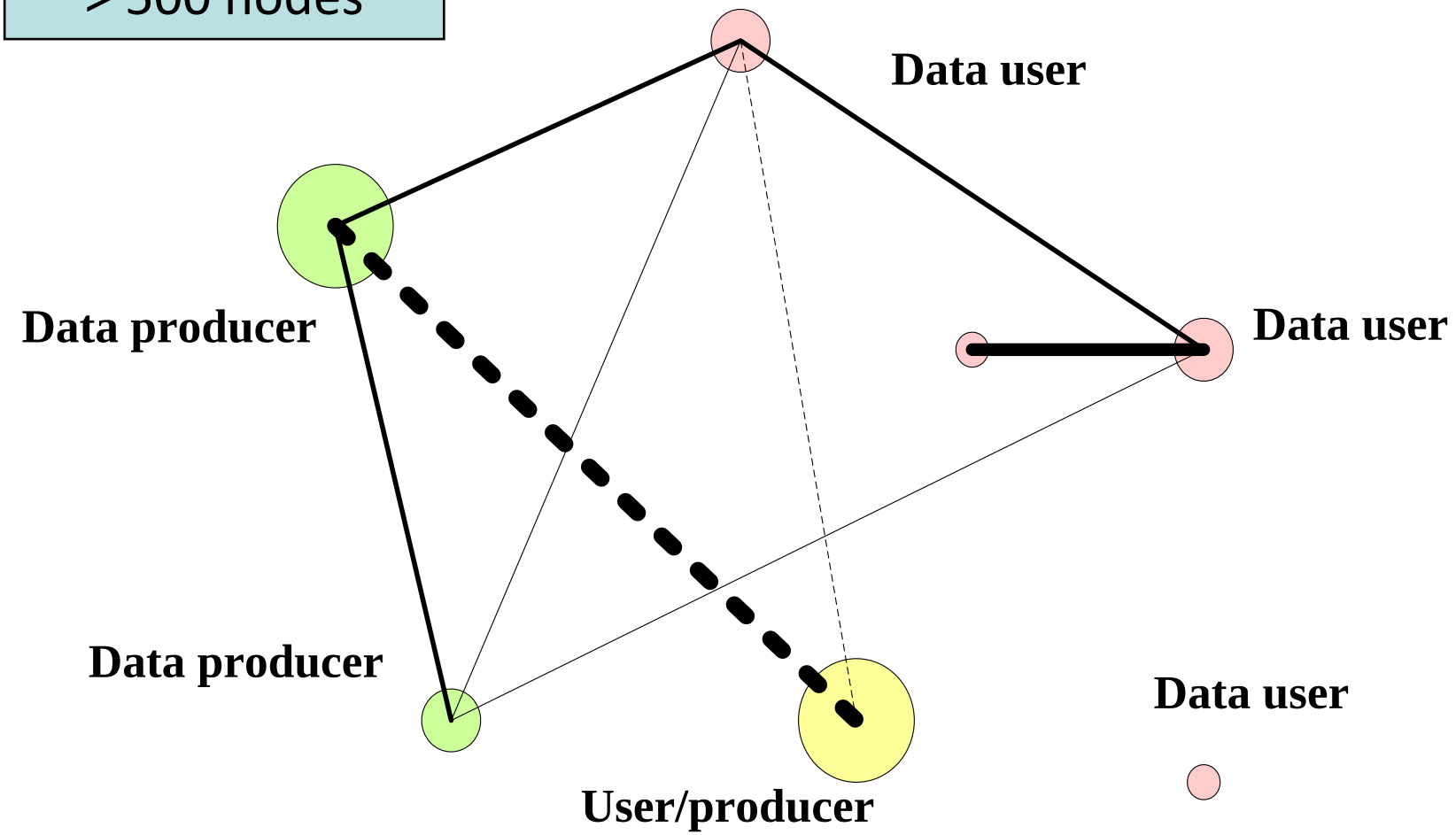
- Many SDI initiatives and definitions
  - (Clinton 1994, ANZLIC 1996, GSDI 1999, Groot and MacLaughlin 2000, Rajabifard et al. 2003, Wytzisk & Sliwinski 2004, van Loenen 2005, INSPIRE 2007, ...)

"A SDI is a set of
technological and non-technological set-ups [components]
within and between organisations [network]
to facilitate access, exchange and use
of spatial data [narrow objectives]
thereby contributing to the performance
of business processes [broader objectives]."
(SPATIALIST, 2008)

Context & problem statement

Flanders:
> 500 nodes

The network perspective



Context & problem statement

- In order to let the data flow and be used in a coherent way:
  - Need for interoperability - (see also ISO, 2004)
  - Semantic (content) and technical (system) – (see also Bishr and Radwan, 2000; Thewessen, 2004)

"Interoperability is the ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organizations via the business processes they support, by means of the exchange of data between their respective information and communication technology (ICT) systems.“ (EIF 2.0)

Context & problem statement

- Standards are used to obtain this interoperability
  - Technical Standards / Semantic Standards
  - International Standards / National Standards / Process Standards
  - De Jure Standards / De Facto Standards
  - Geo-standards (e.g. GML) and general ICT standards (e.g. XML)

☞ However application of (geo-)standards is very variable and impact not known

Research question & hypothesis

What is the impact of the application
of geo-standards on the performance of SDI
and on the processes in which they are used?

A systematic application of geo-standards
will improve the performance of the SDI in Flanders,
but not all the standards are of equal importance,
and not all nodes and chains in the SDI network
should implement standards in the same way

This could lead to a more flexible way of tackling
the geo-standardisation process

Research Design

- The research design is defined to be in line with the overall approach of SPATIALIST
  - = Multi- and interdisciplinary design
- The design is applied within the context of the SDI in Flanders
  - Public Sector
- The design consists of different parts
  - Social Network Analysis to map the different geodata flows between public authorities
  - Case analysis to zoom in on specific processes in and between public authorities
    - The major effort is at this level through in-depth-interviews
  - Additional research in the form specific surveys and in-depth interviews to analyse and validate

Research Design

Analysing business processes
- Spatial Planning
- Mapping floods
- Registration of traffic accidents
- Maintenance of addresses

SET-UP

Technology – geo-standards

Legislation

Licensing & Funding

Organisation

Coordination & cooperation

PERFORMANCE

Access, use and sharing

+

Contribution to the Performance of the process

Research Design

- Set-up – technological aspects – geo-standards
  - It is about the application of geo-standards and the standardisation behavior
  - It looks to the process from different perspectives
    - Input
    - Throughput (the process itself)
    - Output
  - Several variables are defined to classify the information from the interviews
    - Access and distribution mechanisms for spatial data
    - Exchange formats
    - Application of data specifications
    - The creation and use of metadata
  - Allows to classify the organisations (embedded cases) regarding their geo-standardisation

Research Design

- SDI performance
  - This is an important part of the research – how to define it?
  - Double approach
    - Performance in the narrow sense
      - Efficiëncy of geodata access
      - The intensity and usability of geodata use
      - The degree of geodata sharing
    - Contribution to the performance of the process
      - Based on several criteria (e.g. Contribution to the flexibility of the process)
  - This allows to classify the organisations (embedded cases) regrading their SDI-performance
- The analysis is first multi-disciplinary (set-ups as combinations of ...) and then disciplinary

Status

- Currently focus on case analysis
  - Analysing the case Spatial Planning and validation of the other three cases (Addresses, Trafic Accidents, Flood Maps)
- New network analysis (survey) and specific survey on use of geo-standards
- Papers
  - Vandenbroucke, D., Crompvoets, J., Vancauwenberghe, G., Dessers, E., en J. Van Orshoven, 2009. A Network Perspective on Spatial Data Infrastructures: Application to the Sub-national SDI of Flanders. Transactions in GIS, 13(s1): 105-122.
  - In preparation
    - The geo-standardisation process: from definition to integration in business processes
    - Performance measurement in SDI: application and applicability within the context of business processes

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