

## **SPATIALIST: Analysing the Flemish Spatial Data Infrastructure as an Operational Network**

Danny Vandembroucke<sup>1</sup>, Glenn Vancauwenberghe<sup>2</sup>, Ezra Dessers<sup>3</sup>, Katleen  
Janssen<sup>4</sup>, Tessa Geudens<sup>5</sup> and Joep Crompvoets<sup>2</sup>

<sup>1</sup>Spatial Applications Division (SADL), K.U.Leuven

<sup>2</sup>Public Management Institute, K.U.Leuven

<sup>3</sup>Center for Sociological Research, K.U.Leuven

<sup>4</sup>Interdisciplinary Centre for Law & Information Technology, K.U. Leuven

<sup>5</sup>Mathematics, Operational Research, Statistics and Information Systems, Vrije Universiteit Brussel

### **INTRODUCTION**

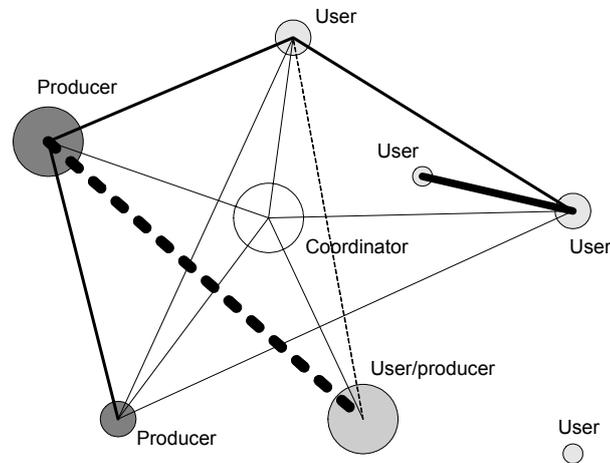
Over the last two decades, the need to use spatial data in different domains of public and private sector has increased dramatically. Nevertheless, the use of spatial data is restrained because many technological and organizational barriers exist. Technological barriers are, amongst others: non-harmonization of data, lack of documentation of the data (metadata) and difficult access to the data. Organisational barriers have been recognised by practitioners and in scientific literature, and are said to be even more important than the technological ones (e.g. Kok and Van Loenen, 2004). They are, amongst others: high costs for data, limitations in data use and re-use. In view to overcome those barriers Spatial Data Infrastructures (SDI) have been developed.

In Europe, the EU took the initiative to start the development of a European SDI, called INSPIRE. It was decided to build upon the existing components of the SDIs at national and sub-national level (European Commission, 2007). One of those sub-national SDIs is the SDI for the Flemish Region in Belgium. It was set-up in 1996 to coordinate GI activities amongst and provide GI services to public authorities. In order to enhance the Flemish SDI and to stimulate public sector innovation, the Flemish Government supports a research project called SPATIALIST. The project examines the technological, legal, economic, sociological and public administrative requirements to further develop the Flemish Spatial Data Infrastructure, which is efficient, effective, flexible and feasible (Bouckaert et al, 2006).

In order to analyse these requirements, the project needs an operational definition of SDIs. There have been many attempts to define and describe SDIs. Most recognise the technological and organisational elements of an SDI and stress the importance of data sharing principles as the core of an SDI. Nevertheless, the focus is still often on the hierarchical context, i.e. a multi-level system of interconnected SDIs (Rajabifard et al., 2003). What is missing is an operational definition that allows SDIs to be described in a coherent way (see for network approach Tulloch and Harvey, 2007). Instead of a well structured SDI at different levels, we will rather put forward the SDI as a dynamic network of stakeholders.

### **SDI AS NETWORK**

For the purpose of our project, we define an SDI as a set of organizational and technological arrangements and set-ups within and between the stakeholders to provide effective, efficient, feasible and flexible solutions to share and use spatial data. The SDI can be compared with a network of nodes which are linked to each other to enhance spatial data sharing (see figure 1).



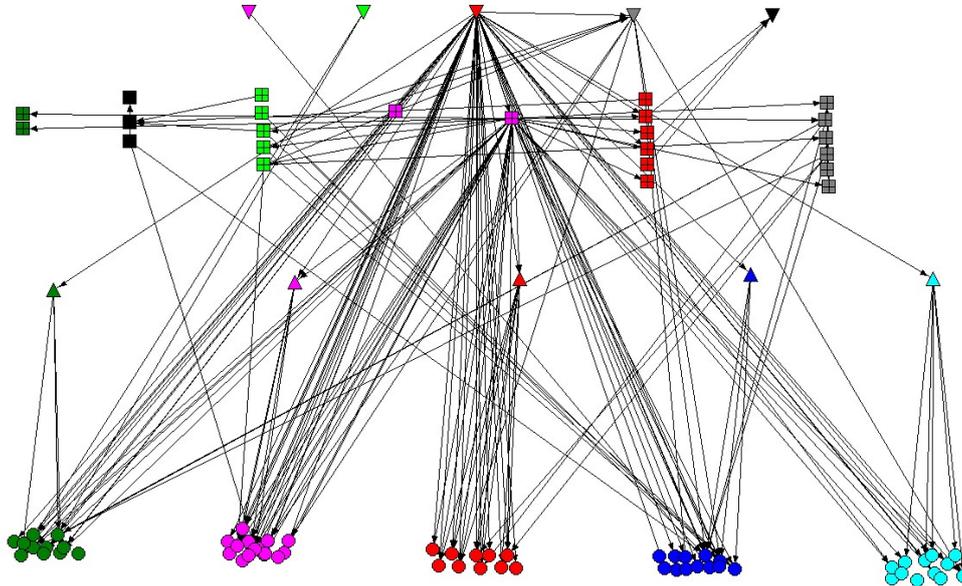
*Figure 1:* SDI as network of stakeholders.

Each producer and user of spatial data is a (potential) node of the network, as well as the coordinating bodies. The links between the nodes represent the relationships between the stakeholders. They can be more or less intense. Nodes can even be isolated, i.e. they use GI within their organisation but have no sharing mechanisms with any other node (own data production, no exchange). Links can be weakened due to the existing barriers we referred to earlier (technological and/or organizational). So the barriers are acting as a kind of impedance (see dotted lines in figure 1). This way of describing the sub-national SDI allows us to characterise the stakeholders and their relationships.

#### **NETWORK APPLICATION**

This network approach is applied to the Flemish SDI. More than 500 stakeholders of the public sector were identified being a (potential) part of the network. They included mainly municipalities, inter-municipal authorities, provinces, regional (Flemish) bodies and departments, and public federal authorities. A survey took place in May 2008 to map the current status of the SDI in Flanders. This survey dealt with the characteristics of the stakeholders: e.g. the type and size of the organisation the way in which GI is used within the organisation (processes), the funding of their GI activities, and the existence of a data sharing policy. In order to characterise the relationships between the stakeholders, the survey tried also to capture the data flows between the nodes of the network for 4 selected types of data sets: parcels, addresses, road network and hydrography. For each data flow, the characteristics were mapped allowing to detect the (potential) barriers on the links for each of the data sets analysed: e.g. cost model, juridical base and replace-ability, frequency and way of transferring. In total, 193 stakeholders responded. Figure 2 just presents one of the application results. This figure shows all the parcel data flows within Flanders. The upper triangles represent the federal authorities, the squares the Flemish bodies and departments, the lower triangles the provinces, and the circles at the bottom the municipalities. On the basis of this figure, detailed analysis show the different data policies of the Flemish departments, and the different policies of the provinces to the municipalities. These results show that there is still no consistent data policy in the context of parcel data exchange.

The poster will present the concept of SDI as network approach and present also the main results of the network analysis.



*Figure 2:* Overview of parcel data flows within Flanders.

## BIBLIOGRAPHY

- Bouckaert, G., J. Van Orshoven, J. Dumortier, G. Van Hootegem and C. Macharis, 2006 Spatial Data Infrastructure and Public Sector Innovation. SBO Project proposal, pp 123.
- European Commission, 2007 Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), L108/1
- Kok, B. and B. van Loenen, 2004 How to assess the success of National Spatial Data Infrastructures? Computers, Environment and Urban Systems 29: 699–717.
- Rajabifard, A., M-E.F. Feeney and I. Williamson, 2003 Spatial data infrastructures: concept, nature and SDI hierarchy. In: Williamson, I., A. Rajabifard. and M-E.F. Feeney (Eds.). Developing Spatial Data Infrastructures: From Concept to Reality, CRC Press, Boca Raton: 17-37.
- Tulloch, D. and F. Harvey, 2007 When Data Sharing Becomes Institutionalized: Best Practices in Local Government Geographic Information Relationships in Journal of the Urban and Regional Information Systems Association, 19(2): 51-59.