Co-creating SDI's: Bridging the Gap between Organizational Cultures

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SUMMARY

Spatial Data Infrastructures are coming of age. In the Netherlands we have reached high levels of maturity for all the original aspects normally attributed to SDI's (data, standards, technology, people and policies). We have learned, however, that this is not enough. Making SDI's successful in society requires that all partners in this SDI effectively work together. We have experienced that collaboration or co-creating is not simply achieved by defining shared objectives between partners and trusting each other. Actually we are still learning how to better cooperate with our partners.

In our presentation we will focus on the lessons we have learned and the patterns we see emerging for successful partnerships. Starting point is the contribution of the analysis in information chains presented at the FIG working week in 2008 (De Bree, Eertink, and Laarakker). Since then we have embarked on a nationwide collaboration of all national public agencies that contribute to our Netherlands' SDI. There we have learned that a number of elements should be in place at all times during the implementation of an SDI: namely vision, necessity, incentives, resources and a plan. We will share our experiences in this field. Much has to do with bridging the gap between sometimes century-old agencies and accommodating different cultures and interests.

In this paper it is concluded that judging the success of collaboration in SDI's, one should take into account the maturity of the environment in which the developments take place. Once all basic elements of an SDI are in place the aspects related to the governance of the collaboration will become increasingly important. We have found that working together in co-creating our SDI is not simple, often adventurous, but can also be analysed in a professional manner.

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1. INTRODUCTION

In the past years we have seen an increasing number of initiatives in the geo-information sector towards information chains, integrated geo-information policies and lately geo-information networks. The focus in Netherlands has shifted from establishing the basic components of a national (and European) Spatial Data Infrastructure towards processes dealing with spatial information. In these information chains and networks parties are working together. Interoperability in a technical sense is a starting point, but more and more we also have to take into consideration aspects of interoperability of processes and organizations. We have found that bridging the gap between organizational cultures is probably more challenging than solving technical issues. In this paper we share our experiences in creating information chains and networks. We have learned by trial and error, by analyzing best practices and looking into the theory of chain integration.

We start our contribution by looking into the policy context in the Netherlands. Then we revisit the results of an earlier research of geo-information chains by De Bree et al (2008) and then will discuss our findings of a recently established network approach to geo-information.

2. SDI POLICY IN THE NETHERLANDS

The Netherlands have over the years developed a consistent vision in how to create a spatial data infrastructure. Primary focus was on data, standards and technology. The aspects of policy and people (the two other elements required to make a SDI truly operational) have only received sufficient attention in the past 5 years. In 2008 the then existing Ministry of Housing, Spatial Planning and the Environment drafted a policy document on the Netherlands' SDI (Ministry of Housing (2008)) driven by the European INSPIRE directive and the then running national research program on geo-information (RGI). The resulting Gideon policy document gives an overall strategy to define, implement and use the national SDI. Gideon has put the focus on policy, supply and demand for the benefit of society. The Gideon strategy is based on 7 tracks:

1. To give geo-information a prominent place within e-services;
2. Encouragement of the use of the existing key geo-registers (cadastres, topography, buildings, and addresses) and to set up two new ones (large scale topography and sub-surface);
3. Embedding the INSPIRE directive into Dutch legislation and to implement the technical infrastructure;
4. Supply-optimization by forming a government-wide geo-information facility, which is to include geo-data standardization, new infrastructure, and collaborative maintenance;
5. Encouragement of the use of geo-information in numerous government policy and

implementation chains, such as safety, the sustainable living environment, mobility, and area development;

6. Creation of a favorable climate for adding economic value to available public geo-information;
7. Encouragement of collaboration in knowledge, innovation and education, for the permanent development and renewal of the key geo-information facility for the Netherlands.

Evaluating the state of play in 2011 we experience that the first four strategies (which are primarily supply driven) are successful, whereas the use in information chains and value creation (the demand side) show a slow start. These findings correspond with earlier results of the investigation in information chains we address in the next paragraph. Demand driven development requires a lot of elements to be in place in order to be successful. The Netherlands' government has come to the conclusion that it will focus on optimizing the supply side with the purpose of creating an effective public sector information infrastructure.

3. COLLABORATION IN CHAINS

De Bree et al (2008) have extensively investigated the collaboration in geo-information chains in The Netherlands based on the premises that collaboration is a critical succes factor for effective SDIs.Their methodology was based on the EFQM excellence model (www.efqm.org). The EFQM model is an evaluation framework for assessing a organisation's actions (enablers) and its achievements (results) (see Figure 1). For both aspects 'hard' and 'soft' measures are taken into account. Although the EFQM model is optimized for organizations, it was applied to the chains in the NSDI as if they were organizations.

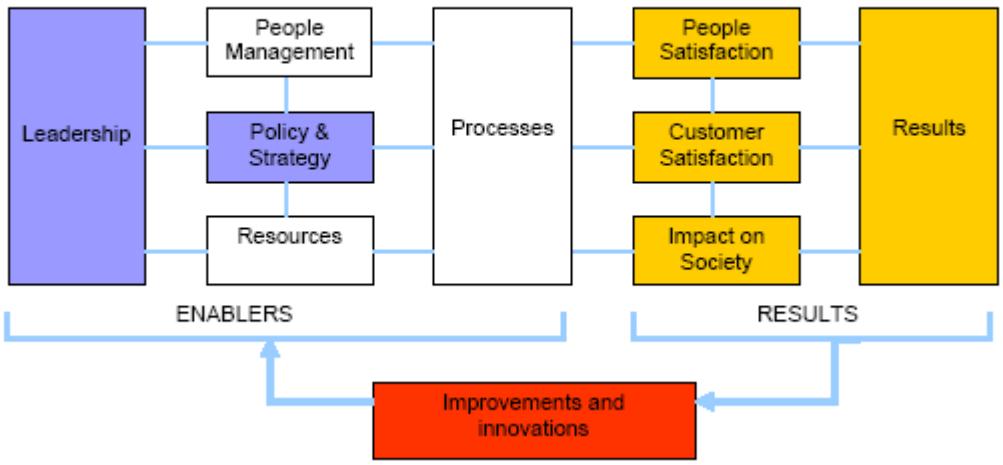

Figure 1: structure of the EFQM-model.

The study found that that the main obstacles for effective collaboration were:

- Absence of a shared view on the dominant chain problem;
- Unclear definition of the chain processes;

- Lack of confidence (trust) between actors at the level of the chain, organisations and operations;
- Lack IT-resources and standards.

Main recommendations were the setting of priorities for a few specific chains at the NSDI level and structurally improving collaboration in these chains.

The findings of the research are given in Figure 2.

Figure 2: Lessons learned in the analysis of chains (considering the enablers for an organization in the EFQM model).

These findings are substantiated with the more general theory on chain analysis (Grijpink, 2010). Grijpink indicates that a dominant chain problem is key to successful chain integration. A dominant chain problem is a recurring issue (or problem) that cannot be resolved by a single organization within the information chain and which when it occurs causes high risks or compromises the chain. The dominant chain problem becomes the 'owner' of the chain, thereby making overall leadership or authority of the chain impossible. Grijpink (2010) has found that risks, image, and political pressure are good breeding grounds for dominant chain problems (and these can often be found in realm of (public) security and health). At the same time efficiency, effectiveness, cost, benefits, and regulations are not. Reconsidering the chains investigated by De Bree et al (2008), this to a large extent explains the lessons learned (in particular related to leadership and strategy).

4. FROM CHAINS TO NETWORKS

In the framework of the Gideon strategy in 2009 an initiative was launched called 'public services with digital maps' (PDOK). Objective was to create a national shared geo-information service which would result in a sharing of resources and thereby creating a more cost-effective government. The public parties involved in the Netherlands' geo-sector saw the political drive to a more cost-effective government as a driving incentive to pool their resources and to create the infrastructure of a spatially enabled government themselves. Moreover the legally required implementation of INSPIRE (Reuvers, 2010) was an incentive. The PDOK initiative is characterized as follows:

- It is supported by a sound legal and policy framework (INSPIRE, Public Sector Information, eGovernment, Gideon SDI-policy).
- Its deliverables are integrated and coupled data and services.
- It supports the ongoing government reform (focussed on efficiency).
- It is an initiative taken by the public geo-sector: achieving results by working together.

What is special about the PDOK initiative is that parties acted as *partners*, thereby creating a network.

Partners of the PDOK initiative are:

- Ministry of Infrastructure and the Environment: policy and program sponsor;
- Public Agencies
  Geological Survey (TNO)
  The Government Service for Land and Water Management (DLG)
  Directorate-General for Public Works and Water Management (Rijkswaterstaat)
  Cadastre, Land Registry and Mapping Agency (Kadaster)
- Ministry of the Interior and Kingdom Relations: launching customer.

What stands out that these are very substantial partners indeed, giving the partnership a lot of impact, but at the same time it has to be kept in mind that some of these agencies date back to the time of Napoleon and cherish their roles and identities.

4.1 Business case and public case and driving issues

The ***business case*** for PDOK is basically centred around *efficiency* (cost reduction). Issues addressed involve re-use of components, sharing of facilities, sharing of data and thereby enabling working with less resources (be it people or operational costs). Savings are to be achieved by doing things only once and being more efficient for each partner's specific public tasks.
The reasons the partners also embarked on this path is the ***public case***. By creating a public shared geo-information service not only the partners themselves would benefit, but all governments and society at large. The services of PDOK would become available to all (and thus creating benefits outside the scope of the partners). Furthermore it is felt that by cooperating within the central government the geo-sector itself could underpin a *sustainable* SDI.
Taking the business and public case together the leading mantra for PDOK is: "smaller and better".

In setting up PDOK the following issues were and still are addressed:

- Who participates (both at the supply and demand side)?
- Conditions of sharing data (harmonisation; access regimes; business model)
- Sound business case at all levels;
- Setting up of services (empowering demand; considering effect on existing arrangements and business models partners);
- Stay in sync with INSPIRE and eGovernment requirements.

4.2 Assessment of networks

In general networks work based on:
- trust and
- shared objectives.

At the same time it is known that networks can be weak. In order to assess the vital strength of a network we have used a methodology described in (DEC, 1996). It is based on the assumption that a number of elements should be present in order to make networks successful (see Figure 3). Note that these elements should be present all along the cooperation and at all chain partners.

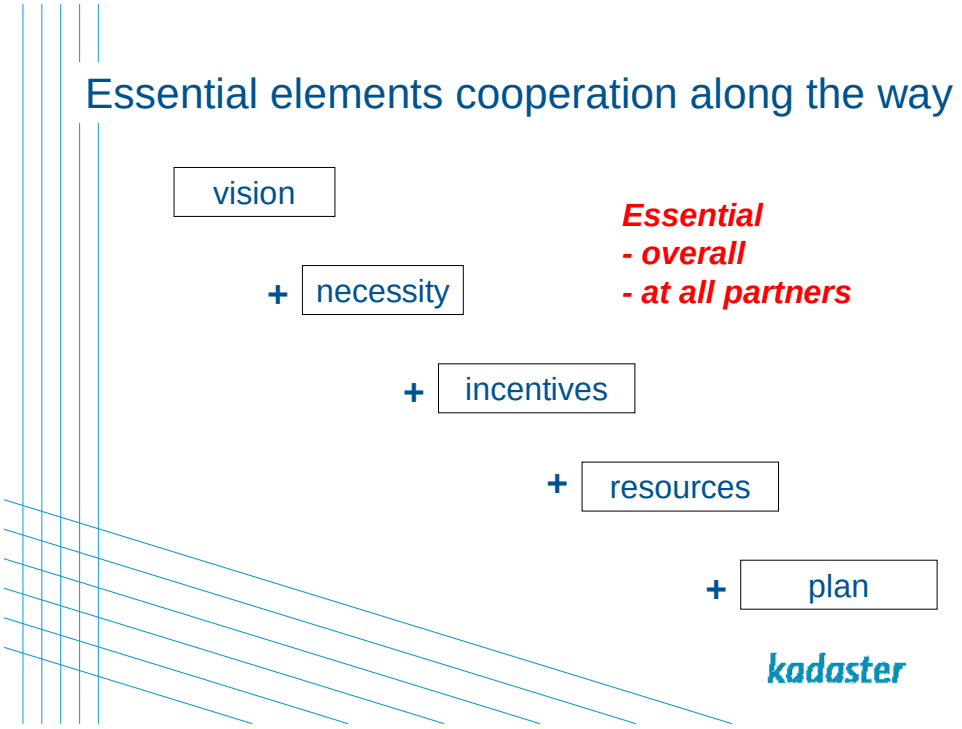

Figure 3: Essential elements in making networks successful.

If one of the elements is absent the following will happen (see Figure 4):

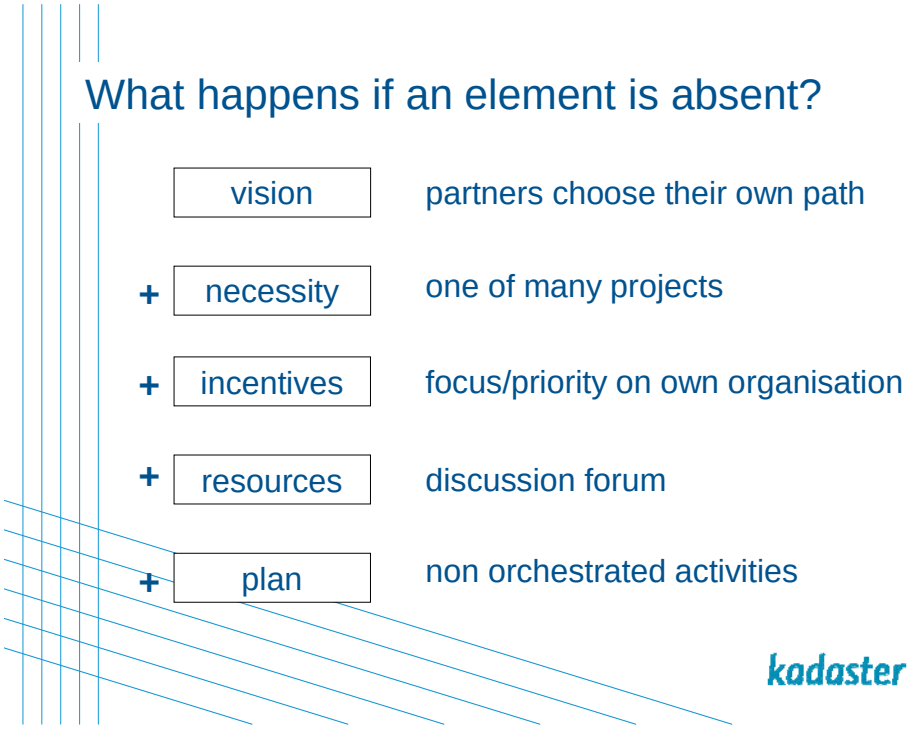

Figure 4: effect if the indicated element of cooperation is absent (e.g. without necessity the network collaboration will only be one of many projects).

4.3 Lessons learned

We learned the following lessons related to the key elements the PDOK program:

- Vision: The partners tended to focus on their long-term benefits. This has led to high expectations with potential users. The solution was to formulate shared, realistic objectives and the action taken was to be realistic in the short term and to manage expectations.
- Necessity and shared incentives: In executing the program a loss of focus on shared objectives was looming as most partners were focusing on their own pressing needs. The solution was to agree on and stick to *shared* needs. This required leadership at the executive level and setting the agenda and focusing on the legally required implementation of INSPIRE, making accessible geo-information of key-registers and getting geo-information embedded in government services.
- Resources: A permanent competition for resources at partner organizations had to coped with. Solution was to prioritize resources related to the program. The action taken was the actual allocation of resources within each partner organization.
- Plan: Based on the ambitious goals at the outset, (too) many activities were launched. Solution was to keep it simple and to operate in steps. Furthermore the action was taken to implement professional project management.

In practice within the program the lessons learned were experienced as:

- Take care essential elements are all simultaneously in place;
- Reassess status of the program and its progress periodically;
- Make sure that all partners are fully committed;
- Accept that individual interests of the partner organizations exist;
- Start small, develop step by step, grow later;
- Not all partners are equal (accept different roles);
- Take the lead as partners (let not expectations lead you);
- Let trust develop (the proof of the pudding is in the eating).

These lessons coincide nicely with the findings of the geo information chains. Without a dominating chain problem partners will focus on their own issues and operate based on their traditional manner (based on their existing organizational culture).

4.4 Recent developments

After having put into place the actions resulting form the lessons learned, the PDOK program has received a boost. Government budget cuts and the introduction of a policy that all activities should be executed only once and at one agency made the necessity for collaboration larger. Basically this had led to a dominant focus on efficiency and organizing your SDI smartly. Combined with the already legally required implementation of INSPIRE the program has gained focus and momentum. At the same time it has really led to reconsideration of which agency should do what and how we should (re-)organize our information chains in our SDIs.

5. CONCLUDING REMARKS

The growing maturity of spatial data infrastructures leads to increasing collaboration in chains and networks. We have experienced that this not automatically leads to success. For success a dominant chain problem or pressing need has to be present.
This is substantiated by investigations we have done in chains and the current SDI-project we execute in the Netherlands. For both chains and networks we have found methodologies for assessing the success- and failure factors. In both cases we have found that a number of essential aspects should be balanced. Using analysis tools from literature have enhanced our understanding of the underlying mechanisms.
Overall we have found that in both theoretical approaches and in practice that a dominant problem or issue, a shared vision between parties, embedded at all levels of the organizations and sufficient resources are essential for successful collaboration.
Specifically in our network case strong (external) requirements as the implementation of INSPIRE combined by a fundamental reorganization of and budget cuts within the public sector make that all aspects of successful networks are met, although part of the solution is also to revert to somewhat more classical, hierarchical solutions. In any case the governance and ultimately the culture of our organization will be affected, but how is dependent on the issue at hand.

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BIOGRAPHICAL NOTES

Martin Salzmann is director of strategy and policy with the Cadastre, Land Registry and Mapping Agency (Kadaster) of the Netherlands. He is deeply involved in the development of eGovernment (including Spatial Data Infrastructures) in the Netherlands. In the past Martin has worked extensively in the fields of quality assurance of cadastral surveying and mapping, information strategies and marketing before moving into the realm of strategic planning and eGovernment.

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