

# Cooperation – Key Factor for a Sustainable Spatial Data Infrastructure (SDI)

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**Abstract.** In Sweden, there is a lot of focus upon modernizing national databases with spatial data where new technologies, SDI-concepts and cooperation are essential parts. Our history in this field, particularly concerning cadastral information, has shown us that cooperation is a crucial and complex factor that needs extra attention. This has inspired a research project that is looking into problems of cooperation about spatial information. The research project itself is in its early stages and this short paper describes background and project plan with some comments added.

## 1 BACKGROUND

In many countries as in Sweden, no single party can by itself handle all stages in the nowadays quite complex administration of spatial information. Cooperation is therefore an intensely discussed and used method for production and further management of spatial information. Complex interrelationships can however often occur in this field. Not only the cooperating parties are concerned but there are also other actors of importance. One, the government, stands for power and decisions and is setting many rules affecting handling and use of spatial information. In the other end is the “market” which ultimately should set the agenda. In between is some sort of association of organizations for which good cooperation is a critical factor of success.

There has been a feeling that better understanding of the mechanisms behind cooperation within spatial data administration and the creation of national spatial data infrastructures can give useful guidance to increase efficiency and benefits within this area. This general feeling has in Sweden been severely strengthened by early experiences from cooperation between the National Land Survey and the local authorities (municipalities) concerning cadastral issues, especially formation of the so called national cadastral index map. When now further steps are taken in direction of a SDI concept, questions of cooperation has rapidly come into focus.

## 2 THE RESEARCH PROJECT

The aim of the project (PhD) is to highlight the role of cooperation as key factor for further development and increasing benefits from spatial information in a broad sense. Hopefully the project will contribute to the answer of following questions:

- How should a dynamic and sustainable network for spatial information between cooperating organizations be implemented?
- A recognizable trend is that large governmental databases are questioned and instead sharing and supplying data in a distributed network is more and more discussed. What is demanded in terms of cooperation of such a distributed network?
- Cadastral information is considered to be key information in many business activities with reference to spatial information. Can experiences from this field be of value in a broader perspective?

The project research design consists of a multiple case study focusing on cooperation within large “SDI-projects” in Sweden and other countries. The project will also include literature surveys, interviews and contacts with relevant people and organizations.

## 3 COMMENTS

In Sweden we gained valuable experiences of cooperation when the new national cadastral index map was established. Both governmental and municipal organizations as well as private firms have been involved in this process. However, we have seen that the need of cooperation does not disappear when the basic agreements about establishment and maintenance are signed. For example, effective cooperation between key individuals in the participating organizations is considered to be very important during the implementation phase. This fact along with other aspects of cooperation during especially the implementation phase will be shown special attention in this research project.

The project is in its early stages and its first phase is a problem analysis which includes mapping relevant research and experiences of at least three kinds:

- General research about cooperation
- Research about cooperation in handling spatial information
- Other relevant experiences and findings

One early finding is that there is a lot of interesting general research about cooperation that might be relevant and useful in the area of handling spatial information. Another finding is that theories about Complex adaptive systems (CAS) probably can be very relevant in the SDI context and also facilitate understanding of the importance of cooperation in this field.

From a Swedish perspective there exists a lot of pragmatic experiences about cooperation that is either not documented at all or at least very little known. To summarize such knowledge can be valuable in many respects and perhaps show interesting patterns.

One early indication in this project is also that cultural differences between cooperating organizations can be a critical factor of success. Cooperation is often prepared and decided by the involved managements but the practical execution is often left to existing working units at low level. They are often not prepared for new and challenging tasks in the best way and often existing cultures can be a problem.

Cooperation is a broad interdisciplinary subject and it is important to look upon relevant questions from different angles.

## REFERENCES

- Augustinsson S (2006). Om Organiserad Komplexitet – Integration av organisering, lärande och kunnande (PhD). Luleå University of Technology, Sweden.
- Axelrod, R (1984). The evolution of cooperation. Published with arrangement with basic Books, inc., New York, N. Y., U.S.A.
- Axelrod, R (1997). The complexity of cooperation. Princeton University Press, U.S.A.
- Carter J.R. (1992). Perspectives on sharing data in geographic information systems. *Photogrammetric engineering and Remote Sensing*, 58 (11), 1557-1560.
- Grus, L., J Crompvoets and A Bregt (2006). Defining National Spatial Data Infrastructures as Complex Adaptive Systems. GSDI-9 Conference Proceedings, 6-10 november 2006, Santiago, Chile.
- van Loenen, B. and B.C. Kok (eds.) (2004). Spatial data infrastructure and policy development in Europe and the United States. DUP Science, Delft University Press.
- McDougall, K., A Rajabifard and I Williamsson (2005). Understanding the Motivations and Capacity for SDI Development from the local level. FIG Working week 2005 and GSDI-8.

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Miller J. H. and S. E. Page (2007). *Complex Adaptive Systems - an introduction to computational models of social life*. Princeton University Press. Princeton and Oxford.