Spatial data lending facility – Test service for comparison of GI data sets

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SUMMARY

Research, development and education throughout Europe suffer from the poor availability and pricing policy of spatial data. The Finnish National Geographic Information Strategy 2005 – 2010 identifies a new service type that fits together the needs and requirements of both data producers and users. The approach of the 'Spatial Data Lending Facility' is new: a library of data sets where various producers can deposit their data and from where registered users can search and lend data for testing, research and development for a limited period of time. The idea and implementation of the service has been piloted since the year 2003 and the feedback has been very positive both among data producers and users. In the future, the service is provided nationally together with viewing and metadata services identified also in the INSPIRE proposal.

KEYWORDS: *INSPIRE, strategy, data availability, NSDI, spatial data service, download*

INTRODUCTION

Throughout Europe, the users of geographic information suffer from the high prices of spatial data sets, even when data is produced by national, governmentally funded institutes. This is particularly evident in fields that operate with limited resources but require data with highest quality, like education, research and development, but affects also the competition potential of private enterprises and the efficiency of governmental sector. The kick-off of many academic research projects and the development of new innovations would be faster if existing spatial data sets were easily available for evaluation, comparison and testing the data in practice.

The INSPIRE directive proposal identifies the data availability impediment from the viewpoint of public administration and proposes a set of network services that at national level could improve the situation (Commission of the European Communities, 2004). In the proposal, Data browsing and metadata services are suggested to be freely available, while the access to and price of download and transformation services are to be defined nationally. In many countries, the debate is ongoing on the final pricing of the actual data sets. It is also unclear, how the "public authorities" of INSPIRE directive will be defined in each country and what is the position of the academic world, education or private businesses as users of the services.

Already freely available and comprehensive metadata about different datasets would assist considerably in evaluation of possible data sources and the efficiency of work. The evaluation of 'fitness for use' is, however, often difficult with databased information only. The selection process is considerably enhanced if visual representations of the data are available and even more if spatial overlays of the data can be made (Ahonen-Rainio 2005). We believe that test data could make the selection process even one step easier, and more user-oriented.

During the preparation of the Finnish National GI strategy 2005-2010 (National Council for Geographic Information 2004), the conflict between the interests of data producers and data users was acknowledged: Data producers, both public and private, generally need to keep the price tags on their data sets, while the users wish at least to test the data sets and their suitability before the purchase.

Consequently, a need for a service additional to those presented in INSPIRE was identified: a service that allows the users to freely download spatial data from a test region and to use them for research, development, education and testing would be a solution for the problem.

In 2003, the Finnish National Council for Geographic Information decided to pilot the service idea in practice. The service was set up with the name Spatial Data Lending Facility, and it consisted of 1) the set of operational rules and 2) the technical implementation. In this paper, we describe the piloting of this service idea and the experiences that were gained.

SETTING UP THE OPERATIONAL RULES

A steering group collected from representatives of national data producers formulated the operational rules for the service. According to the rules, all data from different producers are welcomed. The service distributes the data sets as given in by the data producers. This means that no transformation services are provided, to ensure the original data quality. All data is provided from the same region to allow overlapping and joining of data sets. The actual test area is c. 40 000 km2 / 200 by 200 km in size, and located in SW Finland. Additionally, four smaller data windows are identified for those data producers who feel that the test area is too large. These windows cover different landscape types: 1) coastal region, 2) urban landscape, 3) inland forest with conservation areas and 4) a mosaic of agricultural and forest landscapes.

Operational rules were defined also for the users of the system. After registration, the users are allowed to download freely data from the service. They can use the data for testing and evaluating, for scientific research and education and for development of new commercial products. After one year, the users are obligated to delete the files. In case the use of certain data set will leave to a commercial product, or the data is to be published, the user is obligated to contact the data producer and purchase the data. The data users are obligated to give feedback on individual data sets and the functioning of the system if asked for. The same operational rules are accepted both by udders and producers of the system.

TECHNICAL IMPLEMENTATION OF THE SERVICE

The secretariat was assigned to the University of Turku, department of geography, who began with the technical implementation of the service platform and invitation of data providers to share their data.

A site for the service was built (http://paikkatietolainaamo.utu.fi) with the objective that it should allow easy and interactive searches of interesting data but also define the basic rules so clearly that both data owners and users could be committed to the rules (Fig 1). To enable data discovery, a simple database for metadata was created following the ISO 19115 standard. This database can be queried with php-forms that are provided in the website. In addition, an interactive map service is maintained and the users are allowed to overlay different datasets. These two services are linked together and allow the comparisons and pre-evaluation of data, already on-line (Fig 2). Both metadata and map search allow the registered users to download the data to their own computer, in the exactly same form that the data provider has intended.

To increase the respect towards the one year lending time, both users and data providers are given information about the downloads. In practice, each download is automatically registered to the database with the user and data provider ID numbers. Users are given an opportunity to see their “loans” and their expiry date. Before the one year testing period is ending, they are also reminded automatically by e-mail. The users have to confirm the deletion of the original files and all their copies, or their username is disabled. Data providers are given access to the download registers of their own data sets.

The service has been operational since September 2003.

RESULTS: SUCCESS WITH DATA PROVIDERS AND USERS

Currently, the service shares hundreds of data sets from almost 20 data providers (see also Kalliola & Toivonen 2004). Both national (Finnish Environment Institute, Finnish Meteorological Institute, Finnish Geological Institute, National Land Survey, Statistics Finland and Metsähallitus) and regional (the Regional councils of Häme, Satakunta, Pirkanmaa, Varsinais-Suomi) governmental institutes were well represented, but also companies (Genimap Oy, MarknadsAnalys Finland Oy) had given their data sets for testing. Furthermore, two municipalities of the region (cities of Turku and Uusikaupunki) had shared some data.

In the first six months, more than a hundred users acquired the use permit and thousands of downloads were reported to the data providers. After the first half a year, the user profile of the service was studied. Most users considered themselves as professionals in the field of geoinformatics, mostly representing the environmental sector (36%), GI research and development (29%) or social sector (29%). One third of the users interviewed used the data for education purposes, while technical development or scientific research was mentioned in 29% of answers, respectively. In all, the 86% of the persons interviewed considered the service to be very useful, while the rest 14% were positive as well, but with certain qualifications.

Based on the acceptance of the pilot among the data providers and the data users during the pilot, the idea of spatial data lending facility was included in the National GI strategy of Finland 2005-2010 (National Council for Geographic Information 2004) (Fig 3).

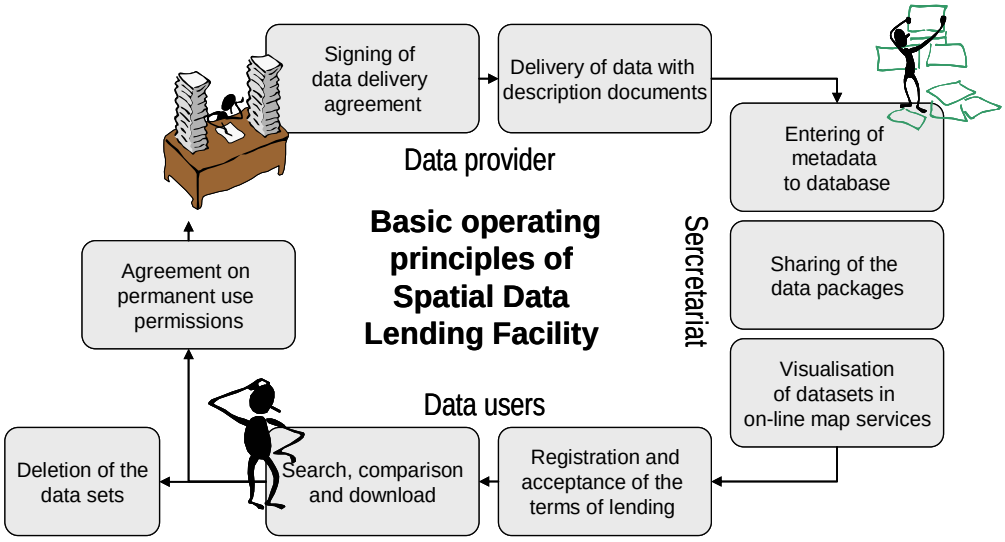

Figure 1: The basic operating principles for the Spatial Data Lending Facility.

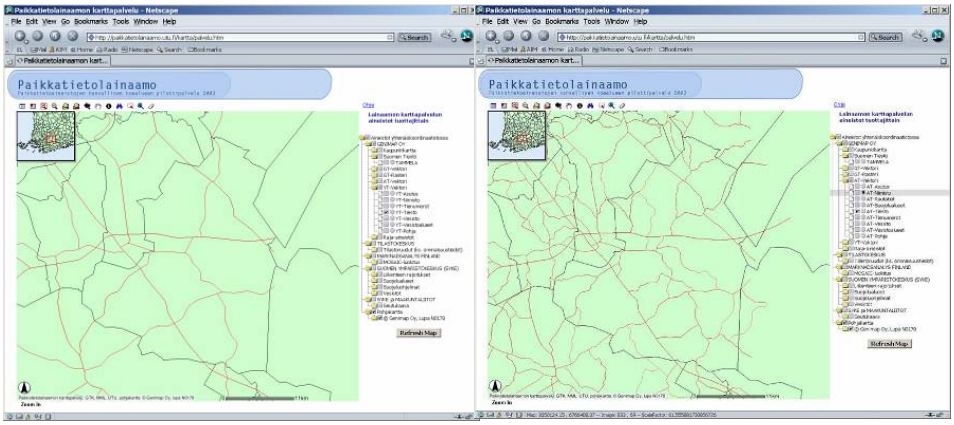

Figure 2: The map services of the service allow the selection of data of interest and comparison of different data sets of line. Here, two road networks of different data providers are presented.

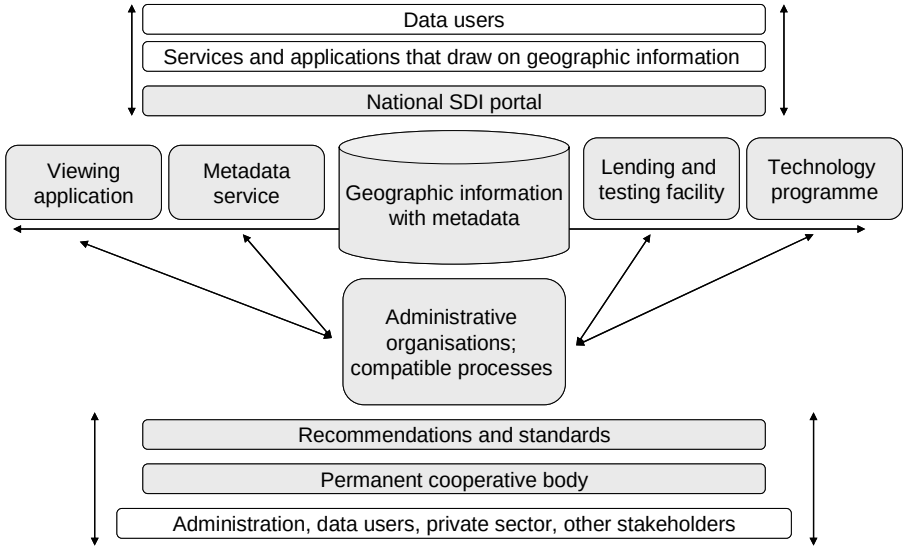

Figure 3: Model of the Finnish National Spatial Data Infrastructure, where lending facility is one of three network services (after National Council for Geographic Information, 2004).

CONCLUSIONS ON THE BENEFITS OF THE SERVICE

The poor availability of data is widely considered as a hindrance for effective progress of the society. Consequently the establishment of spatial data infrastructures for different themes and different regions and with varying set of services is a hot issue (e.g. Nebert, 2004; Nurmi & Kalliol,a 2004; Onsrud, 1998). Based on our experiences with piloting the Spatial Data Lending Facility, this type of approach could be applied more widely when setting up the spatial data infrastructures.

The pilot period proved the benefits of the lending concept:

- The selection of data sets for purchase is improved when the data can be used together and tested in actual use cases beforehand
- Education of geoinformatics can base on national, operational data sets instead of sample data by software companies
- Methodological research on geoinformatics is facilitated by a large set of data and alternative representations of the same themes
- Data providers are given an opportunity to market and to gather information about their data sets
- Well planned follow-up system of downloads is attractive even for the commercial data providers, allowing a wider comparison of data sets

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