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**REPORTS ON ACHIEVEMENTS IN GEOGRAPHIC INFORMATION IN ADDRESSING
NATIONAL, REGIONAL AND GLOBAL ISSUES, INCLUDING: GEOSPATIAL DATA
COLLECTION, MANAGEMENT AND DISSEMINATION**

Geospatial services in Northern Germany

(Submitted by Germany)**

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GEOSPATIAL SERVICES IN NORTHERN GERMANY

- REGIONAL SDI -

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ABSTRACT

The City of Hamburg and the federal state of Schleswig-Holstein will launch new sales services for geospatial information. These two states of the Federal Republic of Germany are going to bring geoinformation to customers like government, business and citizens by several services which are combined in one system named "GEOSERVER/internet based distribution system". Five ways of distribution are defined.

The system will provide both, the basic data of the surveying administration as well as the spatial data of other administrations as there are environmental, business, planning, traffic, statistic and other data. Moreover, there are planned additional services for three-dimensional data and special services for private licence surveyors.

The solution will be developed multi-tenant in order to make it possible to use it in other states, too. The decisive factor is that different data and services are to be found in one place using international standardized technique and unified pricing – to the benefit of the customers.

JUST IMAGINE...

The consulting engineers of 'Quickplan' need a planning basis for some projects. The employee Mr. Looky contacts an internet based geo-portal, which helps him to investigate cadastral data, the valid legally binding land-use plan and information about available special requirements of the protection of historic monuments. This geo-portal tells Mr. Looky not only where the data are available but offers them as well: he can have a look at the spatial data, download and then work on the data at his own computer. He is also able to work with the data within the geo-portal. And he can order online large-sized plots, which are delivered rapidly.

JUST IMAGINE...

Mrs. Mercivul, the employee of an authority for building licences, would like to give a building permission to the married couple Mr. and Mrs. Young. Many other departments are to be asked if they agree. Much time passes, the citizen has to wait. How would it be, if Mrs. Mercivul would turn to the geo-portal, find all necessary information of the other agencies geographically correctly assigned, receive the associated factual information by simply clicking and get a complete overview whether she can give the permission to the young couple or with which selected agencies she would have to confer?

The City of Hamburg and the federal state of Schleswig-Holstein have designed together the technical solution for this tasks and obtain the GEOSERVER, the internet based publishing and distribution system, within the framework of building up their spatial data infrastructures. Taking advantage of the administration structure of a city which is also a state, in Hamburg the above described exemplary scenarios will be no longer an illusion in the near future.

INTRODUCTION

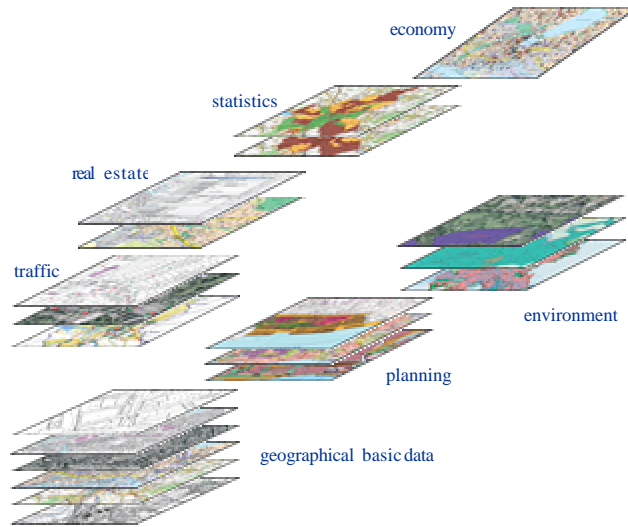


Figure 1: different kinds of geographical datasets in Hamburg

Geographic basic datasets exist in Hamburg and Schleswig-Holstein for more than 10 years in digital form, and in every department and office there are special geographic data, which so far are collected, processed and offered separately. Sometimes it is difficult to avoid doing the work twice.

Target groups for these data are not only authorities and their employees, which both offer and use the data, but also landowners, tourists and new citizens. Furthermore all professions, which have to do with real estates, are addressed to as well as environmental organisations, chambers, engineer and planning offices and many more. Furthermore in the future the group of geobrokers will be a focal point. These data refiners will use the supplies of different institutions, combine their spatial data and offer them within the framework of their solutions all over Germany and in the international community.

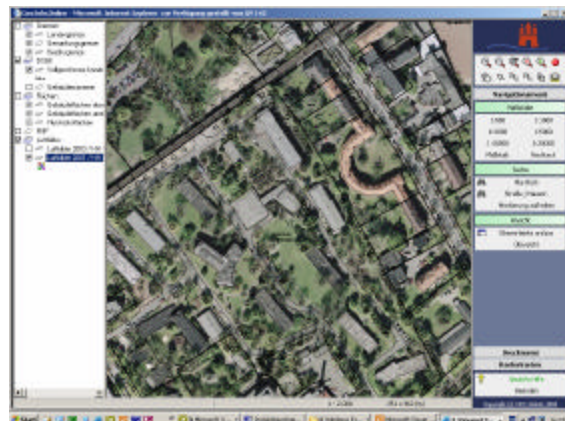


Hamburg has reacted early enough to the need of information and data and so the Hamburg meta data catalogue “HMDK” was created in the year 2000. It offers an overview of the available spatial data, but not the access to the data itself.

Figure 2: Hamburg meta data catalogue “HMDK”

With GeoInfo.online in 2001 an information system was launched, which contains some of the datasets described in the HMDK within the intranet being at disposal to the whole Hamburg administration. Meanwhile some thousand computers are connected to the system and more than 2.000.000 page views are counted. The rate of growth in the last 12 month was about more than 40%.

Figure 3: GeoInfo.online / GeoNord



Learning from this experience in 2003 a copy of GeoInfo.online was implemented in the internet under the label GeoNord because of business being in need of it. Both solutions, GeoInfo.online and GeoNord don't have sufficient security and don't offer online- payment.

One possibility to give access to the spatial data to other computers without user-interface was tested with a WMS under the label GeoInfo.mapservices and is nowadays in production. Today there is access only for a small number of users. The need is much larger. We also believe that the danger of hacker attacks is very great.

Thus a part of it was fulfilled, what is generally called special data infrastructure (official definition): The Hamburg spatial data infrastructure (SDI-HH) covers all political, institutional and technological steps, which guarantee that spatial data are available corresponding to the needs of administration, economy and society.

Part of the SDI-HH is an opened spatial data network which guarantees interoperability between the participating systems. This technology requires a department and office overlapping coordination. It is also a necessary contribution to the German spatial data infrastructure (SDI-DE).

In short: It must all be done to make the spatial data of the administration available to all which are interested in them.

Meanwhile this order has been given to all of the 16 states of the Federal Republic of Germany too.

In Schleswig-Holstein as well as in Hamburg it was realized, that more digital and internet based services are needed. Shop functionality to purchase readymade products (i.e. printed maps, but also brochures, books, etc.) and digital maps are one example for this. The experience, that hackers see a challenge in these unspectacular applications of the administration and the request for an easy and customer friendly access in combination with e-payment led us to the conception of the GEOSERVER and a feasibility study was made in connection with the e-government -gateway, a transition from the internet to the protected intranet of Hamburg and Schleswig-Holstein which is built on a very high security level.

The study shows the possibility, usefulness but also complexity of the integration of the GEOSERVER into the e-government -gateway. The special advantage is, that by the gateway only one installation for both, internet and intranet, is necessary. Soon after the main departments of Hamburg decided in favour of a common solution for reasons of economy which can be used by all departments.

As in Schleswig-Holstein a similar development was proceeding, cooperation between both surveying authorities was established at the beginning of 2004, the requirements of both states were bundled and a solution was made in consideration of the basic e-government-strategies of both states. This includes the replacement of the running services in Hamburg in order to get only one system in the end. This decision was supported by the fact, that Hamburg and Schleswig-Holstein have the same IT service provider and so high effects of synergy can be expected from a joint solution.

DESCRIPTION OF THE PROJECT

The efforts of the state overlapping working group led in July 2004 to the tendering procedure for the purchase of the „GEOSERVER of the surveying and cadastral authorities of Schleswig-Holstein and the City and State of Hamburg“. On 2nd of December 2004 the tender was accepted: a syndicate of 3 companies and 1 research establishment were asked to build up the system. The work began in January 2005, the prototype is expected within a short time and in 2006 the system should be launched.

In following steps from 2007 on three-dimensional data and other functions for special customer groups (i.e. land surveyors) should be added.

The integration into the e-government-activities of the metropolitan region of Hamburg is planned under the headline „ spatial data infrastructure of the metropolitan region of Hamburg“ by Hamburg and Schleswig-Holstein and includes a third federal state of Germany (Lower Saxony). This project is recognized as a “leading project“. This is a more data related project than a technical one.

A special focal point of the project GEOSERVER is the technical and organizational integration into the e-government-strategy of Hamburg and Schleswig-Holstein. Therefore the whole graphical user interface (GUI) and user guidance will be integrated in the e-government-gateway, a .net based framework for the handling of all e-government-business processes, which especially take into consideration the security aspects. This allows the connection of independent systems, too.

If a notary for example had to look into the land owner register and the cadastre he had to contact two different systems. In the future he will have to login only at the gateway and will directly get to both applications. A customer friendly and integrative solution.

Beside the technique the organisation is an important part of building up the GEOSERVER. The idea „we want to do it together“ in the heads of the Hamburg administration was fixed in the 3. e-government-action-schedule and is alive in the overlapping working group GIS. In Schleswig-Holstein it seems to be similar. The customer orientation is a focal point, new customer related economic models are necessary.

Existing solutions are to be replaced by the GEOSERVER and new projects follow the principles of the SDI and GEOSERVER just from the beginning. Examples are:

- the EU-Project FLOWS (Floodplain Landuse Optimizing Workable Sustainability, aims: improvement of the sustainable development in areas, which are endangered by floods)
- the SDI-MRH (provide spatial data within the metropolitan region of Hamburg)
- UmweltInfo.online (the present solution of the Hamburg environmental department, which will deliver its data into the internet through the GEOSERVER)
- the geodatabase of the Hamburg authority for river and port construction
- discussions are running about the system named MUSIS (Multifunctional Location Information System) with the Hamburg chamber of commerce

The aim is harmonisation beyond the boundaries of Hamburg und Schleswig-Holstein.

FUNCTIONALITY

The GEOSERVER as an integrated part of the respective e-government-application first of all is an information and sales system. In this case services and products can be offered, sold and delivered (both in digital form and as an analogous product). It depends on the product and the needs of the customers, whether there will take place a continuous digital distribution or whether the product will be sent by post.

To use the central infrastructure like e-government-gateway including online-payment saves the suppliers time and money and offers security and comfort. The GEOSERVER is available in both: internet and intranet. By the easy and combined access from online investigation (meta data) to the data itself we get a solution for a long lasting idea. Different rights for different usergroups save sensitive datasets.

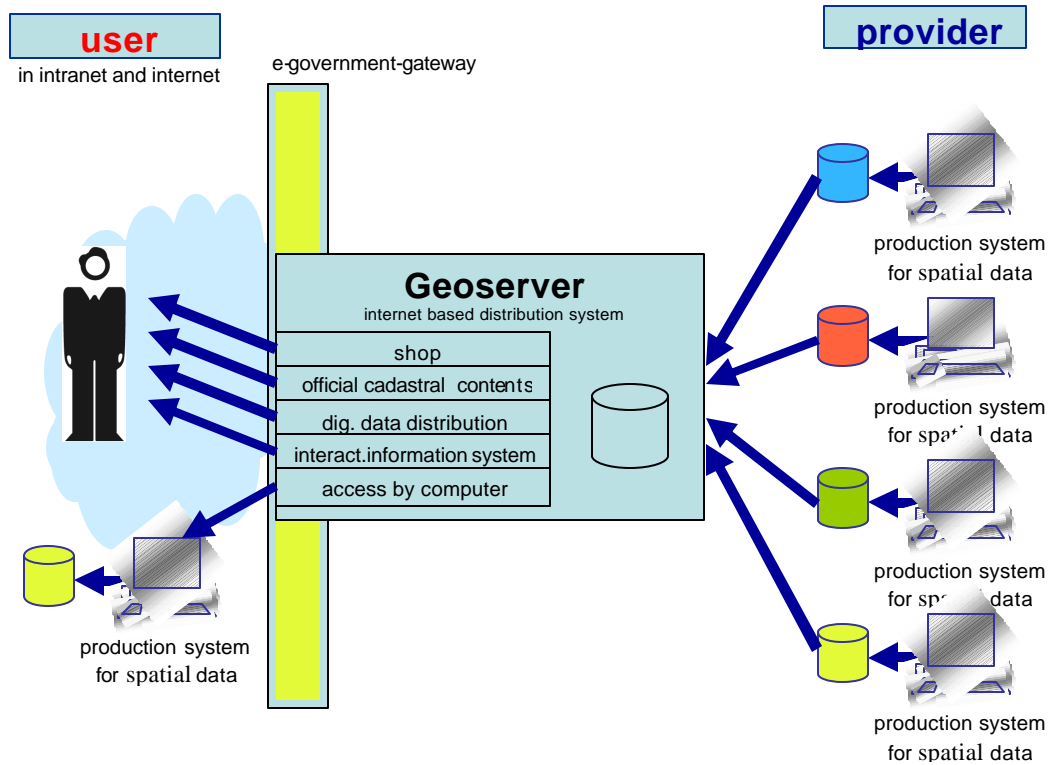


Figure 4: GEOSERVER principle sketch

Presentation and analysing system (replacement and expansion of GeoInfo.online):

The presentation and analysing system brings its own GIS software with it, including features like soil assessment functions, navigating, easy printing, overlay and measuring. This needs a comfortable graphical user interface.

Printing service for official cadastral maps and contents:

the printing service for official cadastral maps and contents are of restricted usability and will be made for the access of special usergroups.

Map shop:

The map shop for ready-made products (paper maps and CD-rom) which also will be used as a shop for non spatial products of the whole administration like brochures, books and so on.

Some more functions are needed in the system which are shown in the next figure:

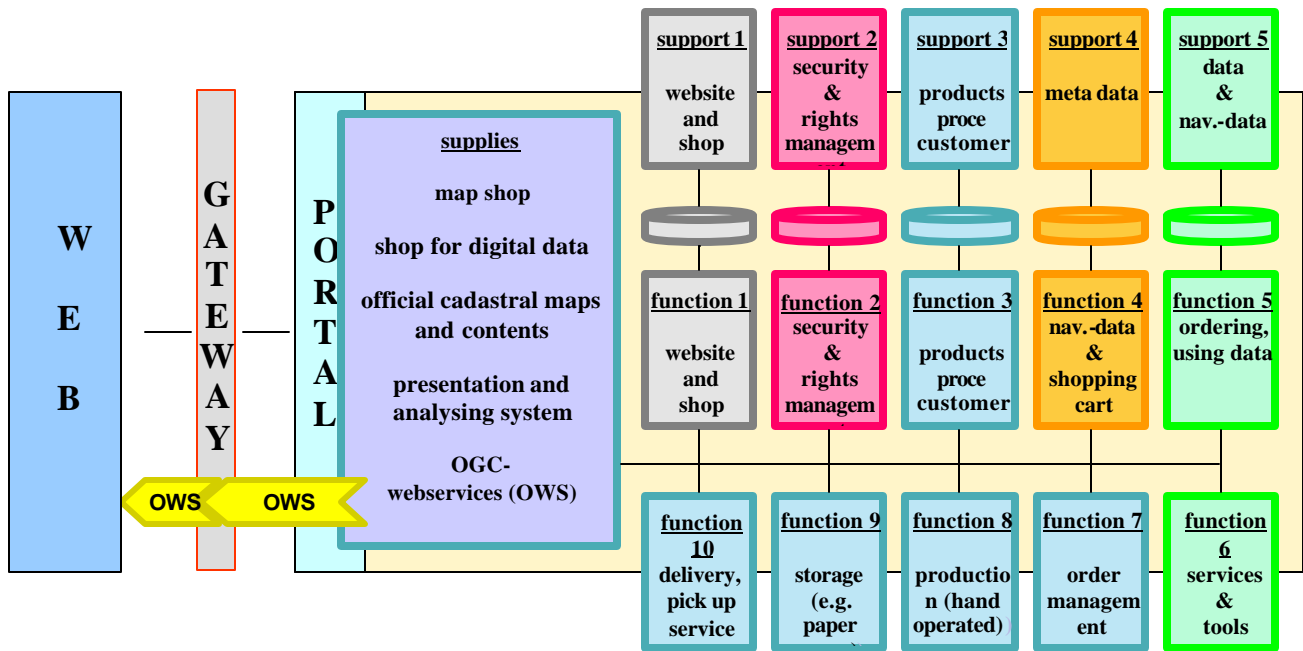


Figure 5: GEOSERVER technical components

SPECIAL FEATURES

The software is installed only once. But it is multi-tenant for different corporate designs and prices and rights of Hamburg and Schleswig-Holstein.

For the client-software only javascript is permitted, to avoid opening of customer systems.

The data which are distributed by the GEOSERVER must not be stored on it. OGC webservices are used to connect the data producing systems with the GEOSERVER. This gives maximum up-to-dateness for the user in combination with minimum expenses for the provider and supplier.

There is no basic difference between free of charge products and products with costs. Each has its own price, and sometimes even different prices for different customers.

ADVANTAGES

- One-Stop-Government: under the motto „data and services from one point“. The vision should become reality to give spatial data as an infrastructure to all people and organisations in an easy way.
- Integrated business processes.
- Saving money.
- Modernising the administration
- Integration into other SDI (INSPIRE, Germany, other cities) is possible by standardized webservices.
- Department overlapping.
- Only one system has to be supported.
- E-government -gateway as an integrative part: not only spatial data but all offers of the administration are found thanks to a single access point. Besides the e-government -gateway gives high security by three firewalls.

The decisive fact is that different data and services are found in one place within international standardized technique and unified pricing – to the great benefits of the customers.

OUTLOOK

The GEOSERVER is excellently suited for further development. The service orientated architecture with its modularly built up service-layers supports the integration of other services. Furthermore it is optimized for the extension towards automated e-government-processes, both by the easy learned user interface and especially by the computer /computer communication which is the trendsetting base for further automation. Further we are planning additional services for three-dimensional data and special services for private licence surveyors.

The project is economically wise and politically advisable. In Germany and maybe international too it is unique in its functionality and content and the state and department overlapping approach. At the same time it is an example for saving money by using multi-tenant systems.

The GEOSERVER constitutes the technical heart of the spatial data infrastructures of Hamburg and Schleswig-Holstein. It brings together the geographical basic datasets of the cadastral and surveying authorities and the special spatial data of other administrations by means of international standardized services (concept of services) and brings them to the user through one point of access (concept of portal).

For this a gold medal was won at the 5. German e-government-competition in March 2005.

The GEOSERVER is part of the federal initiative building the NSDI of Germany.

REFERENCES

[1] Schleswig-Holstein and Hamburg (2004). Conception of the GEOSERVER, unpublished