

E-Government and SDI in Bavaria, Germany

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SUMMARY

Spatial Data Infrastructure (SDI) is an important part of the e-government initiative of the Bavarian Government. Nearly all information and data used in the government administration have a direct or indirect spatial reference. The growing network allows access to information at different places and the combination of these data. The easy accessibility and the easy use of geodata is the major target of a SDI.

The establishment of a SDI in Bavaria (SDI-BY) is a joined task of all resorts of the Bavarian Government, the communes and municipalities, users and producers of geodata, the industry and universities. The SDI in Bavaria has to be fully interoperable with SDIs on national or european level like GDI-DE or INSPIRE. A lot of political, institutional or administrative efforts are put into the synchronization and harmonization of the developments of SDIs on the different levels and to achieve mutual collaboration of all the players involved. Bavaria is applying the pragmatic approach of the small steps to develop SDI. With the development of single projects oriented on the needs of users the concept of SDI will be proofed permanently, the usefulness of standards verified and practical experience gained to be used in further SDI projects.

A quiet impressive number of web applications and services have been developed and showing clearly the benefits of SDI and e-government for the citizens, the administration and the economy.

1. E-GOVERNMENT IN BAVARIA

E-government is one of the major steps in modernising the government administration. It provides administration services over the web. The administration services now come to the customers and not the customers to the administration. Online services are available 24 hours a day and 7 day a week. Before the services go online a decisive analysis and streamlining of the processes involved are carried out. About 80 % of all information and data used in the government administration have a direct or indirect spatial reference. A spatial data infrastructure (SDI) provides the needed geoinformation and geodata for e-government. The bavarian government introduced an e-government concept in 09.07.2002. with SDI Bavaria being an import part of it.

2. AIMS, BENEFITS AND BASICS OF SDI IN BAVARIA

2.1 Aims

SDI means easy access to and use of geodata (reference and thematic data) for the administration, economy and citizen as part of an efficient e-government.

2.2 Economical Benefits

SDI enables the online access to very up-to-date geodata of different data providers using web services. Therefore redundant storage of data is not more needed. With SDI-BY many goals of the e-government can be realized in an efficient and user oriented way.

2.3 Basic Rules

Some of the main important rules of the SDI-BY are:

- sticking to the principles of the European INSPIRE initiative
- building SDI-BY as part of German (Federal) Spatial Data Infrastructure (SDI-DE)
- building SDI-BY as part of the Bavarian e-government strategy
- stepwise approach by developing customer oriented SDI projects to gain the needed experience
- separation of data production and data distribution
- a close cooperation among the resorts and the players involved

3. ORGANIZATIONAL STRUCTURE OF SDI IN BAVARIA

3.1 Ministry of Finance

The Department 73 of the Ministry of Finance is in charge of establishing a SDI in Bavaria. It reports regularly to the Bavarian Board of Ministers, representing Bavaria in the steering committee of SDI-DE, representing Bavaria in the Taskforce to INSPIRE of SDI-DE. It coordinates SDI activities among the different resorts, defines strategic targets in setting up SDI. Additionally it keeps the contacts to the geoinformation industry.

3.2 Coordination Board

The Coordination Board consists of representative from each resort, from the central organizations of the municipalities, communes and districts, from the central organisations of the economy and from the economy chambers.

3.3 The Office Spatial Data Infrastructure Bavaria

The Office SDI-BY is the central office for all questions referring to SDI-BY. It coordinates and supports the building of a SDI-BY. Its main responsibilities are:

- o development and updating of a concept for building SDI-BY

- monitoring of SDI-projects
- Analysis and supporting the development of technical standards
- Development of application profiles out of a huge variety of standards
- Cooperation with other SDI initiatives, particularly with SDI-DE and INSPIRE
- Public relationship and advertisements for SDI-BY

4. STANDARDS

The use of international and mutually agreed upon standards and specifications is one of the corner stones of the success of SDI. It enables interoperability between different web services, web applications and other SDIs.

4.1 BayITS

The BayITS (Bavarian IT standards) specify the general IT-standards for the Bavarian administration and is therefore a basic element of SDI-BY. Presently, there are efforts going on to integrate geoinformation standards into BayITS, to make them more compulsory for the entire administration. When ever reasonable and possible, the federal recommendations on standards and architectures for e-government application (SAGA) will be considered.

4.2 Standards

There are three levels of standards, the national (DIN), the european (CEN) and the international (ISO). These are so called de jure standards and have to be considered in building SDI-BY. New developments are mostly based on pure international standards.

4.3 Open GIS Standards (OGC)

In addition to international standardization software developers, data users and providers and scientists have joined in the Open Geospatial Consortium (OGC) to specify software interfaces on the implementation level. These specifications are based often on the conceptual ISO standards. Examples are the specifications WMS, WFS, FE or GML.

5. CONDITIONS OF DATA ACCESS AND USE

One mayor part of SDI is the conditions of access and use of geodata and services. Up to now the development of international standards in the filed of digital rights management (DRM) is still in process. Existing solutions for the IT branch have to be modified and adopted to geoinformations. Others like authorization and authentication could be at least partly adopted.

6. BUSINESS MODELS AND DISTRIBUTION OF DATA

The SDI-BY offers a completely new way and concept of distributing geodata over the web. The great benefits still have to be communicated to the customers and data users in order to make full use of them. New business models still have to be developed by the participants in SDI. New add-on services are to be developed by third parties.

7. SDI APPLICATIONS AND PROJECTS

The SDI-BY will be set up and developed stepwise. With the development of single application oriented on the needs of users the concept of SDI will be proofed permanently, the usefulness of standards verified and practical experience gained to be used in further SDI projects and in update the concept on SDI.

7.1 SDI-BY Applications

There is quiet a number of existing SDI applications already available in Bavaria.

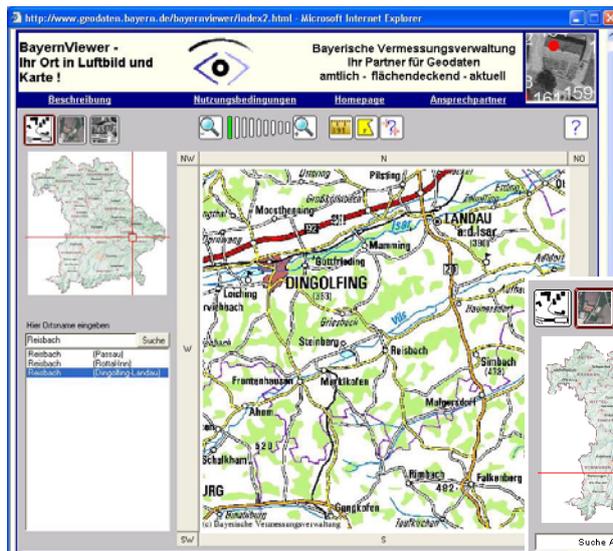
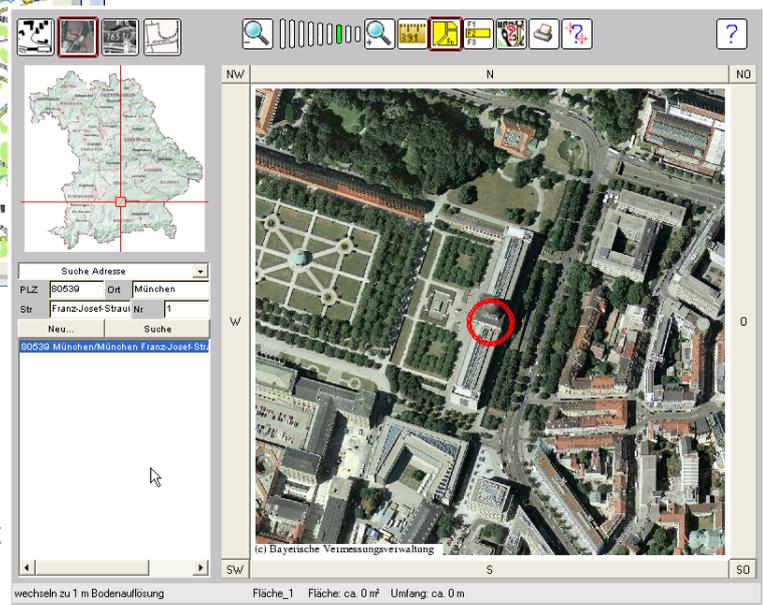


Fig. 1 BavariaViewer showing reference data (free of charge)

Fig. 2 BavariaViewer plus showing reference date in a fine resolution



The BavariaViewer-plus is using OGC-conformal web map services (WMS) to provide different layers of reference data. Additionally a Gazetteer service as a Web Feature Service (WFS-G) is realized to access about 3 Million of address data within Bavaria. There is a great demand for geocoded addresses of houses at the moment, because they are needed in many administration and business processes, like notification of move to a new residential place, finding an address in a navigation system, in rescue services, in police work and so on.

The examples below show the combination of reference data with thematic data from the field of environment and agriculture. The combination and superimposition of different layers make the data of wider use and creates a geodata added values.

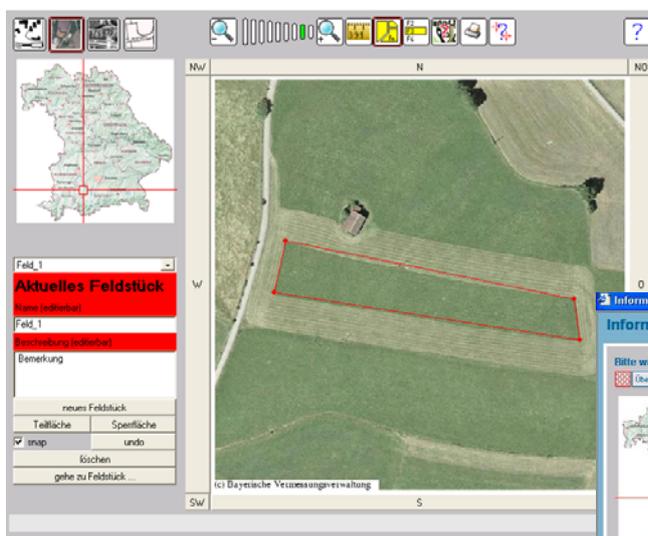


Fig.. 3: Application for agricultural subsidies

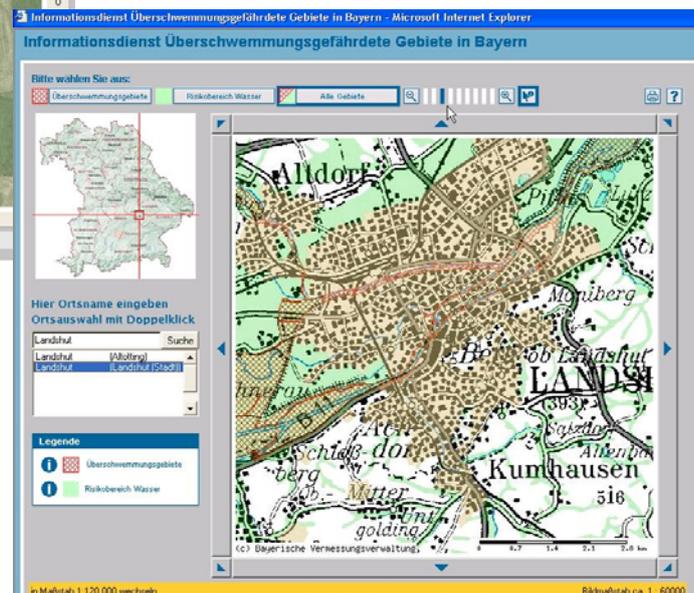


Fig.. 4 Flood risk

The GermanViewer below is an example of combing OGC-conformal web map services (WMS) providing geodata which can be combined in a vertical and horizontal way. Firstly it shows how different layer of geodata can be superimposed. And secondly it shows how web map services can be combined across borders with other web map services. It is a very good demonstrator for the great potential of WMS services. The Office Spatial Data Infrastructure carried out numerous courses on how the WMS services can be used efficiently, integrated in own work flows and in efficient e-government applications.

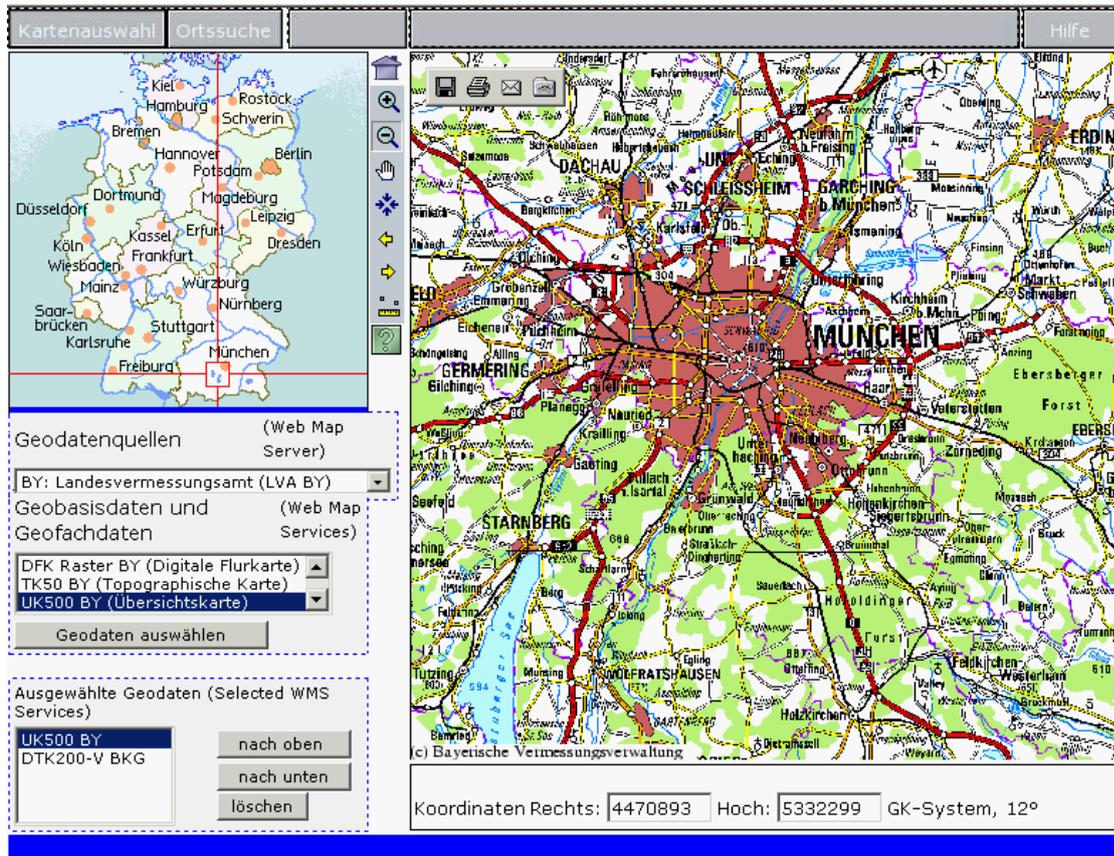


Fig. 5: GermanViewer based on OGC-conforming Web Map Services (WMS)

7.2 Current SDI-Projects

Presently there are six SDI projects in Bavaria under development.

- visualization of protected areas with a geometry based on the cadastre
- digital gathering of area shaped protect monuments
- providing urban land use planes over the web
- providing Bavaria wide average prices for parcel of land over the web
- web based soil information system
- online application of multiple agricultural subsidies

Some projects are entirely new one, others like the soil information system are further enhancements and extensions of existing SDI applications.

8. OUTLOOK

SDI is developing fast and successful in Bavaria. Application close to the customer showing the benefits and advantages of SDI and getting the appreciation and acceptance of the users involved. The realisation of SDI on the Bavarian level up to now will be of great benefit for building a german federal SDI or even the more challenging European SDI INSPIRE.

REFERENCES

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Stoessel, W., 2005, Office Spatial Data Infrastructure, DVW-Mitteilungen 4.2005

Information on SDI-BY can be found Web side of the SDI Bavaria: www.gdi.bayern.de

Information on OGC specification can be found at: www.opengeospatial.org

Information on ISO standards can be found at www.isotc211.org/

Information on the eGovernment concept in Bavaria can be found under www.bayern.de/Wirtschaftsstandort/IuK/eGovernment/informationen.html

BIOGRAPHICAL NOTES

Study of Geodesy at the Technical University of Munich, Germany

Consultant for German and International Development Agencies in development projects in Tanzania and Jordan

Employment with the Bavarian State Agency for Surveying and Geoinformation in the following departments:

- Triangulation networks
- Photogrammetry and Remote Sensing, Digital Terrain Models
- Digital Landscape Model ATKIS

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