

The use of OpenGIS in the public Sector by the example of the public-public-partnership - City of Munich and Chamber of Industry and Commerce for Munich and Upper Bavaria

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1 INTRODUCTION

The city of Munich, Department of Health and Environment (RGU) and the Chamber of Industry and Commerce (IHK) for Munich and Upper Bavaria use a lot of geo-relevant information for their work. Both institutions also have to use spatial datasets of administrative and private third party data suppliers. Originally this data was used only with special GIS-Software, but now it is offered in the form of map services by which the geodata, served by a Linux based Open Source mapserver, can be displayed using standard internet technology with any browser. Internet map services (IMS) are the graphical interface which supply basic GIS-functions in this case without active technologies and the need of plugins.

The geographical base data has to be bought from communal mapping agency of Munich or the Land Surveying Office Bavaria. When extending the spatial coverage of the Departments maps towards the greater Munich area, the usage of OGC-conformant web mapping services (WMS) will become the most important step in the development from a local to an integrated map service. Since the begin of the year 2002 the Department of Health and Environment runs its mapserver in cooperation with the Chamber of Industry and Commerce, making use of the University of Minnesota (UMN) MapServer which also supports WMS functionalities. These are tested in so called cascading mapservers where the every institution keeps her own geodata but can use reciprocal all geodata of the cooperation via WMS. In an extended phase of the OpenGIS-cooperation from middle 2003 within a project of the Technical University of Munich (Interoperability on the base of OpenGIS Web Services) the advantages and practical abilities were proofed with live geodata.

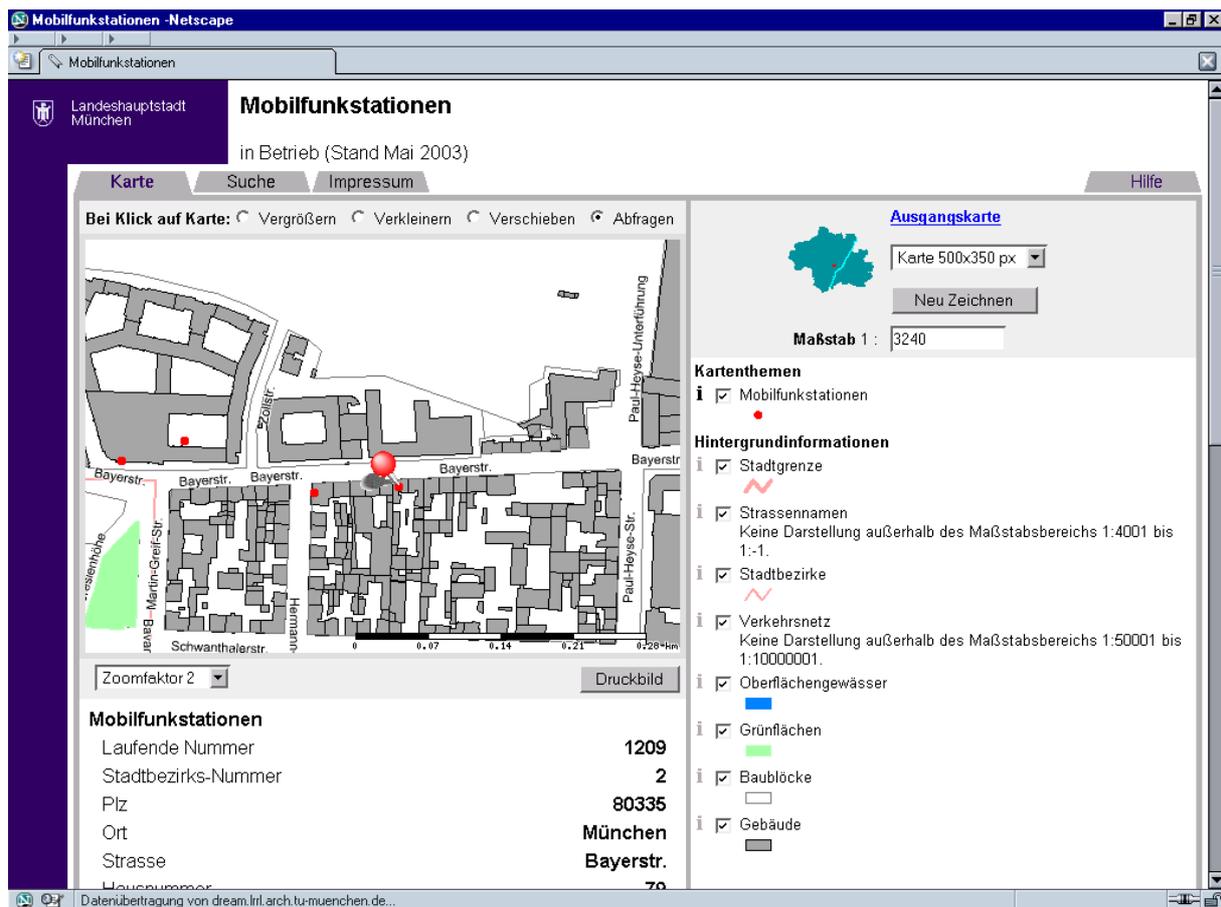


Figure 1: Internet-GIS-Viewer at the RGU, GSM transmitter stations

The RGU as part of the administration of the City of Munich is responsible for environment protection and planning as well as running the public health system with 5 municipal hospitals. The initially paper based environment atlas formed the starting point for the now internet based map services. These are used for internal information and quality control systems as well as public information. In the environment atlas over 100 maps of environmental themes are shown, health reporting adds another 15 maps, tendency growing. Within the European Union funded project MILES (Managing Information for Local Environment in Sri Lanka) the OpenGIS infrastructure will be adapted for the building of an environment and information system for Sri Lankan municipalities.

The IHK for Munich and Upper Bavaria is like any of the 82 Chambers of Industry and Commerce in Germany a self-administering body under public law for any individual company of industry, trade and services. Every company in Germany is member of a Chamber of Industry and Commerce, besides crafts enterprises, professionals and agricultural enterprises. The Chamber of Industry and Commerce represents, democratically authorized, every particular industrial sector independent from the size of the enterprise. The main tasks are the representation of interests concerning economy, sovereign functions and assistance for companies. Concerning GIS there are two major services at the IHK Munich.

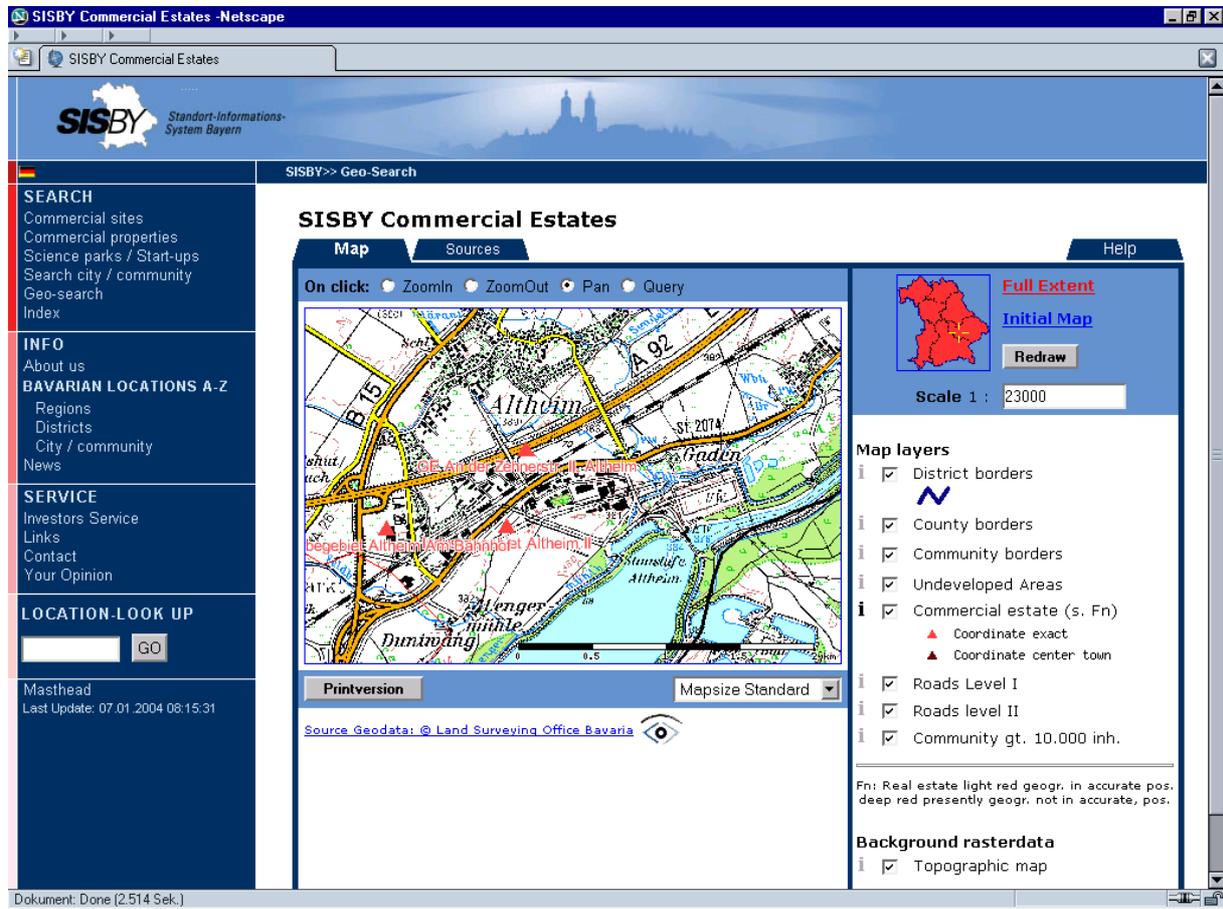


Figure 2: Internet-GIS-Viewer at SISBY

The Site Information System Bavaria (SISBY) is a marketing instrument for municipal industrial real estates in the Internet. The offered geodata covers the whole spatial extent of Bavaria (about 70.000 km²) with ATKIS 500.000 (Authoritative topographic cartographic information system) a vector dataset with the basic transportation system, estate structure and the administrative subdivision. The TK 50.000 (topographical map) is also available in the application with more than 40.000 stored tiles. GIS in SISBY is designed multilingual and supports German and English at present.

In addition the IHK Munich offers a special “Geoinfoservice” covering the district of upper Bavaria for enterprises and citizens with several maps based on official statistics like population, employees, apprentices/trainees, commuters, trade and real estate tax etc.

The RGU and the IHK Munich do a inter institutional cooperation with the objective of development and testing mapserver-tools and -functions to promote the usage of geographic data by means of local distributed mapservers. Only by the use of Open Source Software in combination with the Public-Public-Partnership the expenses for development and to run an IMS could be realized.

2 STATE OF THE ART IN SERVING MAPS AND THE WMS FUTURE

Up to now there has been as strict and clear division between geodata suppliers and geodata users as well as among the geodata suppliers themselves: The supply side had "their" geographical data in files or databases and used a bundle of (mostly proprietary) map servers to bring the data to the users.

Portal and Clearinghouse techniques will leverage the problems of finding and accessing the data. Whereas organizational and legal hindrances still wait for european harmonization, the Open Source community already provides powerful technical tools for a major task of a geo portal:

- The delivery of views of geodata of a broad variety of projections and data sources.

But modern open source technology already offers far more than this: By following the OpenGIS specifications, the UMN mapserver can combine different datasets and thus is a powerful tool even for the less experienced user: by a on-the-fly combination of maps from different sources offered through a portal, a sophisticated and problem oriented ad-hoc solution for many cartographic problems becomes handy.

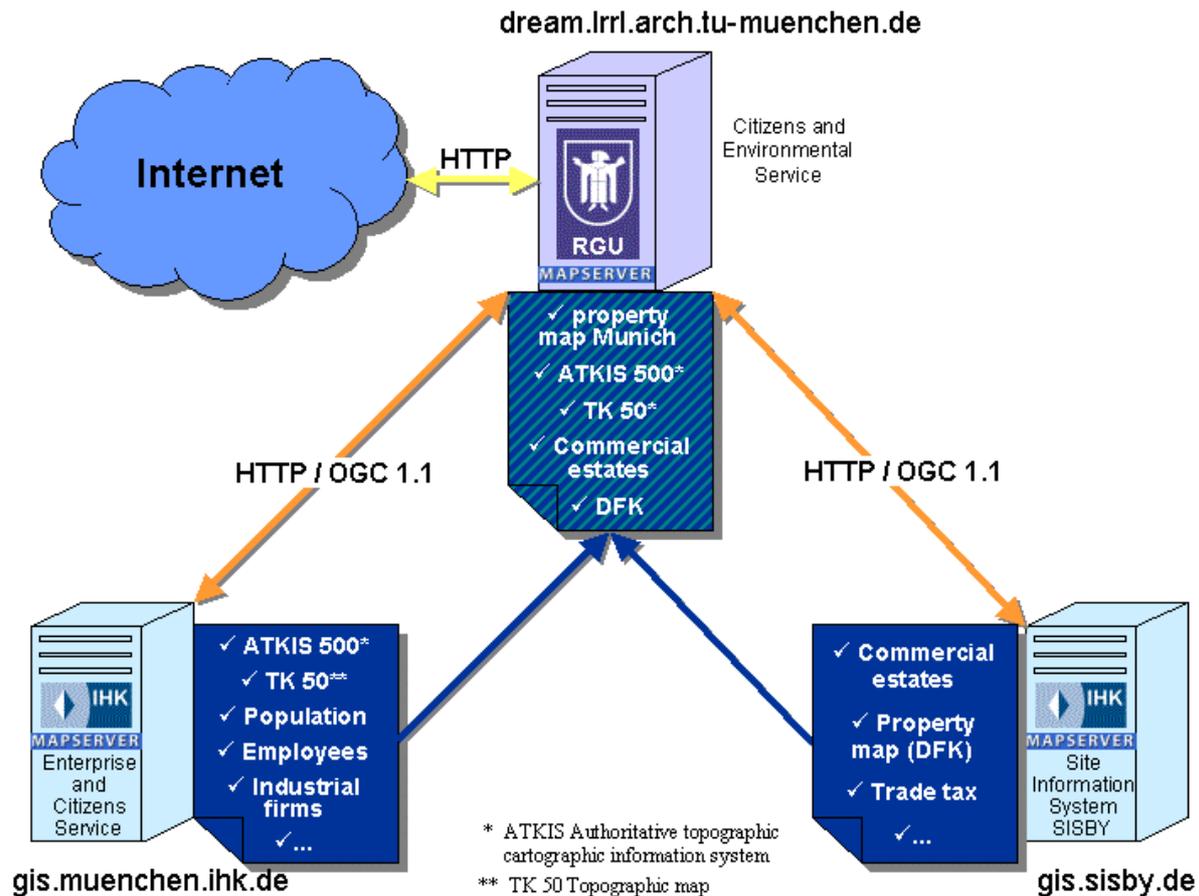


Figure 3: Schematic cascading mapserver combining geodata from two distinct mapservers

3 ENHANCING EXISTING MAPS AND OVERCOME ACCESSIBILITY BARRIERS

The main and seemingly concrete-made distinction between classical map providers and users is going to be wiped out, too: The OpenGIS WMS standards enables everyone being able to run a conformant mapserver (as the UMN mapserver, again) to get into value adding: Given there is a map service for the basic data, for example real estate agents as well as NGO's can publish their geographical information on the background of reference map sets. The painful experience in this pilot scheme with the property map (DFK) for the neighbouring community was that the offered data format (DXF) of the administrative suppliers is still very restricted and inefficient to work with. The conversion of the unsuitable and voluminous dataset produced a lot of manual labour so that the use on a grand scale is impossible at that time.

The practical problem in combining geodata is the de-facto absence of publicly available reference map servers. The European Union's INSPIRE initiative will leverage this problem by achieving legal and pricing security for map providers as well as users, but the sheer cost of data can and will be a major obstacle for spreading of the usage of geodata. As the e-Europe 2002 report and even more the presentation "Borders in Cyberspace" from Peter Weiss of NOAA state, open, unrestricted access to public sector information will yield in strong economic growth in this sector. The above outlined possibility of a shift from map consumers to map enhancers with all its positive economic and societal consequences will only have a chance to become reality if the costs of data can be cut to an absolute minimum.

4 CONCLUSIONS

The used UMN map server proved thereby due to its standard conformity and to its Cascading abilities as stable and future-safe tool for the composition of geo information of different sources. A future goal of the IHK and the RGU Munich is it to demonstrate the efficiency of open SOURCE software and the efforts for the standardization of the open GIS Consortiums (OGC) for WMS by high-quality and practical application examples out of the co-operation.

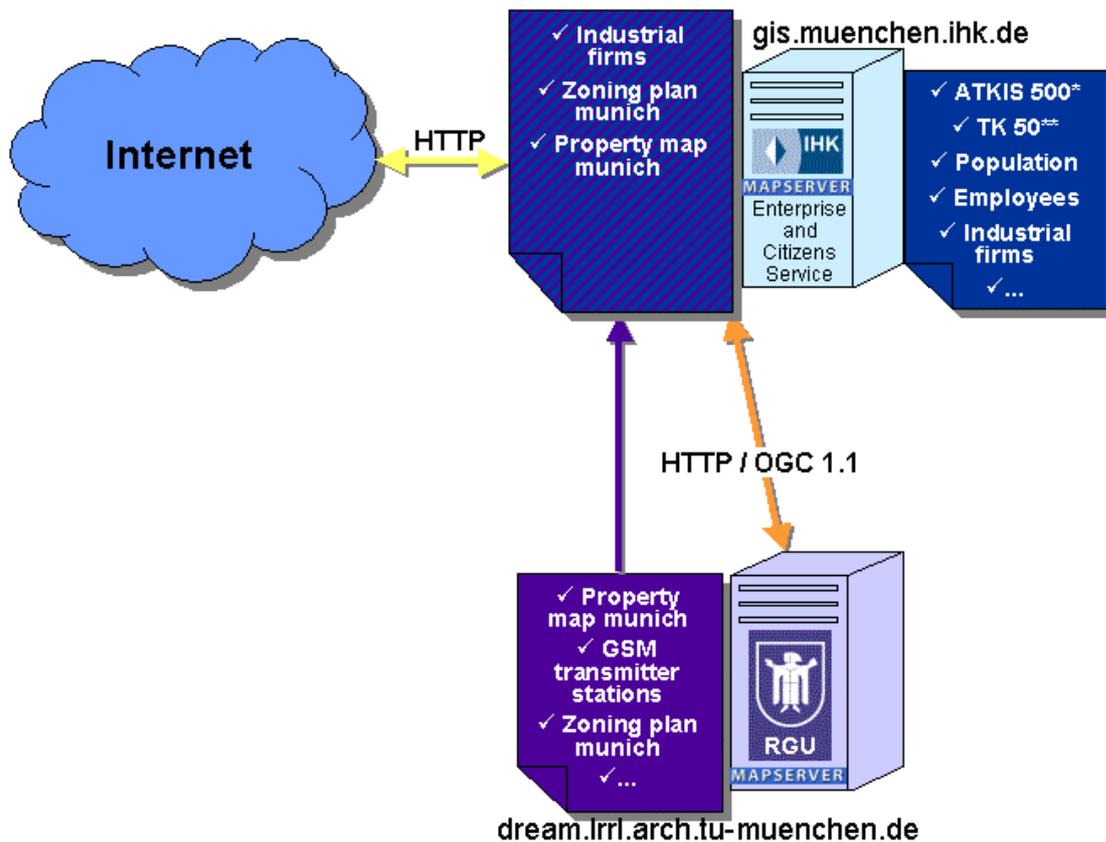


Figure 5: Schematic cascading mapserver enhancing foreign geodata with local layers

5 REFERENCES

- Spring, Markus; Andreas Fritzsche (2003): INSPIRE for the users. A twofold evaluation of new possibilities, demonstrated by means of a free software mapserver. In: ESDI: Serving the user, 9th EC-GI/GIS Workshop, European Commission, La Coruna.
- Fritzsche, Andreas; Markus Spring (2003): OpenGIS Einsatz im öffentlichen Sektor am Beispiel der Public-Public-Partnership - Stadt München mit der IHK für München und Oberbayern. In: Glocalist Review, Ausgabe Nr. 9/2003, ISSN: 1729-6722, Wien, S. 27f.
- Fritzsche, Andreas; Helmut Burger (2003): Die Integration von GIS in das Informationsmanagement der Industrie- und Handelskammer (IHK) für München und Oberbayern. In: CORP2003, Wien, http://mmp-tk1.kosnet.com/corp/archiv/papers/2003/CORP2003_Fritzsche.pdf.
- Fritzsche, Andreas; Markus Spring (2001): Plan-Quadrat - Mapserver-Projekt der TU München und der Stadtverwaltung -. In: Linux Magazin Heft 10/2001, München (in English: http://dream.lrrl.arch.tu-muenchen.de/a_katalog/info/linuxmag/geodaten_frei_en.xml).
- Spring, Markus ; Andreas Fritzsche (2001): Webmapping und XML Content Server mit Free Software - Portalkonzept Digitaler REgional Atlas München DREAM -. In: Angewandte Geographische Informationsverarbeitung XIII, Beiträge zum AGIT-Symposium, Salzburg, S. 461-470, ISBN 3-87907-361-9
- Fritzsche, Andreas; Markus Spring (2001): Free-Software Lösung zur medienübergreifenden Präsentation von Raum- und Umweltinformationen mit WebMapping und XML - realisiert im Digitalen REgional Atlas München DREAM . In: CORP2001, Band 1. Wien, S. 83-86, ISBN 3-901673-06-7.

6 LINKS

- Apache-Webserver: <http://www.apache.org>
- Digitaler REgional Atlas München DREAM, <http://dream.lrrl.arch.tu-muenchen.de>
- Digitaler Umweltatlas München, Referat für Gesundheit und Umwelt (RGU), Landeshauptstadt München, http://www.muenchen.de/referat/rgu/umweltdaten/index_html.php
- Free GIS-software und geodata: <http://www.freegis.org>
- Digital Chart of the world: <http://www.maproom.psu.edu/dcw>
- Mapserver of the university of Minnesota: <http://mapserver.gis.umn.edu>
- PostgreSQL Database: <http://www.postgresql.org>
- PERL in the apache -Webserver: <http://perl.apache.org>
- PERL programming language: <http://www.perl.com>
- Site-Information-System Bavaria (SISBY): <http://www.sisby.de>