

Map Management Server

– Geo-enabled web service applications based on GeoXtension –

Regionalverband Ruhr (RVR) (Regional Association of communities in the Ruhr Basin)

RVR manage a digital map library for their member communities. The data are maintained in the communities and centrally managed at RVR.

FICHTNER CONSULTING & IT (FCIT) has implemented a solution for RVR managing all plan data in a centralized database in OpenGIS® format. A digital workflow supports continuous data maintenance and management without media conflicts. This ensures consistent and up to date map data that can be easily integrated into other business processes.

At the solution's core is GeoXtension – a product designed by FCIT to integrate geodata in business workflows via standard browser interface, requiring no additional software installation. The underlying state-of-the-art 3-tier application server architecture is based on an open standardized ORACLE spatial database.

Customer

The Ruhr Basin is located in the federal state of North Rhine-Westphalia, Germany, constituting the largest economic area in Europe. The Kommunalverband Ruhrgebiet (local association) comprises 11 cities and 4 counties with a total of 44 communities.

RVR manages various tasks for this body, such as PR, marketing, area development, forestry, recreational facilities, regional development and business development. The *Regional Information Department* maintains various cartographic bases and atlases and keeps orthophotos on a geo server. In addition, the department performs GIS services, land use mapping and climate surveys.

Situation

So far, the digital map library was exclusively maintained with MicroStation (Bentley Systems). Data exchange with the communities was performed through data media, manual processing and migration steps as well as plot reviews.

Objective

The prime objective was to efficiently support local data maintenance, the rather complicated editing procedures and to provide fast online results. For this purpose, the

data were to be kept in a centralized database.

Some of the core requirements were:

- Centralized data maintenance of a coherent city map in an OpenGIS® ORACLE database
- Support and control of the decentralized maintenance process through a digital workflow
- Utilization of state-of-the-art communication channels for data exchange
- Intuitive, web-based user interface to actively integrate all communities into the process
- Clear, virtual representation with a self-explanatory display control and legend
- Check-in/check-out mechanisms with controlled long-time transactions
- Monitor to check the work orders and their status



In addition, the application was to run without additional installations on the standard work stations of the communities involved in order to minimize administration costs.

Implementation

The solution is based on FCIT's GeoXtension web service components.

FCIT has designed the overall architecture and supported RVR in integrating the data, implementing the generic import/export interface, including creation and configuration of the GeoXtension web component.

GeoXtension

GeoXtension is deployed on ORACLE's Application Server based on data from an OpenGIS® warehouse. This technology allows data from different sources to be integrated into a uniform basic map, thus creating valuable maintenance support.

GeoXtension has been developed in the leading web architecture J2EE, allowing cost-effective and manageable integration of valuable geodata with other enterprise systems.

GeoXtension takes advantage of leading standards to protect investment and allow a wide range of standard tools to be utilized. The geodata are displayed in the W3C®-XML definition SVG (scalable vector graphics). The base data are kept in OpenGIS® *Simple Feature Specification* format. The application server architecture ensures maximum scalability in terms of end user numbers, data volumes and system distribution.

This helps boost the efficiency of geo-related business processes via web service enterprise applications – from small installations with only a limited number of users up to full-scale professional internet services.

Benefit

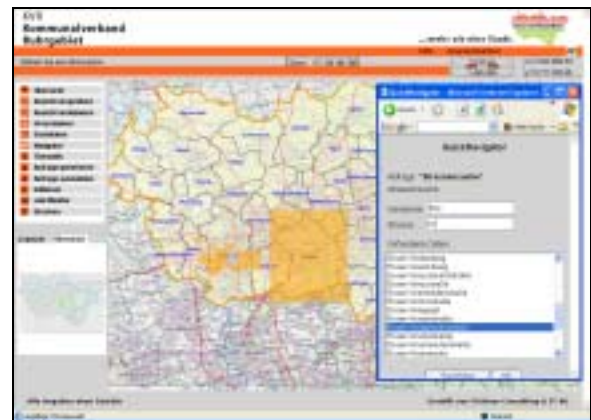
The application implemented by FCIT and RVR enables all participating communities to independently plan and perform their data maintenance jobs. The system provides the data and monitors the work progress via internet. Thus, many work processes can be efficiently supported on one

medium without requiring additional assistance from specialists.

This enhances the quality of the data considerably – they are up-to-date and can be easily integrated. In conjunction with the inherent standards, the architecture allows free choice of the products in use and comprehensive analyses.

One of the major advantages is the application's ease-of-use. The browser-based front-end provides just those functions and options required for the individual process. The actual source of the data is hidden from the user to ensure a clear and intuitive appearance of the application.

GeoXtension is a zero client and does not load plug-ins or applets. This kind of architecture saves costs in administration and ensures that the service is available even for users behind restrictive firewalls.



Outlook

Combining GeoXtension with an OpenGIS® data structure creates many new potentials for geodata. Some examples are:

- De-centralized maintenance of POI's (Points of Interest)
- Utilization of the platform for other geodata such as landuse, environment mapping, maps of recreation areas, ...
- Online correction and publication of geodata through the web
- Linking of specialist documents
- Connection to other systems

Due to GeoXtension's open, configurable and scalable architecture, upgrades and applications can be deployed with minimum cost and time.