

Geo-based Trouble Management

– Geo-enabled web service applications based on GeoXtension –

SWU Energie GmbH, Ulm (municipal utility)

SWU Energie GmbH document and maintain their electricity, gas and water networks in a standard geographic information system (GIS). The system is primarily operated by GIS experts. However, integrated geodata and map-based analyses of infrastructure data could enhance business workflows for a whole range of non-GIS users as well.

FICHTNER CONSULTING & IT (FCIT) has implemented a geo-based trouble management to be accessed via the SWU intranet. Fast and easy-to-use, network troubles can be placed directly into the map, allowing efficient management and analysis of all relevant information.

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 SWU Energie GmbH, located in Ulm, Germany, was founded in 1998 as a 100 % subsidiary of the SWU Stadtwerke Ulm / Neu-Ulm GmbH in the course of their repositioning in the liberalized energy market. SWU stands for competent and reliable supply of electricity, drinking water, gas and district heat in the southern region of Germany. Their lines cover an area of about 3,400 km for electricity, approx. 1,100 km for drinking water, 900 km for natural gas and 25 km for district heat supply.

Situation

Supported by FCIT, SWU Energie GmbH operate a network information system for the media electricity, natural gas and drinking water. In addition, all geographical and alphanumeric network data across all media are available for other applications by means of an Oracle geodata warehouse.

In case of network troubles, the information recorded by the field crews (location, affected equipment, symptom, cause, detail data, trouble shooting of the damage or status assessment of equipment) were collected in paper form to be filed and analyzed.



Objective

To ensure optimal IT support of the business processes *damage recording*, *information provision* and *analysis*, the damage data were to be represented by a geo-related component and input directly into a map for information and analyzing purposes.

Some of the core requirements were:

- Easy-to-operate and intuitive application requiring no extra end user training
- Clear map representation with a self-explanatory display control and legend
- Thematic selection of the data depending on the target group (e.g. drinking water network, low voltage network, natural gas network, etc.)

- Direct navigation via community, street and other relevant criteria
- Thematic display of attribute data pertaining to a certain equipment
- Print function

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

Implementation

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

The GUIs have been tailored to the users' needs when finalizing the above business processes. Damages are now recorded directly into the map by creating a damage object linked to the network object concerned.

FCIT has designed the overall architecture and supported SWU in integrating the data, 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 GIS data to be integrated with other SWU or third-party data, thus creating valuable decision support and allowing navigation and queries based on the intuitive map display.

GeoXtension has been developed in the leading web architecture J2EE, allowing cost-effective and manageable integration of valuable geodata with other enterprise systems such as ERP, CRM, Billing, Dispatching and others.

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 geo-based trouble management implemented by FCIT and SWU enables SWU staff to quickly and intuitively record damages or status assessments into a map, significantly enhancing management and analysis.

The configurable display allows full-scale and detail views, supporting many work processes without requiring additional assistance from specialists.

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

At present, SWU are assessing other business processes to be optimized with GeoXtension. Some examples are:

- Providing site information to construction companies via the web
- Lot management
- Capture and maintenance of specific geodata and attributes
- Linking data of other systems, e.g. SAP

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