GeoXtension for ORACLE Application Server

Infrastructure Viewer

– Geo-enabled web service applications based on GeoXtension –

Deutsche Bahn AG (German Rail)

DB Netz AG, the infrastructure manager of German Rail, store and maintain their infrastructure data in different GIS systems that are maintained by GIS experts. However, integrated geo-data and map-based analyses of infrastructure data could enhance business workflows for a whole range of non-GIS users as well. This can be achieved without extra installation or costly user training!
FICHTNER CONSULTING & IT (FCIT) has implemented a solution for DB Netz AG to provide geodata for various user groups in the DB AG intranet, enabling individual analyses by integrating their respective data.
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

DB Netz AG is the infrastructure manager of German Rail, responsible for the operation and maintenance of their route network. Their prime objective is to ensure safe and reliable operation on the more than 35,000 kilometers of routes in Germany.

Situation

Supported by FCIT, DB Netz AG manage geographical information systems (GIS) containing their entire network infrastructure with corresponding data. In addition, DB Netz AG obtain a large number of other data both from third-party providers and other units within the DB holding company. These are for example topographic maps, sanctuaries as well as DB-specific data such as management units or station equipment.

So far, these data were aggregated by GIS experts and the analysis results were returned to the requesting unit in paper form.

Objective

To support the above processes more efficiently and provide on-the-fly results, a browser-based solution was favored. 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 and coloring of the data depending on the target group (e.g. owner, section class, etc.)
- Direct navigation via station name, kilometer along track, community, division and other relevant criteria
- Thematic display of master data pertaining to sections and the relevant equipment
- Display of SAP data to selected elements
- Measurement functions
- Print functions

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

Implementation

The solution is based on FCIT's GeoXtension web service components. These components are already enhancing a number of business process workflows at German Rail.
FCIT has designed the overall architecture and supported DB Netz 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 German Rail 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.

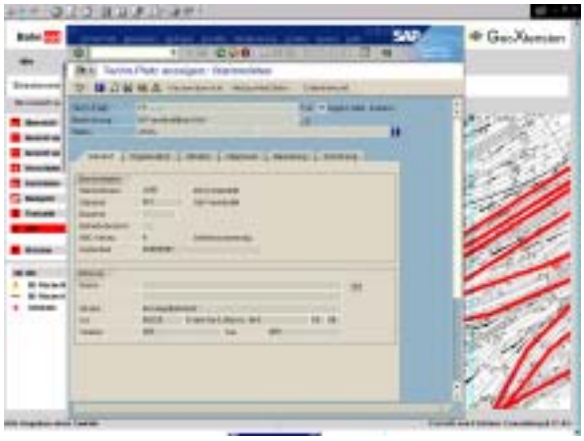
This helps boost the efficiency of georelated business processes via web service enterprise applications – from small installations with only a limited number of users up to full-scale professional internet services.

Benefit

The application implemented by FCIT and DB Netz enables different user groups to visualize the on-site situation in a geographic context. The configurable display allows full-scale and detail views (e.g. assembly of a switch), 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 frontend provides just those functions and options required for the individual process. The actual source of the data are 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

Today, many user groups within German Rail benefit from a number of task-oriented web solutions based on GeoXtension in order to support and speed up their business processes. Some examples are:

- Online geocoding and display of SAP messages and orders
- Infrastructure information
- Planning of upgrade projects
- Capture and maintenance of specific geodata and attributes
- Correction and publishing of geodata
- 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.

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