Case Study:

PRTR

Pollutant Release and Transfer Registry

Germany
What is PRTR?

Pursuant to the European PRTR regulation Germany is bound to report the release of industrial pollutants into air, water and soil and the amount of waste disposal and contaminants in waste water.

As a European member state Germany also has to provide a mechanism that will allow the European Environmental Agency to access this data pursuant to the INSPIRE directive (for example as a web service).
Web interface for Citizens

On June 3\textsuperscript{rd} the web site: http://www.prtr.bund.de was launched to publicly provide this information to the citizens.

Behind the application works an SDI.
Schematic diagram of a spatial data infrastructure
Under the Hood

The mapping component of PRTR was implemented by the WhereGroup in close cooperation with the German Federal Agency for Agriculture and Food on behalf of the Federal Environmental Agency.

The solution is implemented with proven Open Source software using international Standards and in consideration of the INSPIRE directive.
Schematic view of a simple OGC WMS getMap request in a spatial data infrastructure.
The Software

The mapping application was deployed with the geoportal framework that orchestrates the OGC WMS services of the Federal Agency for Agriculture and Food.

- Mapbender
- UMN MapServer
- PostgreSQL / PostGIS

All software of the geoportal shall support the requirements of the INSPIRE directive.
Virtualised Server Architecture

The software runs on a performance optimized and load balanced 100 CPU ESX cluster architecture.

During the first three days of operation the infrastructure served 5 million maps, with a peak of 250,000 per hour at 72% load.
Optimizing Community Map Data

The background map of the PRTR application is based on OSM (OpenStreetMap) data that has been optimized to generalize roads and land cover. The map service is split into 5 zoom levels each of which draws data from a separate physical table. The data was generalized using simple PostGIS SQL simplify commands. It was decided to use a database to allow for differential updates of the OSM data.
Legal Background and Copyright

- The application PRTR is published by the Federal Environmental Agency (UBA). The UBA owns the copyright of the application.
- The locations of the polluting industry are operated as an OGC WMS service. It can be accessed directly. The copyright of this service is also owned by the UBA.

Pollutant locations: Copyright UBA
Copyright and license of the OSM Data

- The OSM data underlies the Creative Commons CC by SA license. All derivative works using that data thus also have to be published under the same CC by SA license.
Postal Codes from Public Domain

- The postal codes have been taken from public domain. They are barely to be seen and are mainly used for navigation purposes.
Combined Copyright

Combining the three data sources into a new map creates a derivative of the OSM data. This might cause multiple copyright and license issues, therefore the application as yet lacks server side PDF generation.

Data Quality Assurance

Simplifying the data showed issues with the structural integrity of the data which only became apparent through the use of standard technology.
Summary

- The mapping requirements of a federal agency can be addressed with Open Source Software (we knew that...) and crowd sourced data (that is good news!).
- The application is fully scalable and stable.
- Some Homework needs to be done wrt copyright and licensing (we already knew that...).
- Consequent application of international standards caters for high interoperability, security of investment and INSPIRE compatibility.
Thank you. Questions?

http://www.prtr.bund.de

WhereGroup GmbH & Co. KG
Siemensstraße 8
53121 Bonn
Tel.: +49 (0)228 909038-0
Fax: +49 (0)228 909038-11

Author: arnulf@seven.us
http://www.wheregroup.com

Copyright: WhereGroup GmbH & Co. KG.

This document ist protected by the GNU FDL license and may be used, modified, and passed on for commercial or non commercial purposes provided that this copyright text, the first, master and last (this) slide are treated as invariant sections (do not modify them).

http://www.gnu.org/licenses/fdl.txt