A High-End SDI with PostgreSQL/PostGIS, GeoServer, MapServer and Mapbender

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What is FIONA?
History of the project
Software requirements
Components
Workflow
Future developments
FIONA – Flächeninformation und Online Antrag

- Online Agricultural Subsidy Application System
- Operated by the Ministry of Agriculture of the Federal State of Baden-Wuerttemberg in Germany
- Realization in 2005/06 in cooperation with CCGIS and BGS-AG and IZLBW
FIONA - Prospects

- Reference Project FloRLP
- Realisation till spring 2006
- Looking for a fast – reliable – easy solution
- Low running costs
- Ease the subsidy progress
What does FIONA offer?

- The portal provides authenticated and secured access for 80,000 farmers to coordinate the subsidies for their farmland.
The farmer can:

- Apply for subsidy grants
- Measure
- Digitize
- Calculate their farmland area
- Get an overview of the subsidy areas
FIONA – Open Source Technologie

The project is implemented with Open Source technologies.

- SUSE-Linux Enterprise Server
- Apache
- PostgreSQL/PostGIS
- GeoServer
- MapServer
- Mapbender
Hardware components

- **Application- & database-Server (2):**
  - 4 CPUs, 8 GB RAM,
  - Resources aprox. 350 GB

- **Web-Server:**
  - 1 CPU, 2 GB RAM
  - Resources: at least 140 GB
FIONA - the architecture
FIONA - the Components

Information Service

Authorisation

Administration

FSV

GIS

FrontController
FIONA - Data Access by OGC Standards

The access to the data is realised with services based on OGC Standards.

- Web Map Service (WMS): MapServer
- Transactional Web Feature Service: WFS-T GeoServer
- Download of geometries as GML
Datavolume

- Datavolume of GIS aprox. 250 GB
  - aprox. 180 GB Orthofotos (Filesystem)
  - PostGIS Geom 20 GB
  - FSV Data at least 60 GB
  - Transaction-logs at least 5 GB, other Logs about 1 GB, DB-Backup 40 GB
PostgreSQL/PostGIS

- 8.5 million parcels of the federal state (cadastre data)
- Additional subjects (nature, water)
- User based geometries (polygons, points)
- User has read and write access
- PostGIS Geom 20 GB
MapServer as WMS

- Background imagery is served by MapServer WMS
  - Orthophotos of the federal state
  - Cadastral data of the parcels
  - Nature
  - Water
GeoServer – Access to the Geodata

- Read and Write access to geographic features is provided by GeoServer as OGC WFS-T
- User specific features are overlayed and served by GeoServer WFS
Mapbender Portal

- FIONA – GIS
- Management of user access and orchestration of the OGC services.
- Integration in the portal
- Providing the functionality for administrators and users
- Navigation, FeatureInfo and Digitizing, Gazetteer
Workflow before FIONA was set up

- Farmers filled out formulars
- Draw their parcels in maps on paper
- Send them to the authorities
FIONA - simplified the Workflow

- Farmer logs in with his account
- User-dependent display of the parcels
- Project is opened with the extent of the farmers parcels
- Online digitizing is provided
- Online application for subsidy
- Faster processing
- Less errors
- More transparency for farmers and administration
Administration Frame

- Status of FSV and login informations

FIONA - Flächeninformation und Online-Antrag
Willkommen bei FIONA - Flächeninformation und Online-Antrag.

Antragsteller
Name: Marius FIONA-DEMO
Straße: Fionahausener Str 119
Wohnort: 74099 Fionatal
Teilort:

Ud-Nr.: 08 000000 00030 0
Status: In Bearbeitung von Antragsteller

Amt
Amt: Landratsamt Testhausen
Amt-Nr.: 1234

System
FIONA-Version: 0.8.3a
FIONA - SDI with PostgreSQL/PostGIS, GeoServer, MapServer and Mapbender

FIONA-FSV (Parcel Catalog)

- Displaying informations from the last years
- Check of input, filter, ordering
- Booking
- Analysis

Search
Selection
Editing / Input
FIONA-GIS

- Displays the parcels of the farmer and basic data
- Connection between FSV and GIS by parcel number
Component of the GIS

- Menu bar
- Attribut- and FeatureInfo
- Search & download of own objects
- WFS Search for parcels
- Schlagbildung – extended FeatureInfo
FIONA - Features of the GUI

- Access to actual data via WMS
  - Basic data as background information
  - Display of the parcels of the farmer
  - Parcels from the last year appear
  - Additional data (like nature 2000, water protection area)

All necessary data for a correct subsidy appliance is provided
FIONA - Features of the GUI

Feature information about the parcels:

- Parcel number
- Area
- Type
- Information about earlier subsidies

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Nummer</td>
<td>080260-000-00709/000</td>
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<tr>
<td>FLIK</td>
<td>DEBWLI026000GIS5</td>
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<td>1.0314 (ALB)</td>
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<td>GIS-Fläche [ha]</td>
<td>1.0313 (ALK)</td>
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<td>Landkreis</td>
<td>Hohenlohekreis</td>
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<td>Gemeinde</td>
<td>Schöntal</td>
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<td>Gemarkung</td>
<td>260 Oberkessach</td>
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<tr>
<td>Eigene Flächen</td>
<td>Landschaftselement, Baumgruppe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antragsdaten Vorjahr</th>
</tr>
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<tbody>
<tr>
<td>Schlag NC bean. Fläche ohne LE bean. Fläche der LE Flst.</td>
</tr>
</tbody>
</table>
FIONA - Features of the GUI

- Gazetteer for administration units (f.e. commune)
- Gazetteer for parcels
- Gazetteer for the own digitized parcels or points subject to the type (forest, farmland)
FIONA - Features of the GUI

- Download of digitized polygons as GML
- PDF-print with comments, project information and legend
FIONA – Experiences with the System

- Users have to get used to the portal and its multiple functions
- Introduction of the farmers by information sheets and short courses
- Performance problems due to slow connection to the internet (modem)
- Transfer potential for the software
- Cooperation of authorities by open and modular architecture
- Interoperability in datamanagement and function
FIONA – Future Developments

- Editing of existing geometries
- Snapping on existing geometries
- SLD support
FIONA – Test the SDI

- FIONA demo login
- mapbender wiki information about FIONA
Thank you for your attention!

If you have any questions contact me

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At the FOSS4G 2006 booth 10