



## An Integration Platform for a Spatially Enabled Society

*Dr. J. Luethy*

*June 19th 2014*

SWR GEOMATIK • WAGISTRASSE 6 • CH-8952 SCHLIEREN • T +41 43 500 44 00  
INFO@SWR-GEOMATIK.CH • WWW.SWR-GEOMATIK.CH

### Introduction

- PLR-Cadastre in Switzerland – Pilot project in Cantons of Nidwalden and Obwalden.
- How should a modern system architecture be designed, having
  - distributed responsibility for data,
  - existing, but distributed data sets,
  - existing Spatial Data Infrastructure,
  - broad band-width and high speed of the internet and
  - which may also supports other applications than PLR-Cadastre?

FIG Congress 2014

GeoApps - Integration Platform for SES

2

## Requirements

- Minimal extension of established structures and processes is desired;
- Use of web-technologies, wherever feasible;
  - Real-time access of source data;
  - Real-time data query, analysis and reporting.
- Use of open-source components;
- Flexibility and scalability.

FIG Congress 2014

GeoApps - Integration Platform for SES

3

## System Architecture (Marketing)

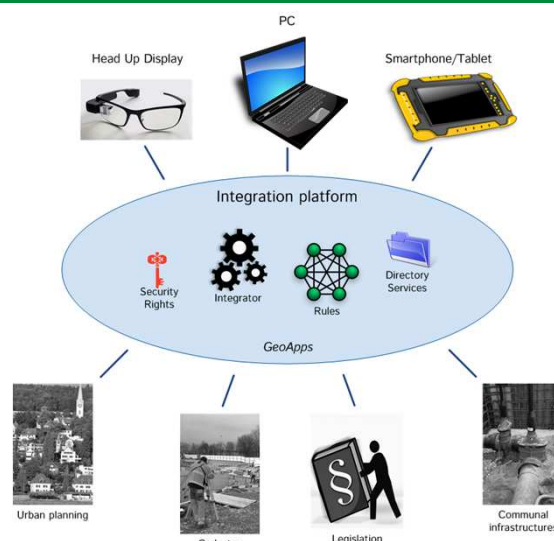


FIG Congress 2014

GeoApps - Integration Platform for SES

4

## System Architecture of GeoApps

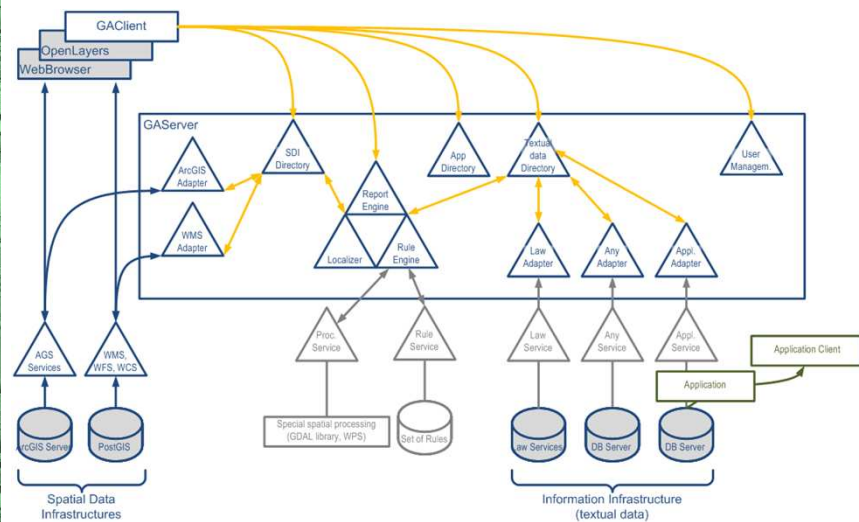


FIG Congress 2014

GeoApps - Integration Platform for SES

5

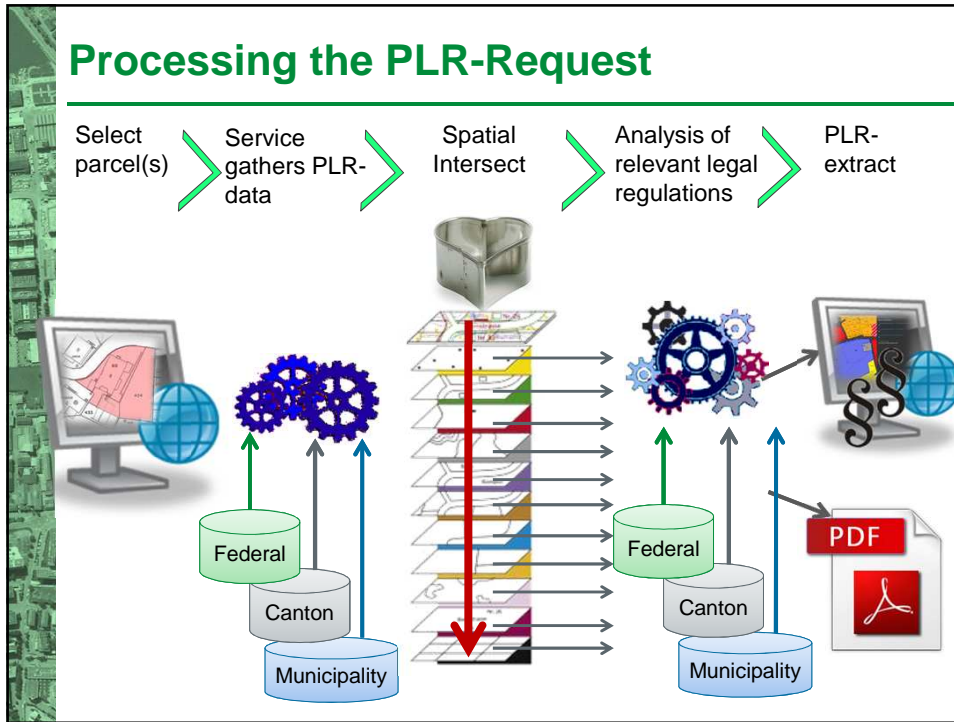
## Client

- Accessibility is key factor for success!
- Shift from WebGIS to «Web-Application»;
- Supports all kinds of information presentation like dash-board, map, pivot-tables enabling the best visualisation method for each information;
- Viewports are interconnected: interaction (like selection) in one view are propagated into other views;
- Map rendering based on OpenLayers.

FIG Congress 2014

GeoApps - Integration Platform for SES

6



## PLR-Application

The screenshot shows the 'Cadastre for Public Legal Restrictions on Landownership' application. The interface includes a search bar for addresses and parcel numbers, a 'PLR-Wizard' sidebar with three options: '1) Query the PLR-Cadastre for addresses and parcel numbers', '2) Query the PLR-Cadastre by selecting a parcel', and '3) Query the PLR-Cadastre by drawing a polygon'. The main map area displays a detailed view of a region with various parcels and labels like 'Ennetbaden', 'Buchs', and 'Buchsberg'. The application is running on a browser window.

FIG Congress 2014 GeoApps - Integration Platform for SES 8



## Challenges

---

- Overall performance: sound data integration concepts is worthless when system is *slow*;
- Missing standards outside spatial domain (e.g. data model for legal data);
- Architecture poses new requirements on
  - (spatial data) infrastructure;
  - Data quality.

FIG Congress 2014

GeoApps - Integration Platform for SES

9



## Benefits of our architecture

---

- User interface is intuitional;
- Definition of the rules (relationships) between spatial and data allows that queries may also be reversed: which legal regulation applies where;
- Preserving data ownership – the owners remain in control;
- Uniform treatment of spatial and textual data in the client.

FIG Congress 2014

GeoApps - Integration Platform for SES

10

## Conclusion and Outlook

- PLR-Cadastre (information system) as an ideal test-bed for *Spatially Enabled Society* concepts.
- Future enhancements of PLR-Cadastre with:
  - Ownership from Land Register;
  - Site development from Infrastructure Systems;
  - Construction permits and construction restrictions;
  - Listed building / site preservation;
  - «Common» web data (crawlers, imagery), etc.
- Provide holistic views on real-world objects;
- Data integration in practise is hard work!

FIG Congress 2014

GeoApps - Integration Platform for SES

11

## Project partners

- GIS Daten AG
  - [www.gis-daten.ch/nw\\_oereb](http://www.gis-daten.ch/nw_oereb)
- Geocloud
- Federal Office of Topography



**geocloud**



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Eidgenössisches Departement für Verteidigung,  
Bevölkerungsschutz und Sport VBS  
armasuisse  
Bundesamt für Landestopografie swisstopo

FIG Congress 2014

GeoApps - Integration Platform for SES

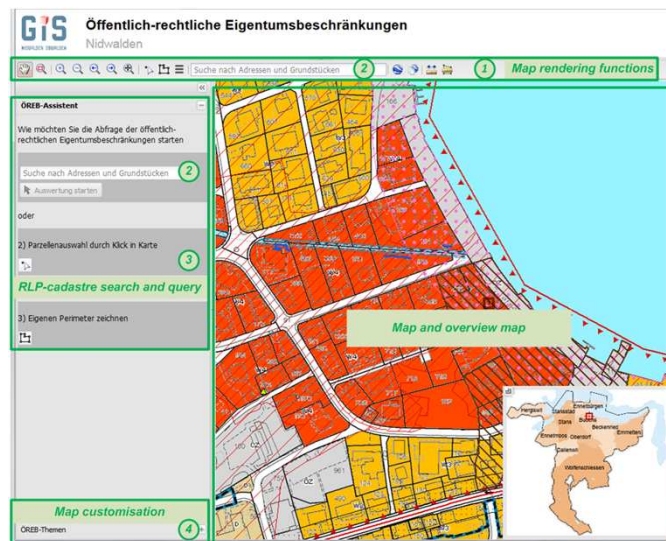
12



Contact information:  
[juerg.luethy@swr.ch](mailto:juerg.luethy@swr.ch)

**THANK YOU FOR YOUR  
ATTENTION**

## User Interface – components



## User Interface – dynamic extracts

The screenshot shows a web browser window with a GIS Client titled "Öffentlich-rechtliche Eigentumsbeschränkungen" (Public-law restrictions) for "Nidwalden". The interface includes a search bar and a map area. A specific land parcel is highlighted in red on the map, with a callout box stating "Map with highlighted perimeter of selected land parcel".

On the left side, there is a panel titled "Betroffene OREB Themen" (Affected OREB topics) under the heading "Lärmempfindlichkeitsstufen" (Noise sensitivity levels). It lists several legal provisions, each with a numbered icon (1-4):

- Empfindlichkeitsstufe II
- 700 Bundesgesetz über die Raumplanung
- 611.1 Gesetz über die Raumplanung und das öffentliche Baurecht
- 814.41 Lärmschutzverordnung Bau- und Zonenreglement der Gemeinde Buochs

Below this, a section titled "Results from PLR query" states: "Each theme belonging to the PLR-cadastre is listed (spatial and textual data)".

Further down, another list of legal provisions is shown under "Keine Empfindlichkeitsstufe" (No noise sensitivity level):

- 700 Bundesgesetz über die Raumplanung
- 611.1 Gesetz über die Raumplanung und das öffentliche Baurecht
- 814.41 Lärmschutzverordnung Bau- und Zonenreglement der Gemeinde Buochs
- 721.1 Einführungsgesetz zum Bundesgesetz über den Lärmschutz

At the bottom of the panel, there is a section for "OREB-Assistent" and "OREB-Themen".

FIG Congress 2014

GeoApps - Integration Platform for SES

15

## User Interface – interconnected views

This screenshot shows the same GIS web application interface as the previous one, but with a different view of the legal restrictions. The map still shows the highlighted parcel, with a callout box stating "Map with highlighted perimeter of a public-law restriction".

The left panel is titled "OREB-Auswertung" (OREB evaluation) and shows "Results from PLR query". The list of legal provisions is more detailed and includes:

- 611.1 Gesetz über die Raumplanung und das öffentliche Baurecht
- Bau- und Zonenreglement der Gemeinde Buochs
- 331.1 Gesetz über den Natur- und Landschaftsschutz
- 302.2 Gesetz über den Schutz der Kulturerbe
- Gefahrenzone 2 (GFZZ)
- 700 Bundesgesetz über die Raumplanung
- 611.1 Gesetz über die Raumplanung und das öffentliche Baurecht
- Bau- und Zonenreglement der Gemeinde Buochs

Below this, there is a section for "Nicht betroffene OREB Themen" (Not affected OREB topics), which lists:

- Belastete Standorte
- Belastete Standorte öffentlicher Verkehr
- Gestaltungssplan (Sondernutzungsplan)
- Grundwasserschutzzonale
- Grundwasserschutzzone
- Projektierungszone Flughafenlagen

At the bottom, a section titled "List of PLR-themes not affecting selected parcel" is visible.

FIG Congress 2014

GeoApps - Integration Platform for SES

16



# PLR-Report



## Auszug Kataster der öffentlich-rechtlichen Eigentumsbeschränkungen (ÖREB-Kataster)

