Using OSGeo solutions for local development systems implementation

The experience for the Northern Region of Costa Rica

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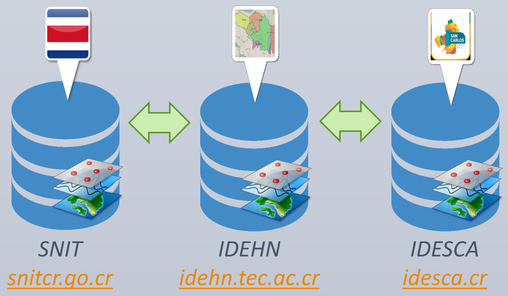
ABSTRACT

Although some general definitions classify Spatial Data Infrastructures (SDI) as technological standards, institutional and even political agreements, which allow the discovery and use of geospatial information by users for different purposes [Kuhn 2005], computationally these platforms are valuable data repositories that must reach people efficiently and effectively for analysis and timely decision-making on issues of collective interest.

Costa Rica has several SDIs experiences, the following work shows the experience for developing applications supported by OSGeo's software, consuming several local SDIs data in accordance with the realities of the region and geospatial data producers.



OBJECTIVES

Our main objective was to contribute to the improvement of SDIs geospatial data access through the implementation of software applications using open source standards and software technologies.

ACCESSING SDI GEOSPATIAL DATA

Geoservices information sources can range from files to a collection of different geographic databases and even information from other types of remote sensors [Arnhardt, 2007]. Geoservices make their sources transparent to the user; however, they could be limited to some information geoprocessing capabilities that could be performed directly from the database.

Several experiences were developed from using WMS and WFS protocols to manipulate geographic data layers to direct database query connections, allowing complex dynamic operations to improve performance.

RESULTS

Commercial Directory

It displays a commercial patent data layer for San Carlos county, so users can query POIs information using mobile devices.

WFS was used to generate GeoJSON data to be efficiently displayed on mobile devices using Leaflet library.

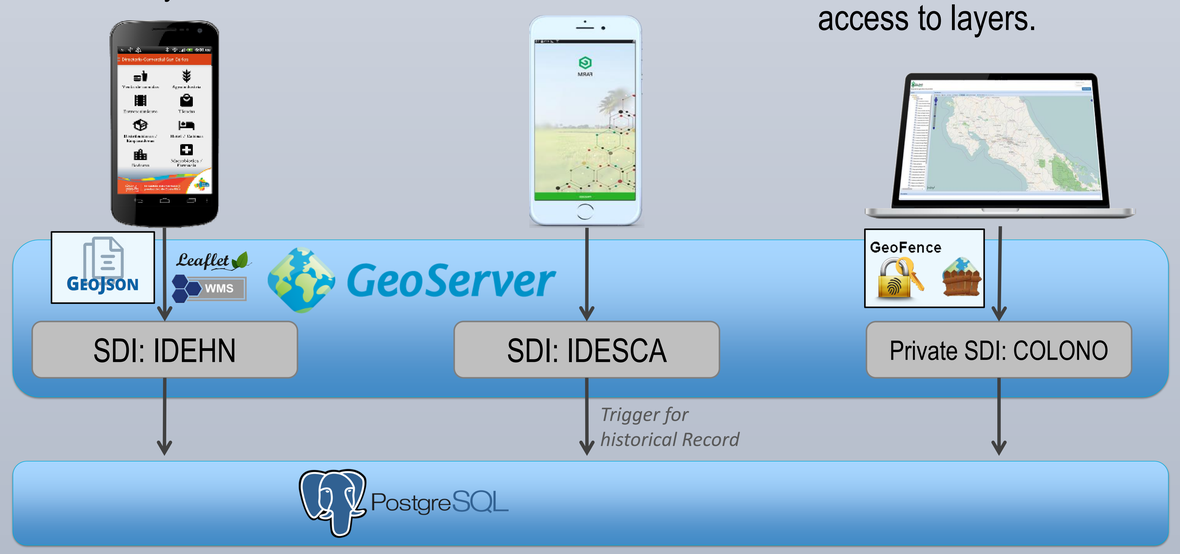
AgroMAG

It aims at the creation of data histories from farm plots intended for a particular changing agricultural activity.

It includes plots historical records management in Postgres. The use of database triggers was necessary to make copies of the structure and register new historical values.

Agricultural Geoportal

SDIs could have limitations for private purposes because Geoserver WMS and WFS use are intended for public information management. This application implements data access control scheme using GeoFence as an authentication engine to allow a private access to layers.



CONCLUSIONS

- The implementation of an SDI for institutions or local governments in Costa Rica requires few resources and basic IT technical knowledge.
- SDI's geoservices allow efficient data access to develop multi-purpose software applications.
- Specific applications could provide non-specialized users better knowledge of the geographic and cartographic areas of their territory.
- For a region with historical limitations, making software using OSGeo's open source tools helped to reach particular objectives at minimum cost in a relatively technical simple way.
- Based on our experience, private and public applications can be implemented using OSGeo's open source tools and miscellaneous libraries with basic programming skills.

REFERENCES

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- Kuhn, W. (2005). "Introduction to Spatial Data Infrastructures". Institute for Geoinformatics, University of Münster. Alemania.