GeoSemantica as a Technological Platform to develop the Colombian Spatial Data Infrastructure

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CONTENTS

INTRODUCTION

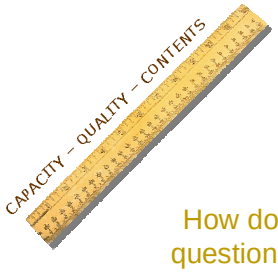
SPOTTING THE PROBLEM

How do we get Government Agencies achieving the best knowledge management with opportunity and effectiveness in technical processes regarding land information

?

Normal questions in knowledge management

Evaluation Process:



- Is the captured information enough?
- Do data have appropriate quality?
- Is my knowledge good enough to establish conclusions?

How do we answer these questions without "knowing everything"?

GeoSemantica was created to help solving these tricky questions

- Multinational Andean Project: Geoscience for Andean Communities (2002-2007)
- GeoSemantica is intended to support the integration of Geoscientific databases in the area

GEOSEMANTICA AND ITS FUNCTIONALITY TO HELP INTEGRATE THE COLOMBIAN SPATIAL DATA INFRASTRUCTURE

THE GEOSEMANTICA PROJECT

•It is under the framework of the Multinational Andean Project: Geosciences for Andean Communities (MAP:GAC).
•Funded by the Canadian Government and leaded by Natural Resources Canada
•GeoSemantica is a set of web services tools designed for integrating, translating and sharing information and knowledge assets.

GEOSEMANTICA

WHAT IS IT?

- **GeoSemantica is a set of computing tools and information management practices that allows efficient data integration through the use of information technologies in a distributed network environment.**

HOW IS ITS ARCHITECTURE?

- **Based on a web services architecture which combines semantic web browsing with Internet GIS and knowledge discovery tools, that allows:**
  - **Shared knowledge**
  - **Distributed interoperability**
  - **Unlimited growth**
  - **Data control by each node**
  - **Data management by each node**

WHAT IS ITS FOCUS?

- **GeoSemantica is intended to help broaden and deepen both, awareness and understanding of sustainability issues in the context of collaborative learning and decision support.**

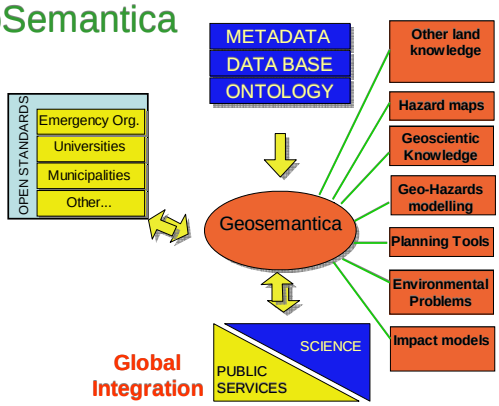
Digital Library

Geosemantica

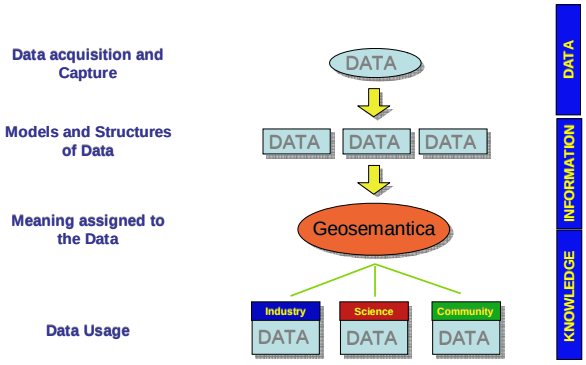
Geoscientific data and knowledge integration

What you need at your finger tips…

GeoSemantica



Data Flow and Geosemantica



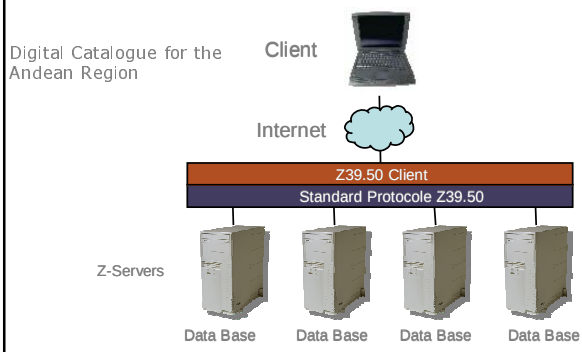
What is in it?

- Fully compliant with OGC standards and recommendations
- Most of it uses open source developments

OGC in GeoSemantica

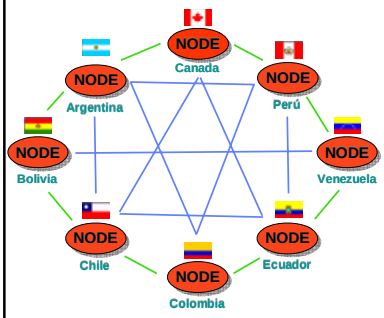
- Interoperability
  - Other nodes
  - International Community
  - Government local and regional agencies
- Publication of Spatial Data
  - WMS (Web mapping services)
  - WFS (Web feature services)
  - WCS (Web cover services)

Metadata Catalogues



GeoSemantica - Architecture

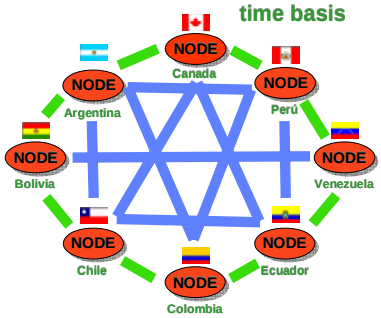
Information System Distributed



- Shared knowledge
- Distributed interoperability
- Unlimited growth
- Each node controls its data
- Each node manages its data

GeoSemantica - Architecture

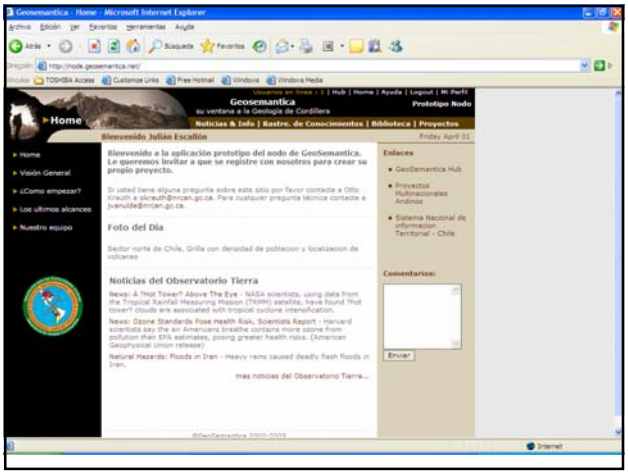
Distributed information system operates in a real time basis

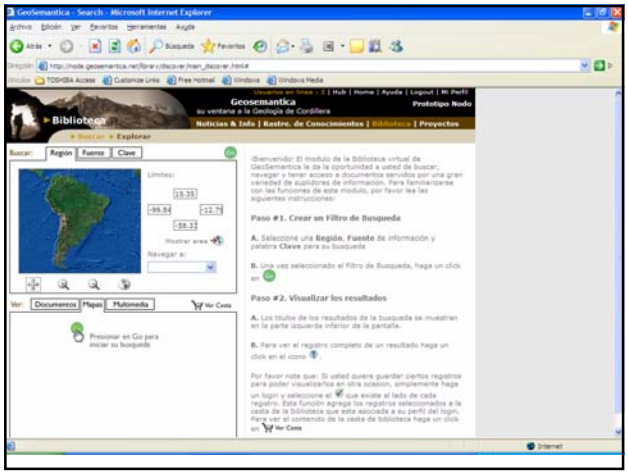


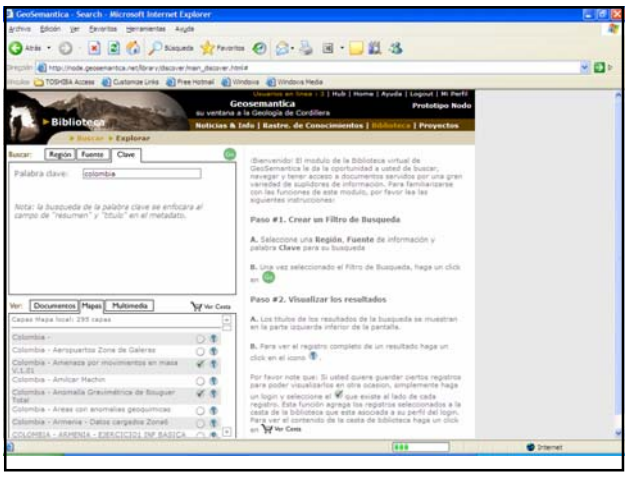
- Data integration of different nodes in real time
- Node interoperability in real time

What information is already available?

- Functional prototype supporting different modules.
- 500+ layers of South America:
  - Different themes and regions
  - Optical images for the whole region
  - SRTM images
- 80+ layers of Colombia from different agencies
- 45.000+ Metadata records not yet released to the public
- Geosemantica Version 1.0 just released for testing on early April, 2005.


GeoSemantica - Home - Microsoft Internet Explorer
Geosemantica
su ventana a la Geología de Cordillera
Home
Noticias & Info | Rastre. de Conocimientos | Biblioteca | Proyectos
Bienvenido Julián Escalón
Bienvenido a la aplicación prototipo del nodo de GeoSemantica.
Le queremos invitar a que se registre con nosotros para crear su propio proyecto.
Foto del Día
Noticias del Observatorio Tierra
Enlaces
Comentarios:


GeoSemantica - Search - Microsoft Internet Explorer
Geosemantica
su ventana a la Geología de Cordillera
Biblioteca
Noticias & Info | Rastre. de Conocimientos | Biblioteca | Proyectos
Paso #1. Crear un Filtro de Busqueda
Paso #2. Visualizar los resultados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Biblioteca
Noticias & Info | Rastre. de Conocimientos | Biblioteca | Proyectos
Palabra clave:
colombia
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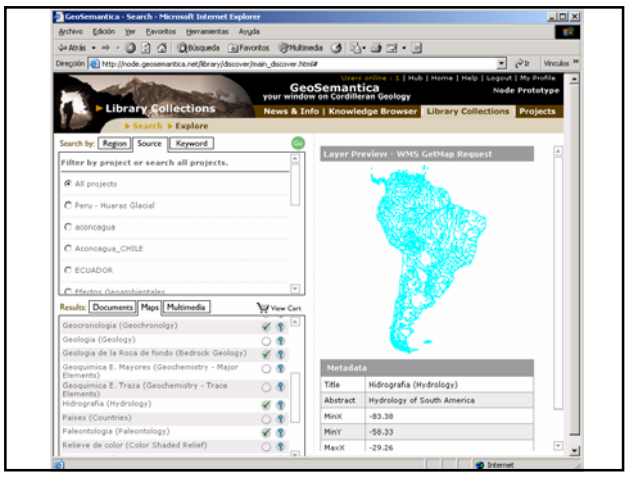
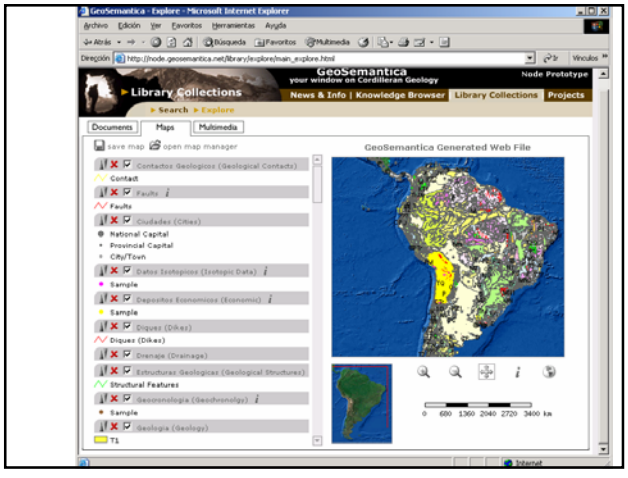

GeoSemantica - Search - Microsoft Internet Explorer
GeoSemantica
your window on Cordilleran Geology
Node Prototype
Library Collections
News & Info | Knowledge Browser | Library Collections | Projects
Search
Explore
Search by: Region Source Keyword
Filter by project or search all projects.
All projects
Peru - Huaraz Glacial
aconcagua
Aconcagua_CHILE
ECUADOR
Layer Preview - WMS GetMap Request
Results: Documents Maps Multimedia
Geocronologia (Geochronolgy)
Geologia (Geology)
Geologia de la Roca de fondo (Bedrock Geology)
Geoquimica E. Mayores (Geochemistry - Major Elements)
Geoquimica E. Traza (Geochemistry - Trace Elements)
Hidrografia (Hydrology)
Paises (Countries)
Paleontologia (Paleontology)
Relieve de color (Color Shaded Relief)
Metadata
Title Hidrografia (Hydrology)
Abstract Hydrology of South America
MinX -83.38
MinY -58.33
MaxX -29.26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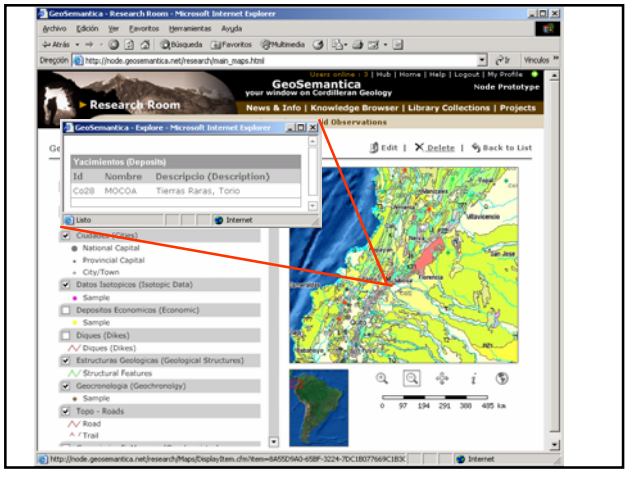
Node Prototype
Library Collections
News & Info | Knowledge Browser | Library Collections | Projects
Search
Explore
Documents
Maps
Multimedia
save map
open map manager
GeoSemantica Generated Web File
Contactos Geologicos (Geological Contacts)
Contact
Faults
Ciudades (Cities)
National Capital
Provincial Capital
City/Town
Datos Isotopicos (Isotopic Data)
Sample
Depositos Economicos (Economic)
Diques (Dikes)
Drenaje (Drainage)
Estructuras Geologicas (Geological Structures)
Structural Features
Geocronologia (Geochronolgy)
Geologia (Geology)
0 680 1360 2040 2720 3400 km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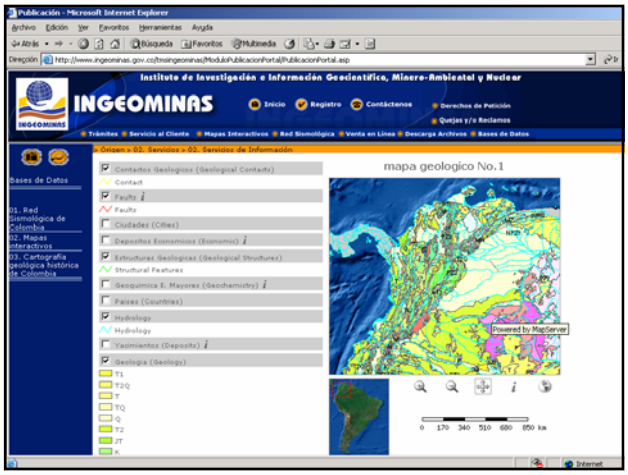
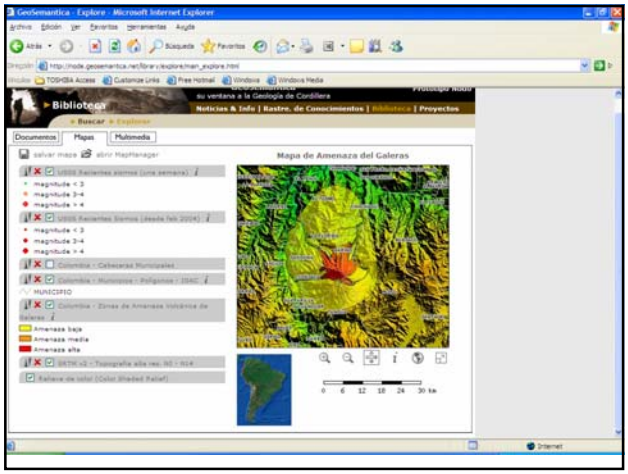
Node Prototype
Research Room
News & Info | Knowledge Browser | Library Collections | Projects
GeoSemantica - Explore - Microsoft Internet Explorer
Yacimientos (Deposits)
Id Nombre Descripcio (Description)
Co28 MOCOA Tierras Raras, Torio
All Observations
Edit | Delete | Back to List
National Capital
Provincial Capital
City/Town
Datos Isotopicos (Isotopic Data)
Sample
Depositos Economicos (Economic)
Diques (Dikes)
Estructuras Geologicas (Geological Structures)
Structural Features
Geocronologia (Geochronolgy)
Topo - Roads
Road
Trail
0 97 194 291 388 485 km



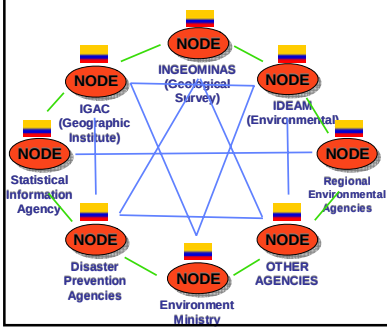


HOW GEOSEMANTICA COULD BE USED BY COLOMBIAN GOVERNMENT AGENCIES

The availability of GeoSemantica to government agencies : Canadian Government has offered Geosemantica to be used by any public agency in Colombia

Weaving the network: Colombian Agencies could be connected using the same topology and interface mechanisms as in the original setup, allowing all of them to be fully compliant with OGC standards and thus, with the connectivity required for a SDI.

Geosemantica as a Platform for the Colombian Spatial Data Infrastructure ➔



ICDE

COLOMBIAN SPATIAL DATA INFRASTRUCTURE - ICDE

DEVELOPMENT OF A PILOT PROJECT FOR TESTING GEOSEMANTICA ADVANTAGES AND FURTHER STEPS

Basic Pilot Project:
Using the prototype node, 18 national geographic products from a few agencies have been setup for visualizing and combining with other data.

Initially, Geological Survey: INGEOMINAS Geographical Institute: IGAC Mining and Energy Planning Agency (UPME) Ministry of Environment (Minambiente)

Thematic Map	Layers available at Geosemantica
Administrative and political boundaries (IGAC)	2
Indian and Black Communities (IGAC)	2
National Parks (Environment Ministry)	1
Total Coal Potential Map (UPME)	1
Basic Geology (INGEOMINAS)	3
Geochemistry Anomaly (INGEOMINAS)	1
Gravimetric Anomaly (INGEOMINAS)	1
Mining Cadastre (INGEOMINAS)	1
Mining Inventory (INGEOMINAS)	1
Metallogenic Map (INGEOMINAS)	3
Potential areas for precious and Basic metals (INGEOMINAS)	2
Ground Water Points (INGEOMINAS)	1
Seismic Hazards (INGEOMINAS)	1
Instrumental Seismicity (INGEOMINAS)	1
Historic Seismicity (INGEOMINAS)	2
Galeras Volcanic Map (INGEOMINAS)	8
Machín Volcanic Hazard (INGEOMINAS)	12
Mass movement Phenomena (INGEOMINAS)	1
TOTAL	**43**

Steps to follow

- **Node connections with Geosemantica Version 1.0, to be released on Mid 2005, starting with INGEOMINAS.**
- **Deployment of main node by IGAC with another project already in progress: "On line Geographic Information Services"**
- **Some other Agencies, besides INGEOMINAS and IGAC will start using Geosemantica as a platform for connecting and accessing other agencies` geographical information.**
- **Making the connections among nodes to enable future exchange abilities**

CONCLUSIONS

- Many government agencies will be able to implement nodes for the Colombian Spatial Data Infrastructure in a straightforward way
- The intensive usage of GeoSemantica principles and integration tools among data providers and users could definitely foster the achievements of the Colombian Spatial Data Infrastructure.
- Thanks to the pilot project deployment, the advantages and achievements of geographic data integration could easily be shown to decision makers and future users, making it possible to involve more and more people at all levels.
- The sustainability of GeoSemantica depends on how all the integration technologies and standards are going to be assimilated by personnel of the participating government agencies.
- Despite these new possibilities, the Colombian Data Infrastructure has still a long way to go to get proper agreements among agencies and government involvement in supporting and spreading of the initiative.