GeOxygene: ... to host and share advanced GI Science research results

Bénédicte Bucher, Mickaël Brasebin, Elodie Buard, Eric Grosso, Sébastien Mustière
IGN-COGIT

OGRS 2009, July 8th, Nantes
Outline

• What are GeOxygene platforms?
  - GeOxygene_C (COGIT)
  - GeOxygene_OS (Open Source)

• Zooms:
  - Colours management
  - 3D
What are **GeOxygene platforms**?

**GeOxygene_C (COGIT)**

COGIT proposes the release of specific modules

IGN direction accepts

**GeOxygene (Open Source)**

Administrators: Eric Grosso, Julien Perret, Thierry Badard

**Administrators:** Eric Grosso, Julien Perret, Thierry Badard

---

**GeOxygene platforms** - GeOxygene_C - GeOxygene_OS - Colours - 3D
What are GeOxygene platforms?

GeOxygene_C (COGIT)
- dynamic CORE

Dynamic modules

GeOxygene_OS (Open Source)
- dynamic CORE

Static modules

SVN
More about GeOxygene_COGIT...

- **COGIT missions**: to develop algorithms and processes (for vector data)
  - To enhance IGN internal processes (integration, ...)
  - Or for external users.

- **10 years ago**:
  - Available development software: proprietary (but raster GRASS), black box, poor programming language
  - COGIT researchers selected or developed new ‘platforms’ adapted to their research topics: integration, generalisation, 3D, metadata...

  $\Rightarrow$ many obstacles to research activities
More about GeOxygene_COGIT...

• ~1999: Development of a new platform for most COGIT developments (Badard and Braun 2003):
  - Based on ISO/OGC standards, Java, Open Source releases, CVS

• Summary of motivations:
  - Internal code capitalisation and reuse
  - Research collaborations
  - Web Services development
More about GeOxygene_COGIT...

Application specific structures (Network, conceptual_schema,...)

ISO/OGC Geometry, Topology, Feature, FeatureType, ...

Applications:
- Core
- Basic
- Expert

1) Data are loaded into an object-oriented structure

2) Different applics

OJB, Hibernate

Spatial RDBMS
More about GeOxygene_COGIT...

Applications:
- Expert →
  ✓ data matching, schema transformation, ontologies, agents, ...
  ✓ simulation, 3D, colours, catalogue of processes, map design services and application, metadata acquisition...
More about GeOxygene_COGIT...
More about GeOxygene_COGIT...
GeOxygene_OpenSource milestones

http://oxygene-project.sourceforge.net

- v1.0: **Core** packages (2005)
- v1.2: **Basic** applications (spatial operators, topological map, triangulation) (2007)
- v1.4: java6 + **Core** additions (SLD support, ISO 19109, ...) (2009)
- v2 (under acceptation): **Expert applications** (colours, 3D), **Core modification** (ergonomics enhancement)
Colours

1) Map with legibility issues

- E. Chesneau PhD (2006) on proprietary platform
- Colours and their relationships should reflect:
  - the nature of geographical objects,
  - the relationships between these objects (Bertin, ...)

→ 2) Automatic improvement
1) Map with legibility issues

→ 2) Automatic improvement
3D

- M. Brasebin (2009)

GeOxygene platforms - GeOxygene_C - GeOxygene_OS - Colours - 3D

3D Geom (java3D)
3D Geom (ISO)
3D mapping for solids

3D Visualisation
3D Spatial operators
3D Generalisation

PostGIS

3D Translators
(CityGML, extruded Shp, Bati3D)
GeOxygene platforms - GeOxygene_C - GeOxygene_OS - Colours - 3D

3D

- After (Kada, 2006)
Conclusion

• COGIT missions: to develop algorithms and processes (for vector data) to enhance IGN internal processes (integration, ...), or for external users.

• Summary of motivations for GeOxygene:
  - Internal code capitalisation and reuse
  - Research collaborations (e.g. GeOpenSim project)
  - Web Services development (e.g. PhD of E. Grosso)
  - **IGN expertness dissemination:**
    • Open source software,
    • Collaborations,
    • Web Services,
    • Dialogue applications, Processes cataloguing, ...
  - ... collaborative construction of a new kind of expertness required to handle spatial aspects.
Data Matching

3D Colours

Abadie et al., 2007
d_s=0.2
d_s=0.6

3D Ontologies

Schema transformation

GeOxygène

Simulation

http://geopensim.ign.fr/

Abadie et al., 2007

d_s=[0,1]