



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

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

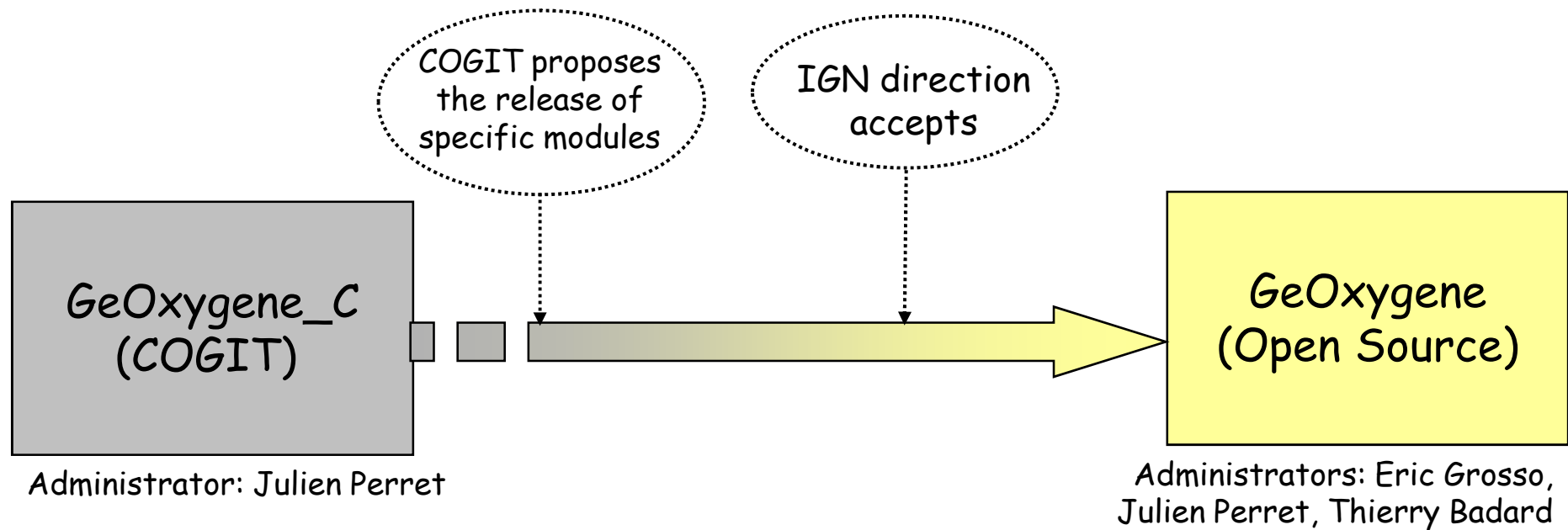


**OGRS 2009, July 8<sup>th</sup>, Nantes**

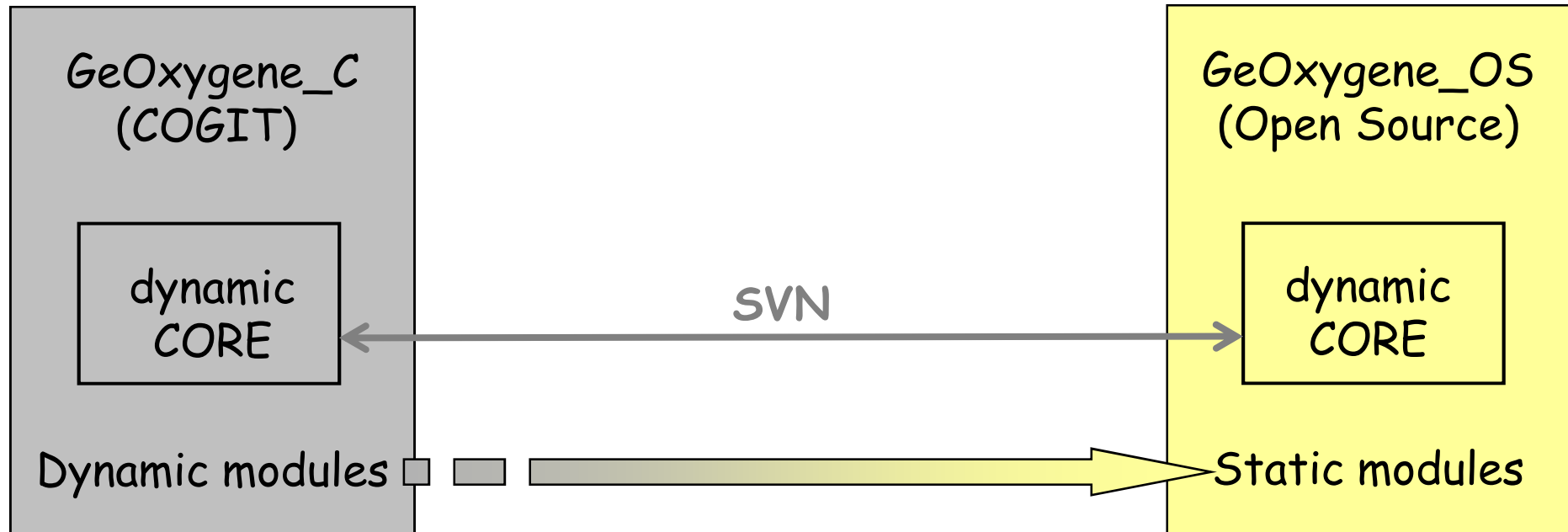
# Outline

- What are GeOxygene platforms?
  - GeOxygene\_C (COGIT)
  - GeOxygene\_OS (Open Source)
- Zooms:
  - Colours management
  - 3D

## What are GeOxygene platforms?



# What are GeOxygene platforms?



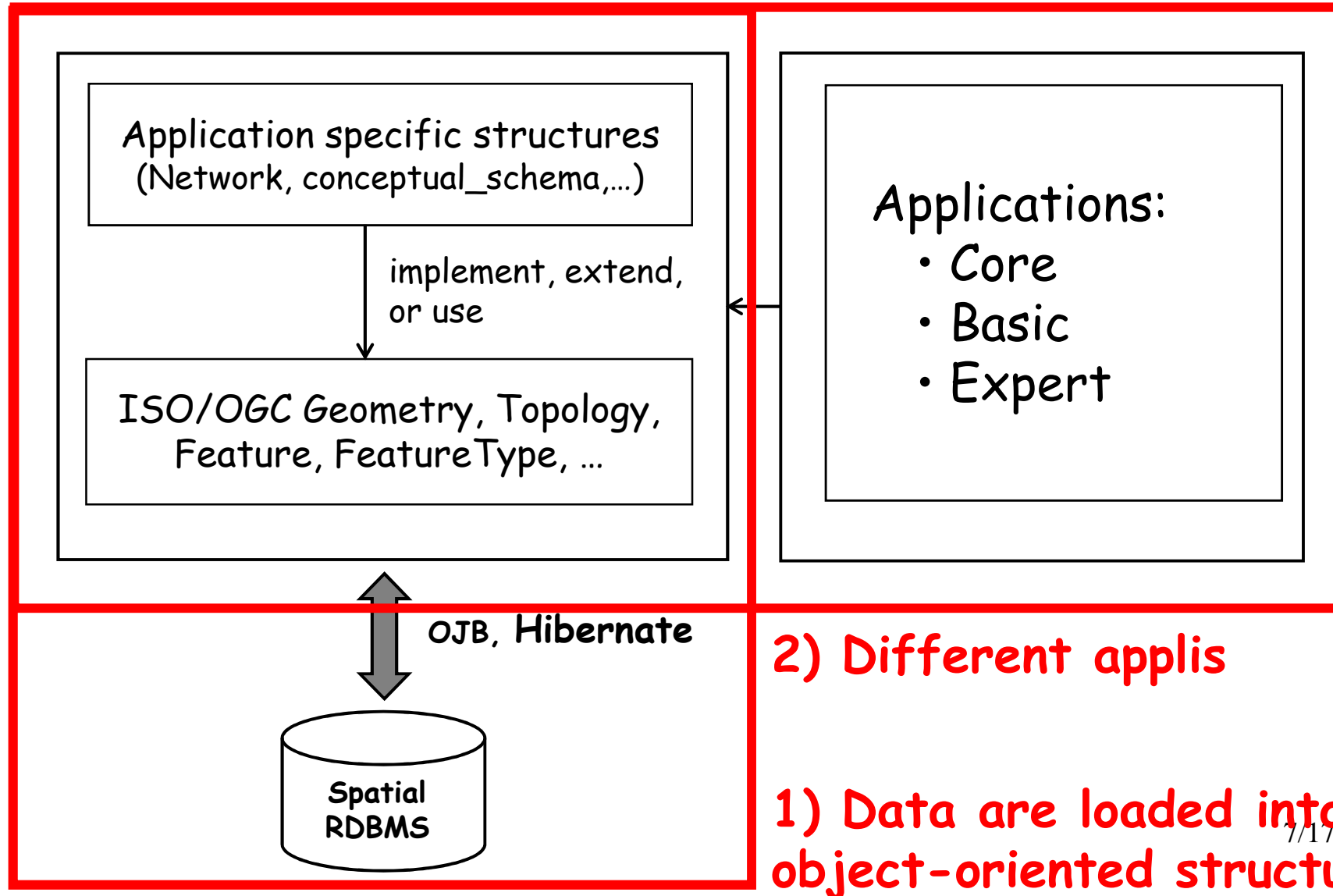
## More about GeOxygene\_COGIT...

- 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...
- ⇒ 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...



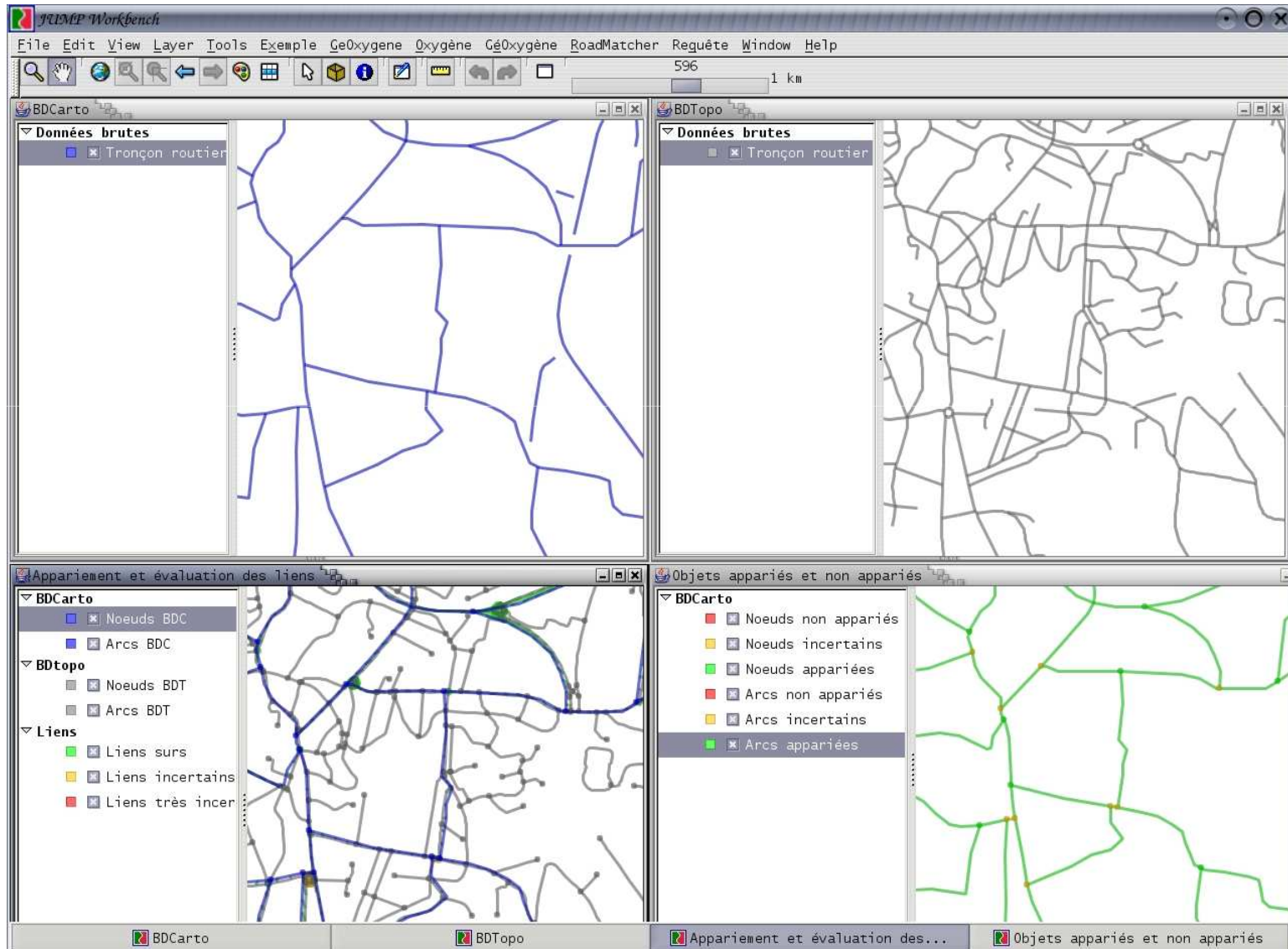
## More about GeOxygene\_COGIT...

### Applications:

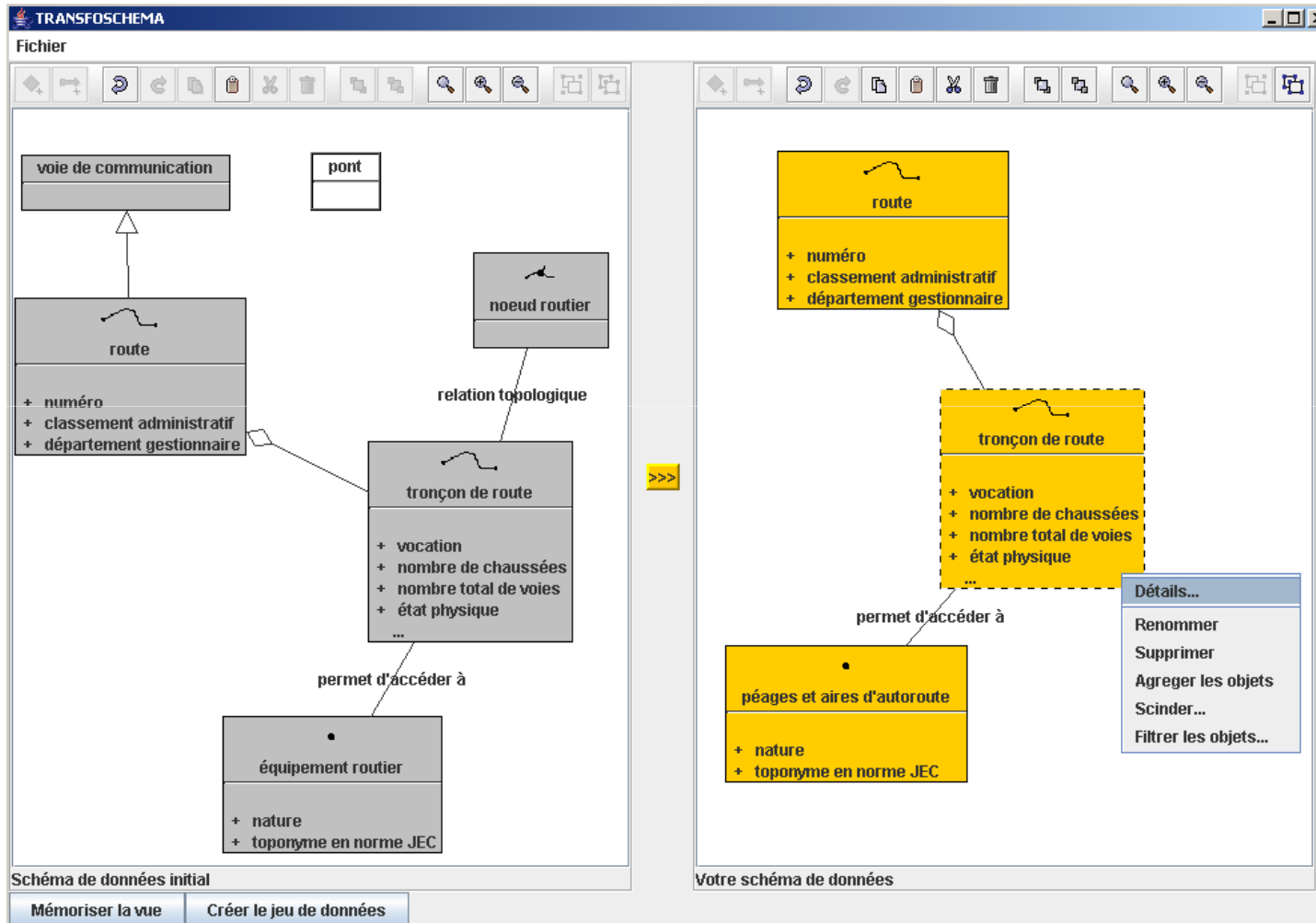
- Expert →
  - ✓ data matching, schema transformation, ontologies, agents, ...
  - ✓ simulation, 3D, colours, catalogue of processes, map design services and application, metadata acquisition...



# More about GeOxygene\_COGIT...



# More about GeOxygene\_COGIT...



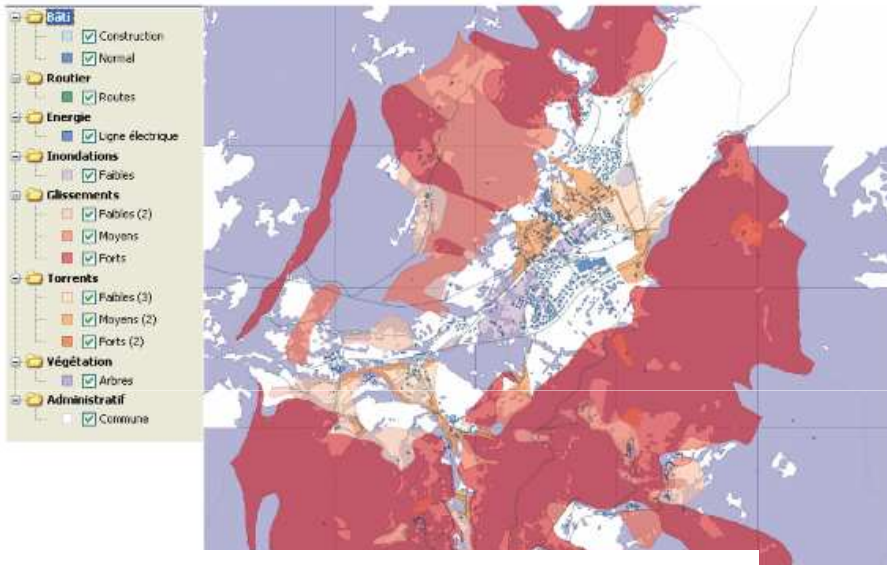
## GeOxygene\_OpenSource milestones

<http://oxygene-project.sourceforge.net>

- v1.0: **Core** packages (2005)
- v1.2: **Basic** applications (spatial operators, topological map, triangulation) (2007)
- v1.3: **Expert application** : network matching (2008)
- v1.4: java6 + **Core** additions (SLD support, ISO 19109, ...) (2009)
- v2 (*under acceptance*): **Expert applications** (colours, 3D), **Core modification** (ergonomy enhancement)

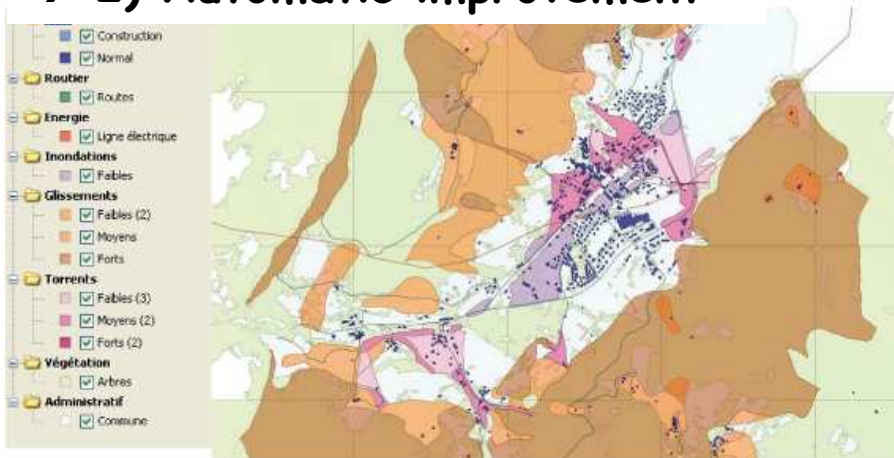
# Colours

## 1) Map with legibility issues



- E. Chesneau PhD (2006) on proprietary platform
- A. Ruas and E. Buard (2007, 2009)
- Colours and their relationships should reflect:

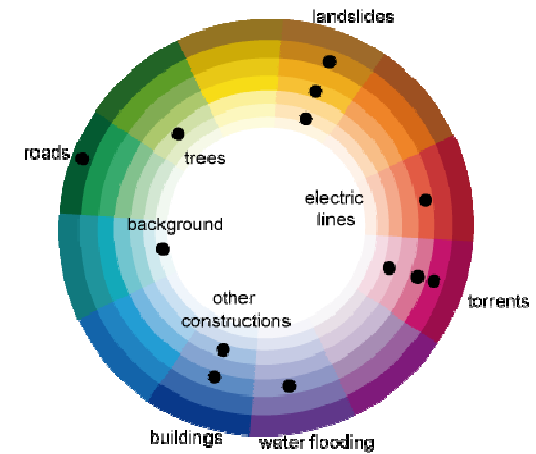
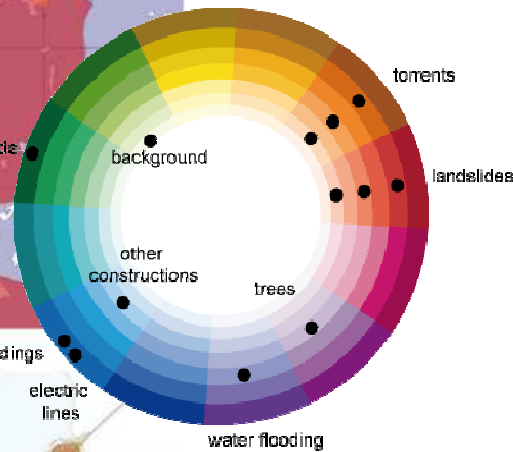
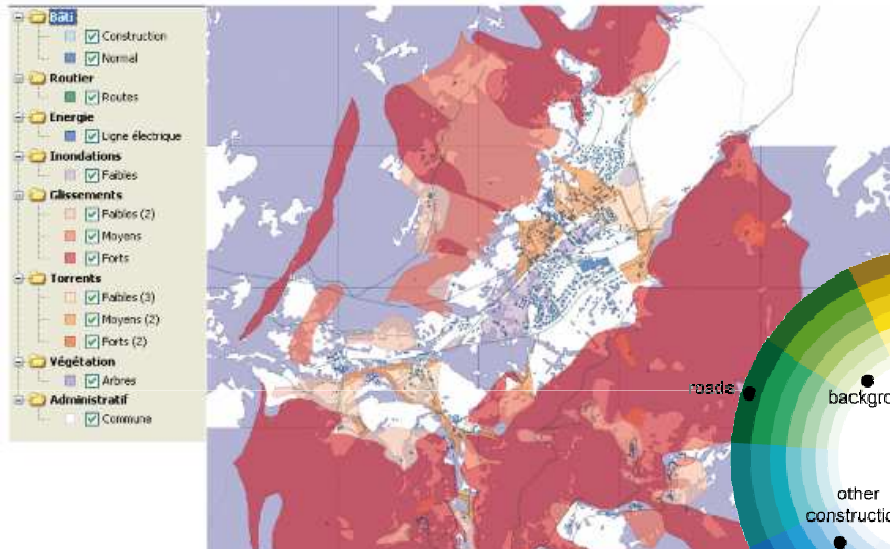
## → 2) Automatic improvement



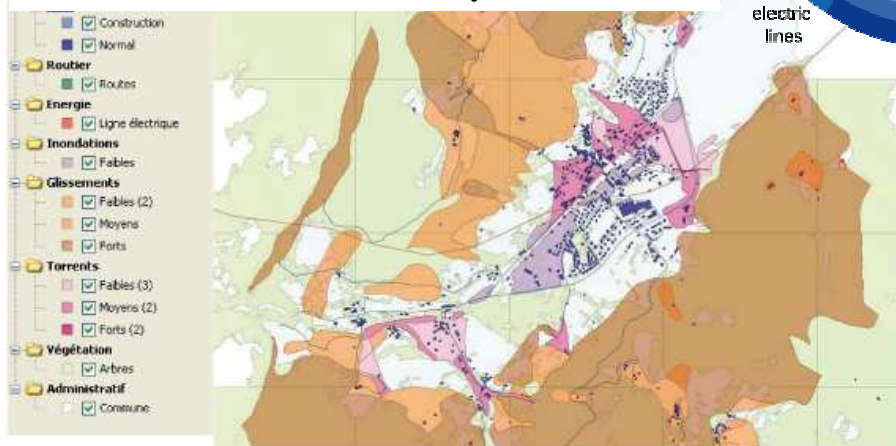
- the nature of geographical objects,
- the relationships between these objects (Bertin, ...)

# Colours

## 1) Map with legibility issues

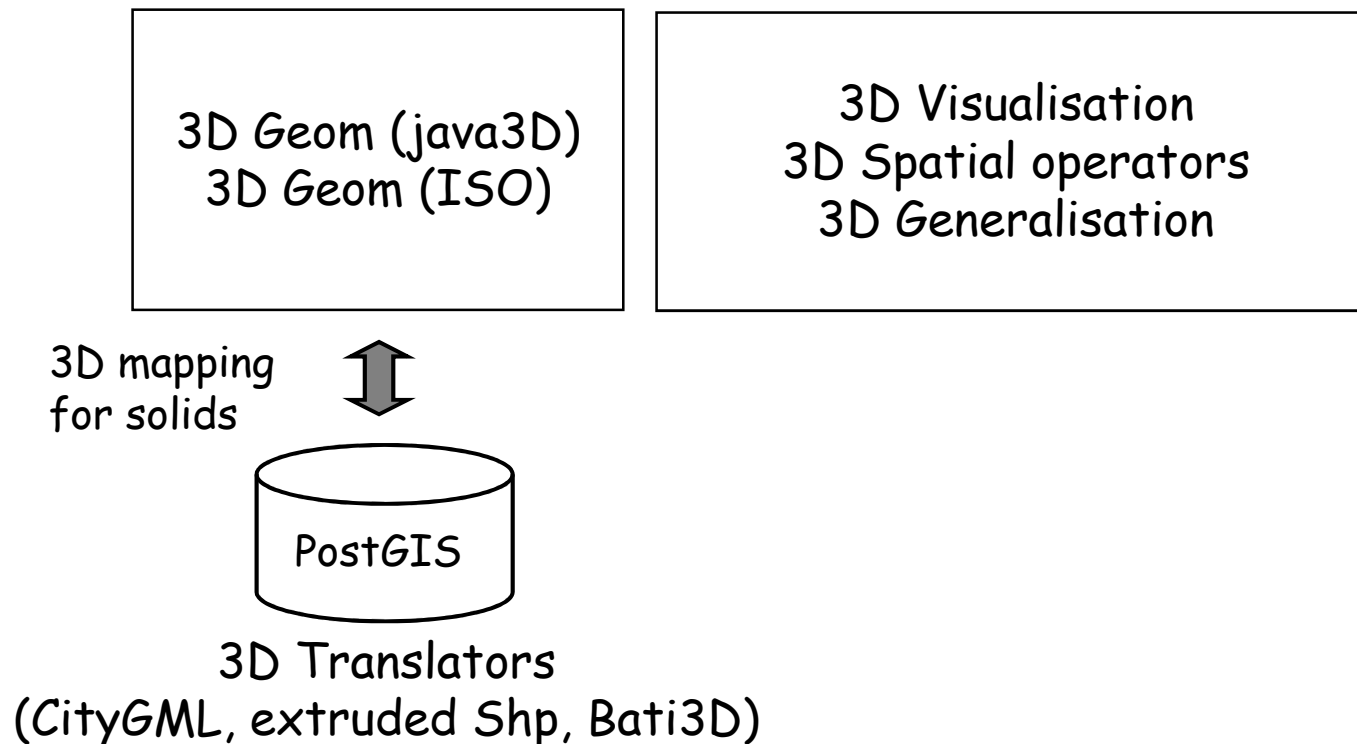


## → 2) Automatic improvement

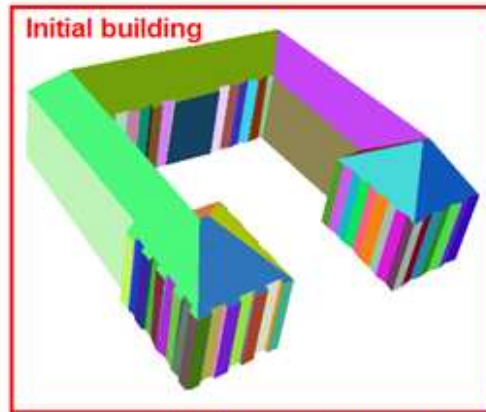


## 3D

- 4 PhD on different platforms: De la Losa (2000), Ramos (2003), Rousseau (2004), Poupeau (2008)
- M. Brasebin (2009)

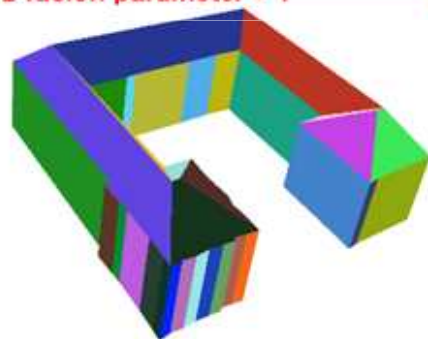


# 3D

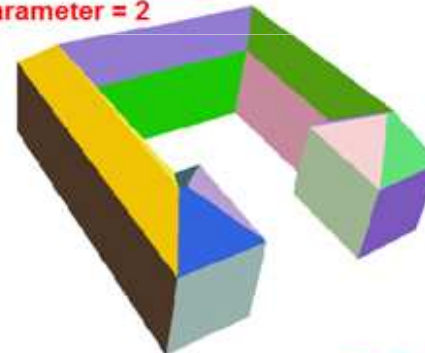


- After (Kada, 2006)

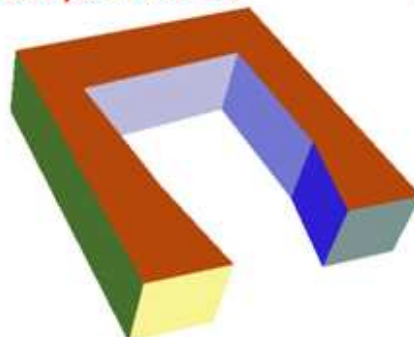
z-fusion parameter = 1



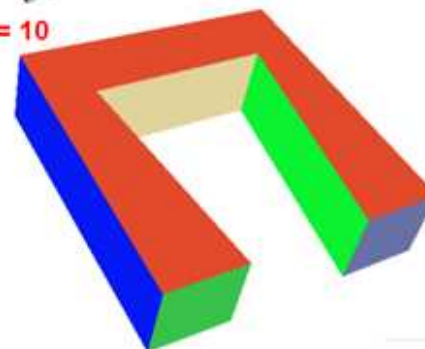
z-fusion parameter = 2



z-fusion parameter = 5



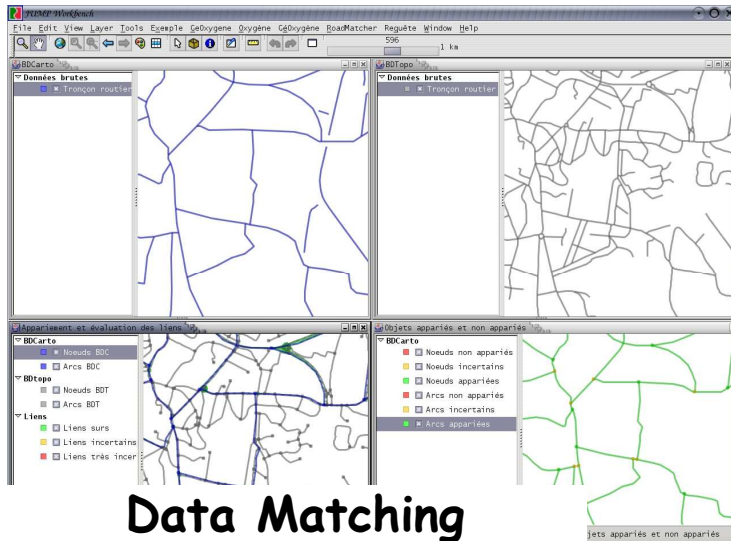
z-fusion parameter = 10



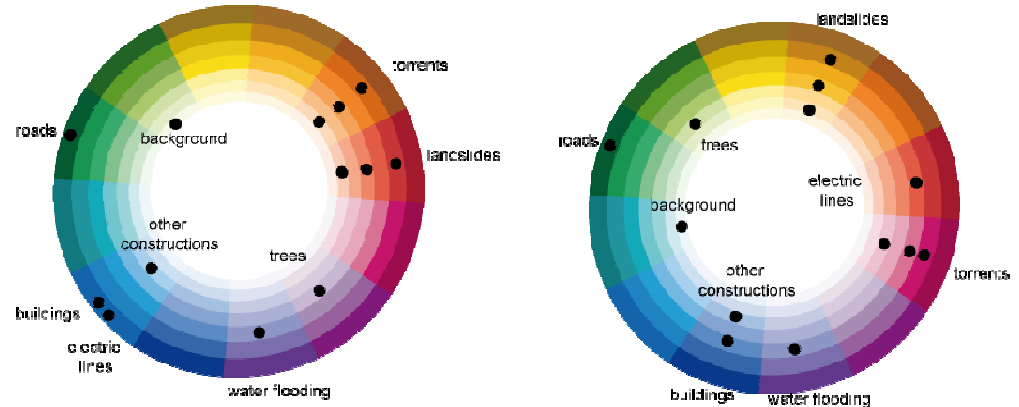
# Conclusion

- 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.

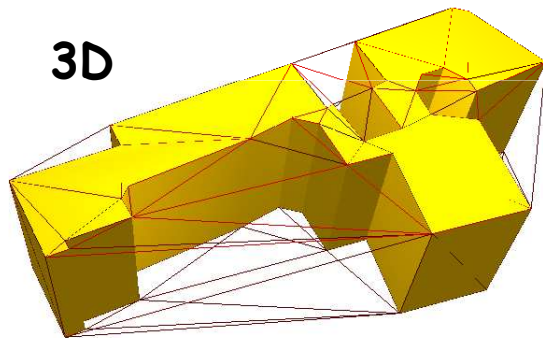




Data Matching



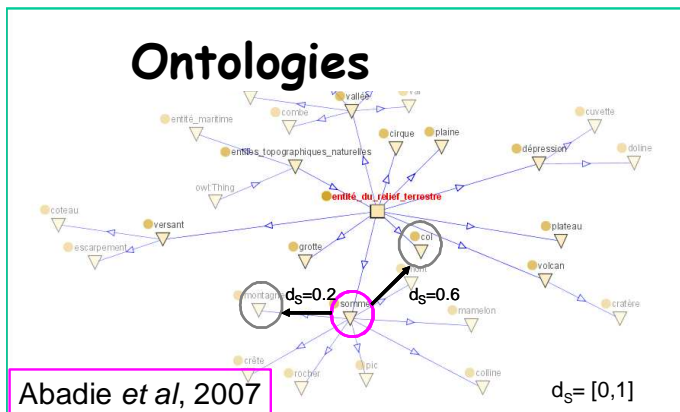
Colours



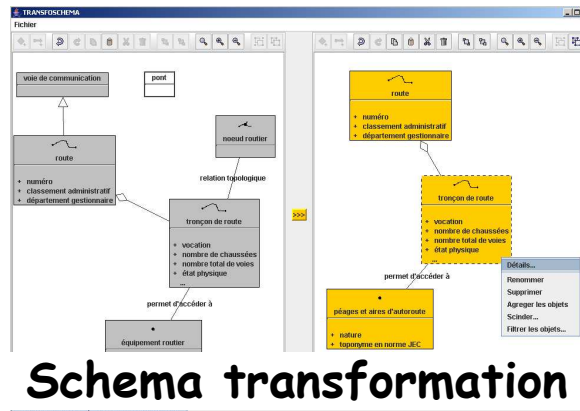
3D



Simulation  
<http://geopensim.ign.fr/>  
**GeOpenSim**



Abadie et al, 2007



Schema transformation



Accueil du site > Pr sentation > Les objectifs du projet GeOpenSim  
**Les objectifs du projet GeOpenSim**  
 Plate-forme G ographique OpenSource de Simulation.

**Les objectifs du projet GeOpenSim**

- L'objectif de ce projet de recherche est de concevoir une nouvelle plate-forme OpenSource d di e   l'analyse des tissus urbains qui disposerait des caract ristiques suivantes :
1. une repr sentation vectorielle et multi-niveaux de l'information g ographique apte   d crire les tissus urbains.