GeoPeuple project: using RESTful Web API to disseminate geohistorical database as open data

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GeoPeuple project: using RESTful Web API to disseminate geohistorical database as open data

- 30 month research project supported by the ANR
- Partners: COGIT (IGN), LaDéHis (EHESS), MALIRE (LIP6), IFSTTAR
- Aims:
  - to analyse and extract by vectorisation the contents of old maps, to use current topographic databases
  - to build a geo-historical database
  - to study the densification of French territories
- Website (in French only): http://geopeuple.ign.fr
Overview

- Geo-historical database gathering more than 200 years of evolution
- How to disseminate this database?
History of French municipalities

- Population: between 1793 and 2006, 34 census
  Disappearance of 7,300 entities (44,000 in 1793)
  Main investigator: Claude Motte

- Hervé Le Bras' hypothesis: spatial data
Easy cases

• Split or restoration: automatically computed by union of geometries
Complex cases

- Union or creation of entities from several entities

1793

Merger

Creation from n entities, n>1
1. County town (x,y) has to be inside former boundaries

2. Use maps (cadastres, road maps, satellites images, aerial photographs) to draw them

3. Respect as much as possible the scales between population ratio and area ratio
Example of some municipalities evolution

1999-present

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Example of some municipalities evolution

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Example of some municipalities evolution

1832-1972

Trancault
Bourdenay
Bercenay-Le-Hayer

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Example of some municipalities evolution

Charmesseaux
11 % population
1832 – 29 inh.

Trancault
80 % population
1832 – 205 inh.

Villeneuve-aux-
Riches-Hommes
9 % population
1832 – 23 inh.

Bercenay-
Le-Hayer

1793-1832
Geo-historical database

- Between 25 and 30 years of work to build it
- Design not limited to administrative entities: religious, academic, fiduciary, judicial, etc.
- Database model not limited to the French study
- Model allows to manage multiple evolutive hierarchies
  [Christine Plumejeaud's PhD 2011]

- Database will be provided as open data
- A priori ODbL license without commercial use
How to disseminate this database?
(both for general audience and historians)
Three different access

- **Downloadable data**
  - users can not handle data dynamically
  - users can not visualise it

- **Through a website**
  How to represent information?

- **RESTful Web API**
  To allow users to have a real access to data
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RESTful Web API

- Based on Java SPRING framework
- Queries vs. Outputs

<table>
<thead>
<tr>
<th>Output Query</th>
<th>Thematic</th>
<th>Time</th>
<th>Spatial</th>
<th>Spatio-temporal</th>
</tr>
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<tbody>
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<td>Spatio-temporal</td>
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<td>toponyms, census, boundaries, hierarchies</td>
</tr>
</tbody>
</table>

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How to represent information?

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Website

- No unique representation of such complex phenomenon

- Difficulties to understand and to visualise the historical demographic dynamics (particularly at local levels)

- Dynamic website with 4 synchronised points of view
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Density study
Source: GeoPeuple project (http://geopeuple.ign.fr)

See all the diagram

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Website: technical side
(inside our little kitchen)

- French GeoPortal API: based on OpenLayers
- Raphaël JS (SVG): historical diagram
- HighCharts: demographic and density diagrams
- Others: JQuery, JQuery UI
But better than words...

- First prototype online
  
  http://www.rotefabrik.free.fr/geopeuple/en/
Conclusion

- Geo-historical database
- Open data (ODbL without commercial use)
- Dissemination through 3 different ways:
  - Download
  - RESTful Web API
  - Website
- All codes will be released under GPL V3 or Affero GPL V3
- When? Mid-2013
- Sustainability: TGE-ADONIS
Perspectives

- Improving: search, esthetic, historical tab, reports

- Long term: crowdsourcing to improve geo-historical DB
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Questions

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