Beginning study about:
Taking into account the dependency between the thematic data and the reference data throughout the process of automatic generalisation

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Outline

1. Definitions
2. Problem statement
3. Referencing thematic data on topographic data
4. Case study of reference system
5. Conclusion and perspective
Outline

1. Definitions
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1. Definitions

Mashup:

In Computer science, a mashup is a web page or an application that combines data or functionality from two or more external sources to create a new service (Wikipedia).
1. Definitions

Mapping mashup, map mashup, geomashups: Combining data (personal or public) with a locating data through API like Google maps (McConchie 2008)

(http://www.theatreinchiicago.com)
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Mapping mashup, map mashup, geomashups: Combining data (personal or public) with a locating data through API like Google maps (McConchie 2008)

(http://www.theatreinchicago.com)
1. Definitions

Cartographic mashups for us:
Group of geographic data layers which may come from more than one source, these layers are superimposed
1. Definitions

**Thematic data:** Features of one type that are generally placed together in a single layer (wiki.gis.com).

**Topographic data:** the reference data, serve at locating the thematic data.
Outline

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2. Problem statement

More and more data available through the web.

- Different Lod and *specifications*.
- Thematic or topographic
- More and more VGI.

=> more and more mashups
=> Integration and generalisation become more complex
2. Problem statement

Problems of integration:

• Shifts, it may break semantic relations (Bus lines are along roads)

Source: www.geoportail.fr
2. Problem statement

Problems related to generalisation:

- Different Lod, between layers or in the same layer

Source: geoportail(http://www.geoportail.fr)
2. Problem statement

Problems related to generalisation:

- Different Lod, between layers or in the same layer
- Visualisation at a smaller scale.

Source: www.geoportail.fr
2. Problem statement

Problems related to generalisation:

- Different Lod, between layers or in the same layer
- Visualisation at a smaller scale.
- No respect of the thematic data

Scale of topographic layer 1:18000

The road is deleted 😊

Scale of topographic layer 1:32000
2. Problem statement

Sequence of integration and generalisation process:

- Semantic integration
- Geometric integration
- Generalisation
2. Problem statement

Sequence of integration and generalisation process:
Our proposed changement:

Semantic integration → Geometric integration → Thematic data referencing → Generalisation
2. Problem statement

Sequence of integration and generalisation process:
Our proposed changement:

Semantic integration

Geometric integration

Thematic data referencing

Generalisation

We work on this part
2. Problem statement

General objective

Be able to take into account dependencies between layers during the generalisation of cartographic mashups
Outline

1. Definitions
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3. Referencing thematic data

To preserve the relation between thematic and topographic data, we have to reference the thematic data.
3. Referencing thematic data

We propose two components reference system

• Semantic component: Semantic relations between objects (using Ontologies)

Semantically, bus lines related to a road
3. Referencing thematic data

We propose two components reference system

• Semantic component: Semantic relations between objects (using Ontologies)
• Spatial component: Relative topologic and metric position

Before the crossroad

Between « Tarasque » and « lauzard » roads

Topologic position
3. Referencing thematic data

We propose two components reference system

- Semantic component: Semantic relations between objects (using Ontologies)
- Spatial component: Relative topologic and metric position

Metric position
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4. Case study of reference system

The case study is used to refine our propositions and to test our ideas.
4. Case study of reference system

The case study is used to refine our propositions and to test our ideas.

Cooperation with public road manager

• Thematic data = road information: security, accidents, traffic lights, signs...etc.
• The localization of their data is based on physical objects (milestones)
4. Case study

Milestone no. 2

Accident after 155 m from milestone 5
The 20/06/2011 (Over speed)

Traffic sign after 720 m from milestone 4

Real world

Milestone no. 2

Accident after 155 m from milestone 5
The 20/06/2011 (Over speed)
4. Case study

Real world

Their Database
4. Case study

Table of milestones:

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They located their thematic data by finding the correspondent of crossroads on the topographic database.
4. Case study

They located their thematic data by finding the correspondent of crossroads on the topographic database.
4. Case study

So

- they locate the milestones of crossroads
- then locate the other objects in a proportional way

![Diagram of their database and topographic database]
4. Case study

So

- they locate the milestones of crossroads
- then locate the other objects in a proportional way

Their database

Topographic database
4. Case study

BUT:

Not the same topologic position!!
4. Case study

Problem:
We need to conserve the semantic and spatial relations when we locate the thematic data.
4. Case study

Problem:
We need to conserve the semantic and spatial relations when we locate the thematic data.

We have the same problem when we generalise.
4. Case study, possible solution

What we propose to do:

- insert characteristic points be recognized between geographical databases and extract the relations topologic and metric of thematic data with them.
4. Case study, possible solution

What we propose to do:

- Insert characteristic points be recognized between geographical databases and extract the relations topologic and metric of thematic data with them.

The accident took place in front of the museum 400m south of Characteristic points.
What we propose to do:

- insert characteristic points be recognized between geographical databases and extract the relations topologic and metric of thematic data with them.

We can use that To put the decide the accident place In any topographical database

The accident took place In front of the museum 400m south of Characteristic points
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5. Conclusion and perspective

- The beginning of a study regarding the integration and the generalisation of mashups even when having the two types of data “topographic” and “thematic”

- We presented our first thoughts about a referencing system

- We want to be able to generalise with respect to relationships between thematic and topographic components.
5. Conclusion and perspective

- Study an automatic way to choose the characteristic points

- Test the deformation of generalisation result during and after the processing (on real road data)

- Study the generalisation of thematic data
Thanks