Relevant Space Partitioning for Collaborative Generalisation

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Presentation Outline

• Collaborative Generalisation Framework
• Defining Geographic Spaces
• Geographic Spaces Neighbourhood
• Finding the Best Outline?
• Conclusion and Further Work
Many automatic cartographic generalisation processes
But…

Adapted to a specific *landscape*

AGENT [Ruas 99], [Barrault et al 01]

Adapted to urban areas

CartACom [Duchêne 04]

Adapted to rural areas
Many automatic cartographic generalisation processes
But…

Adapted to a specific **theme**

"MIP aggregation"  [Haunert 08]

Adapted to Land Use

[Baella et al 07]

Adapted to Spot Heights
Many automatic cartographic generalisation processes
But…

Adapted to a specific \textit{conflict}

Elastic Beams [Bader 01]

Adapted to line symbol overlapping conflicts
Many automatic cartographic generalisation processes
But…

Adapted to a *mix* of landscape, theme and conflict

AGENT [Ruas 99], [Barrault et al 01]

Adapted to mountain roads
• Make generalisation processes collaborate
• Potential side effects at the edge of spaces

More on Collaborative Generalisation at GIScience Friday morning
Plan

• Collaborative Generalisation Framework

• **Defining Geographic Spaces**

• Geographic Spaces Neighbourhood

• Finding the Best Outline?

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Defining Geographic Spaces

A geographically meaningful extract of the data that can be a relevant input for a given generalisation process

- Areal (urban area, mountain area…)
- Thematic (road network, vegetation…)
- Mixed (mountain roads…)
Defining Geographic Spaces

Examples of geographic spaces

Urban space

Rurban space

Mountain roads space
Plan

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3 Types of Neighbourhood:

- Simple edge
- Adjacency
- Overlap
3 Types of Neighbourhood:

- Urban space
- Rurban space
- Mountain space
- Edge
- Rural space
- Adjacency

Geographic Spaces Neighbourhood
Neighbourhood for Thematic Spaces

What is the outline of a road network when the outside is the place that suffers side effects?

Road network

Smokestacks layer
Geographic Spaces Neighbourhood

Functional Thematic Neighbourhood between two themes:

Moving one theme impacts the other

Generalisation

Side effect

Roads and Forests have a thematic adjacency
Roads and Gas stations have a thematic adjacency
Plan

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Finding the Best Outline?

Many outlines possible for vague spaces  e.g. Urban spaces

→ Analyse Sensitivity to outline choice

[Chaudhry & Mackaness 08]

[Walter 08]

[Boffet 01]

[Delahaye 10]
Conclusion

• Collaborative Generalisation needs to partition data in relevant spaces

• The spaces neighbourhood allows to manage side effects

• Delineating thematic spaces is not an easy task!

• The choice of the algorithm to delineate vague spaces is critical
Further Work

• Analyse more into details the sensitivity to outlines
• Experiment side effects detection and correction
• Develop new algorithms for new spaces

- Suburban repetitive space
- Industrial space

• Finalise the CollaGen prototype
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Thanks for your attention ! Questions ?
Guillaume Touya