Developing a vario-scale IMGeo using the constrained tGAP structure

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Introduction

• MSc thesis within municipality of Rotterdam

• Problem definition:
  – Efficiency
  – Data authenticity

• Solution:
  – Integration through tGAP
Generalisation method

- **tGAP = topological Generalised Area Partition**
  - Merging area objects, storing in a tree structure

- **Constrained tGAP structure**
  - Merging large scale objects until the small scale situation is reached
  - Weights and compatibilities guide the generalization process
  - Use of constraint improves results tGAP
  - Instead of optimization a real dataset is used as constraint
Datasets

• IMGeo
  – Large scale object oriented exchange model
  – 1:1,000
  – Derived from line-based GBKN
  – Pilot in Almere

• Top10NL
  – Medium Scale Map
  – 1:10,000
  – Successor of Top10Vector
  – Authentic registration on topography
How to combine the two datasets?

Introduction  Generalisation  Pre-processing  Results  Conclusions

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No. 5
Geometrical differences

Introduction                         Generalisation                         Pre-processing                         Results                         Conclusions

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No. 6
Methodology of pre-processing

- How to assign an IMGeo object to a Top10NL region?
  - Intersect and split all IMGeo objects in case of a Top10NL border
  - Assign the IMGeo object to the Top10NL object that overlaps the IMGeo object most
  - Split the IMGeo object in case of a 50-50 situation
  - Classify buildings first

- IMGeo geometry not leading.

+ End result resembles Top10NL
Methodology of pre-processing

• How to assign an IMGeo object to a Top10NL region?
  – Intersect and split all IMGeo objects in case of a Top10NL border
  – Assign the IMGeo object to the Top10NL object that overlaps the IMGeo object most
  – Split the IMGeo object in case of a 50-50 situation
  – Classify buildings first

+ IMGeo geometry is leading
- Not satisfying end result
Methodology of pre-processing

• How to assign an IMGeo object to a Top10NL region?
  – Intersect and split all IMGeo objects in case of a Top10NL border
  – Assign the IMGeo object to the Top10NL object that overlaps the IMGeo object most
  – Split the IMGeo object in case of a 50-50 situation
  – Classify buildings first

- Parking place classified as building
- Not satisfying end result
Methodology of pre-processing

- How to assign an IMGeo object to a Top10NL region?
  - Intersect and split all IMGeo objects in case of a Top10NL border
  - Assign the IMGeo object to the Top10NL object that overlaps the IMGeo object most
  - Split the IMGeo object in case of a 50-50 situation
  - **Classify buildings first**

+ IMGeo geometry is leading

+ Good representation in end result
Results using the constrained tGAP structure (Almere)
Results using the constrained tGAP structure (Almere)
Results using the constrained tGAP structure (Rotterdam)
Conclusions and recommendations

• The constrained tGAP with a real dataset as constraint can be an improvement to the version with the optimization.

• Building first method is suitable as classification method for constrained tGAP.

• To improve the results line simplification needs to be added to the (constrained) tGAP algorithm.