Two Demos: Typification, Continuous Generalization

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Demos

Typification
- Of buildings for small scale representations
- Based on Kohonen Feature Maps

Continuous Generalization
- Based on coding scheme
- Incremental refinement of data
  • Simplification of lines (Douglas Peuker)
  • Simplification of buildings
Process for typification

- Given a target scale and reduction rate, select \( nz \) buildings randomly; larger buildings are slightly prioritized. The buildings are reduced to their centroids.
- Processing of the centroids using Kohonen feature maps leads to re-arranged building centroids.
- Assign building symbol: look for nearest object in the vicinity of the re-arranged object; Depending on its size:
  - Present it with original shape
  - or present it as a square symbol with the orientation of the original building.
- Displace new buildings and streets with displacement algorithm `PUSH`
- If required number of objects could not be placed in a mesh, a smaller reduction rate is chosen and the whole process is repeated.

Streets and cadastral buildings: goal 1:50.000

Buildings too detailed and small; Overlap with streets
Result of typification (gray)
Overlay of typified buildings and DTK50

Original – Buildings 1:1000
Continuous Generalization

(for more information -> SDH 2004-Proceedings)
Simple Operations

- EGO's can be subdivided into simple operations (SO's)
- SO's may modify geometry or topology

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Description</th>
<th>Parameters</th>
<th>Inverse Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>Insert Vertex</td>
<td>IV &lt;edge id&gt; &lt;rel. position&gt;</td>
<td>IV &lt;edge id + 1&gt;</td>
</tr>
<tr>
<td>DV</td>
<td>Duplicate Vertex</td>
<td>DV &lt;vertex id&gt;</td>
<td>IV &lt;vertex id + 1&gt;</td>
</tr>
<tr>
<td>MV</td>
<td>Move Vertex</td>
<td>MV &lt;vertex id&gt; &lt;dx&gt; &lt;dy&gt;</td>
<td>IV &lt;vertex id&gt; &lt;dx&gt; &lt;dy&gt;</td>
</tr>
<tr>
<td>RV</td>
<td>Remove Vertex</td>
<td>RV &lt;vertex id&gt;</td>
<td>–</td>
</tr>
</tbody>
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Simple Operations: Example

- After IV 1, 60%
- After DV 2
- After MV 3, 2, 0
- After MV 4, 2, 0
Continuous Generalization Demo