Merging Route Data and Cartographic Data

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Route generation

Requirements:
- Road names or numbers
- Address ranges
- Turn restrictions
- Physical dividers
- Speed limits
- Relative road level
- etc.
System architecture GiMoDig
Cartographic data

Data from NLS Finland

```
gmd:intendedUse: motorWay
name:
gmd:number:
gmd:width:
gmd:locationCategory:
fid: Road.NLS.55197
$GEOMETRY_ELEM: centerLineOf
```
Route data

<table>
<thead>
<tr>
<th>Description</th>
<th>Drive 600 meters. At the end of the street turn left into Sokinsuontie (Sockkärrsvägen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn</td>
<td>endofroad_left_turn</td>
</tr>
<tr>
<td>Distance</td>
<td>626</td>
</tr>
<tr>
<td>Time</td>
<td>81</td>
</tr>
<tr>
<td>Roadname</td>
<td>Hönörintie (Hönörvägen)</td>
</tr>
<tr>
<td>Exitcount</td>
<td>4</td>
</tr>
<tr>
<td>Transportation</td>
<td>type drive</td>
</tr>
<tr>
<td>Crossing_type</td>
<td>crossing_3ways_t</td>
</tr>
<tr>
<td>Is_turn</td>
<td>false</td>
</tr>
<tr>
<td>SpeedLimit</td>
<td>50</td>
</tr>
</tbody>
</table>

Data from Wayfinder Systems, TeleAtlas
Cartographic data and route data
3 main issues

- Matching
- Matching in relation to generalisation
- Final route representation
Matching

- Matching road and route segments
- Merging road and route segments
- Presentation of integrated road and route data
Matching

- JCS Conflation Suite

Automated road network matching by:

- Matching nodes
- Finding matching segments
- Splitting segments to enable better matching

Presenting a conflated network
Matching Problems
Matching

Solution

Improve the JCS Network Conflation to function iteratively
Generalisation

Before or after matching?
Generalisation

Generalisation before matching:

+ Removal of unwanted roads facilitates the matching process
+ The route is matched to the road network’s final geometry

- Roads needed for matching might be removed beforehand
Generalisation

Generalisation after matching:

+ Possible to keep all matched road segments

- Generalisation might remove or change geometries of the matched road segments
Final route representation

Object or attribute?
Final route representation

Route as road attribute:

+ Generalisation will not affect route

- The route also has attributes, can be "too much" to have these as road attributes as well

- Impossible to present route outside road network
Final route representation

Route as object:

+ There will be no problem with having many attributes for a route
+ The route does not necessarily need “full” geometry, links to road geometries can also be used

- Unless links are used, the matched road and route geometries might differ after generalisation (if generalisation is done after matching)
Other issues

- Could generalisation be adjusted to the route integration?
- Or should route integration be adjusted to the generalisation result?