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Radius Clarity
Automated Generalisation

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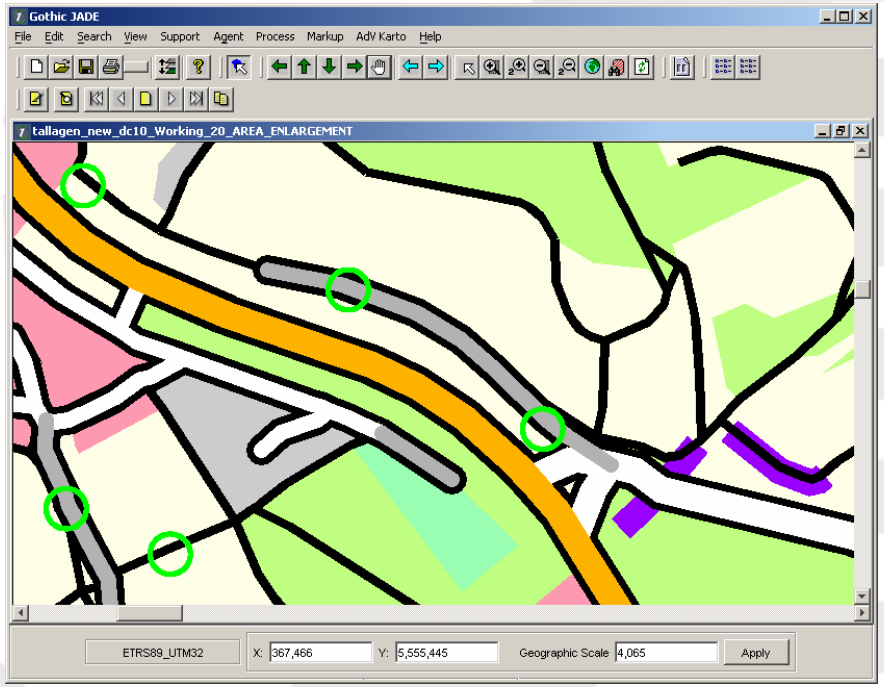
Content

- Brief overview of Radius Clarity
- Automated Generalisation workflow
- Model Generalisation results
- Cartographic Generalisation results
- Explain Agent Technology
- Planned Future Developments

Radius Clarity is 1Spatial's platform for automated generalisation.

- Toolkit for building automated generalisation workflows
- Derives new mapping products automatically from existing data.
- Provides an environment to develop and research new generalisation algorithms.



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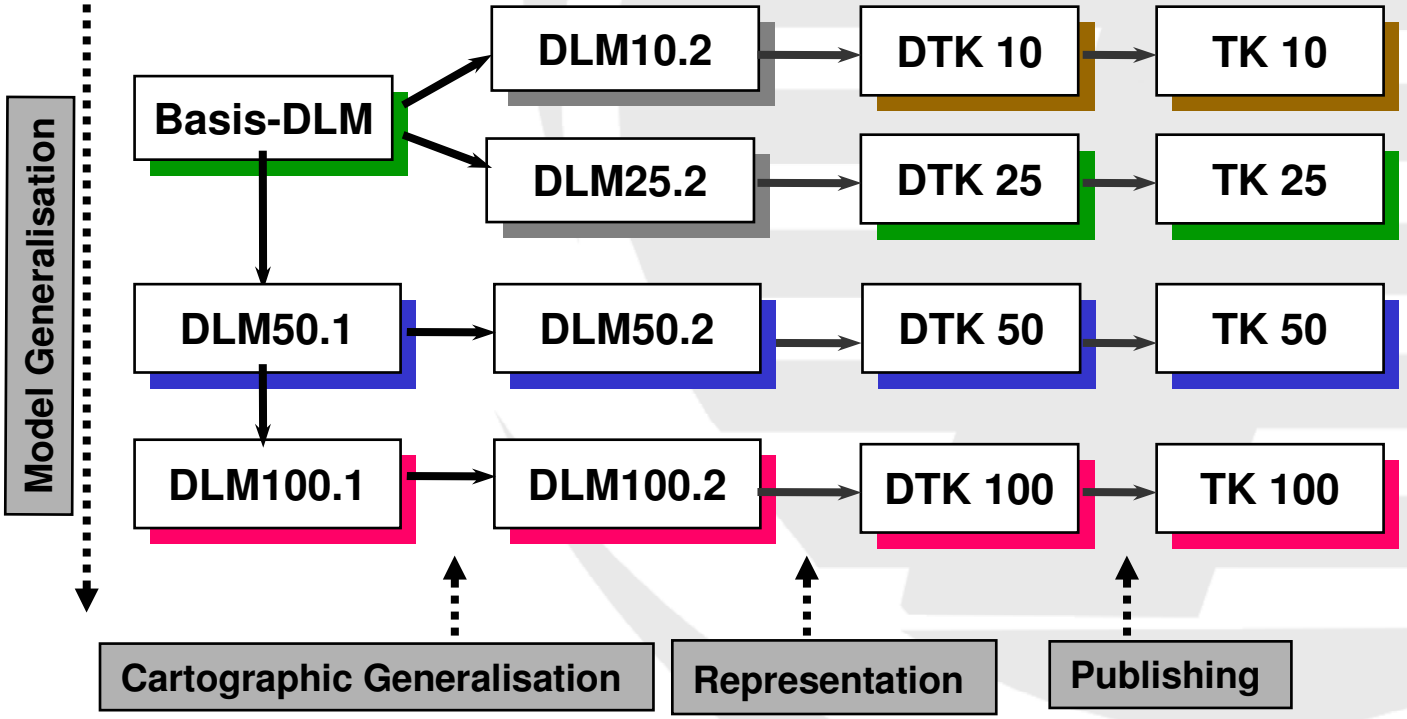
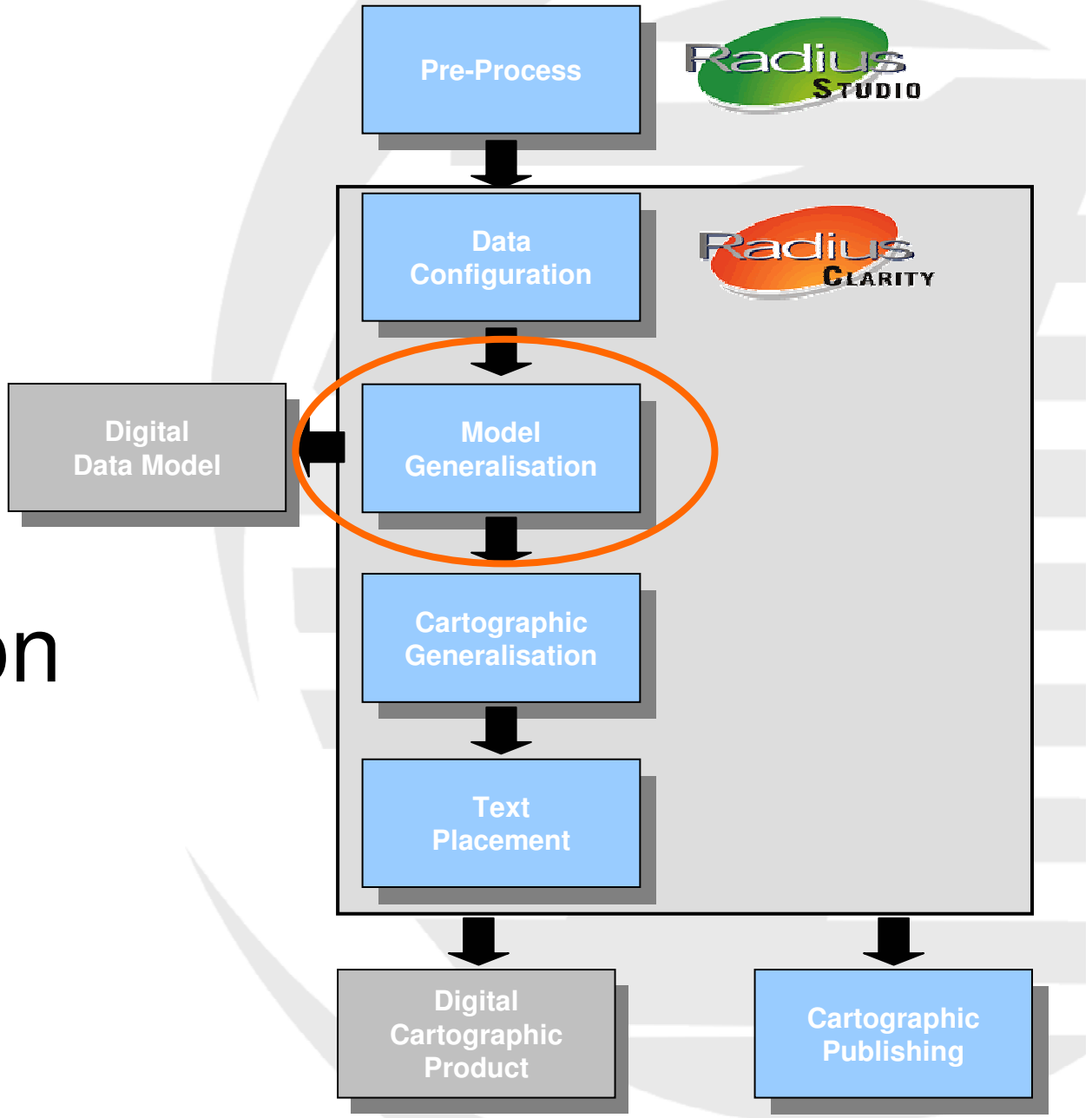
AdV Project

Advantages of the Agent-Technology

- Scale independence



Automatic Generalisation Workflow



Model Generalisation

Model Generalisation is the reduction of the amount of source data to a level suitable for the target scale. This is achieved by;

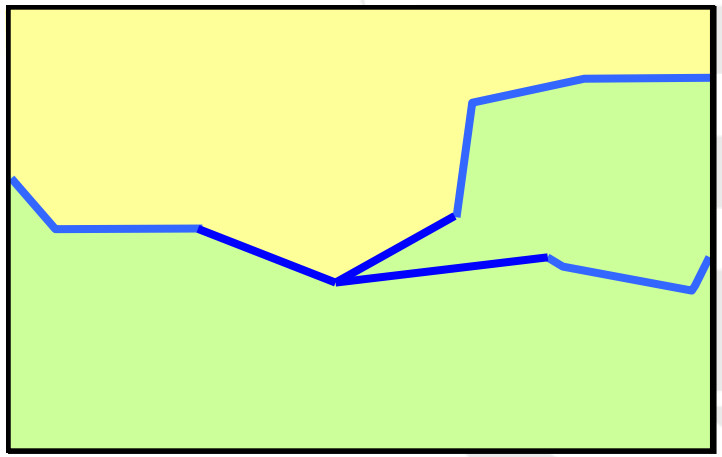
- Removing feature classes that are not visualised at the target scale
- Amalgamating or removing small features while retaining topological connectivity
- Filtering unwanted detail from features

Features retain their real world coordinates (not displaced or exaggerated etc).

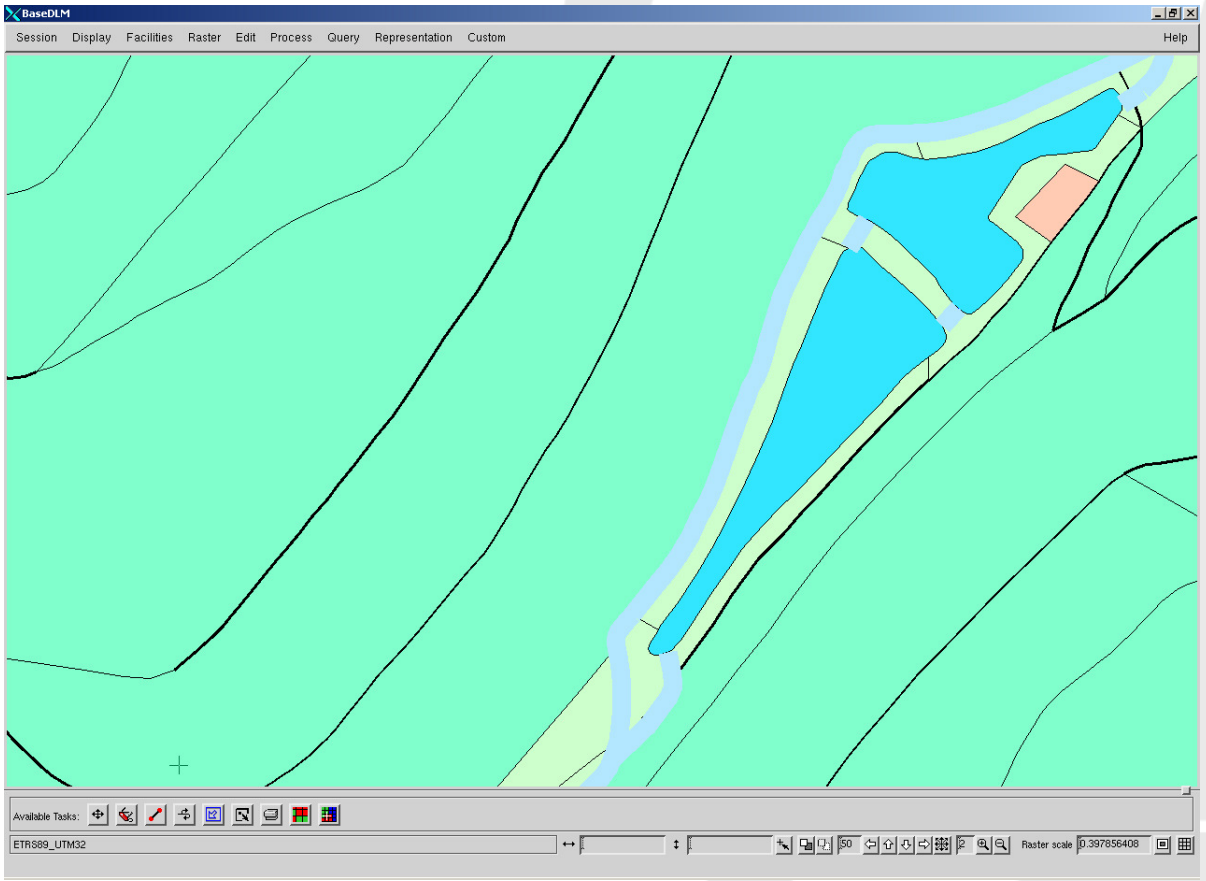
Area Merging (merging base areas)

Requirement

- Delete lake objects that are too small for representing at 1:50,000
- If the lake has a connection with two or more rivers then connectivity must be maintained
- Merge all the parts of the deleted lake into the surrounding areas



Area Merging (merging base areas)



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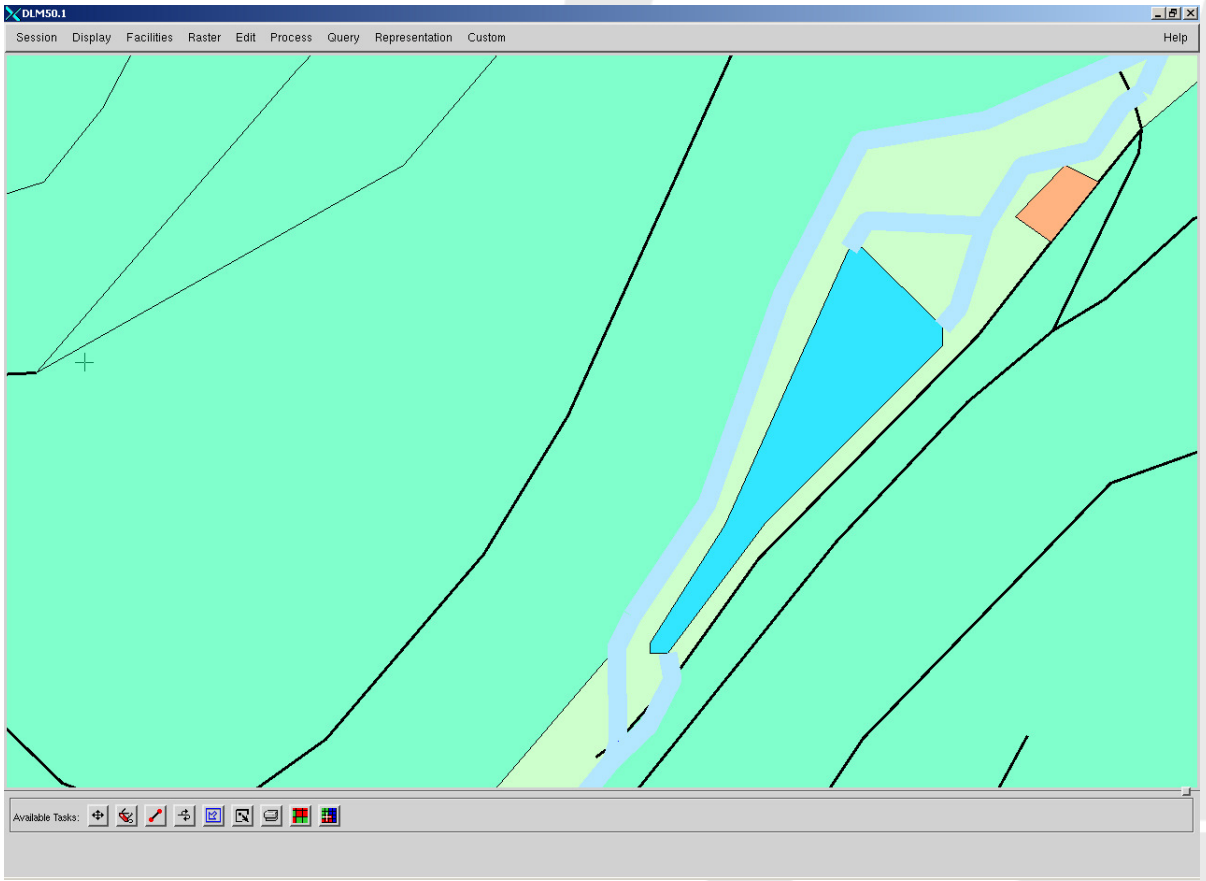
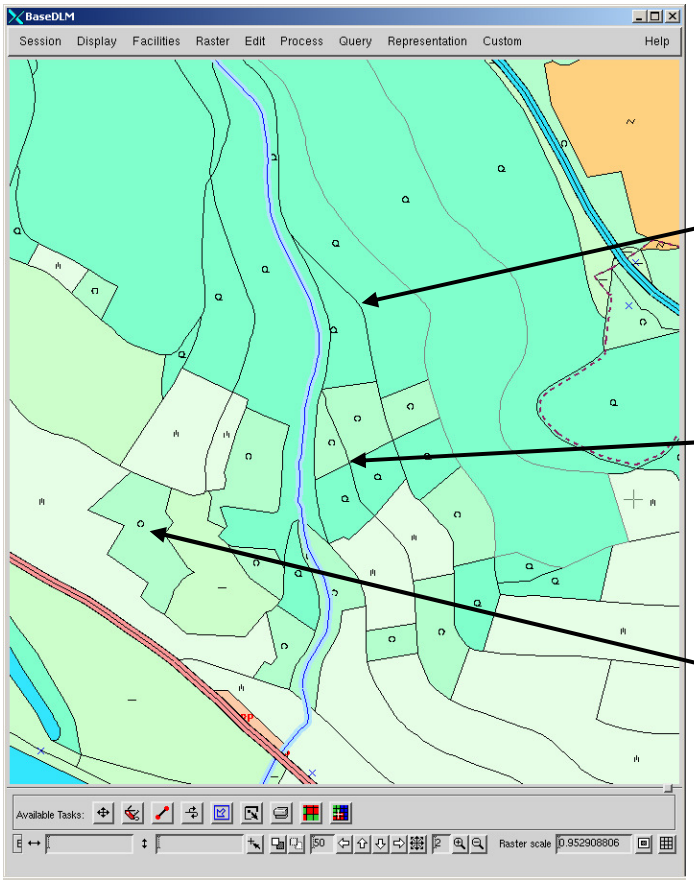


Model Generalisation Results

BaseDLM

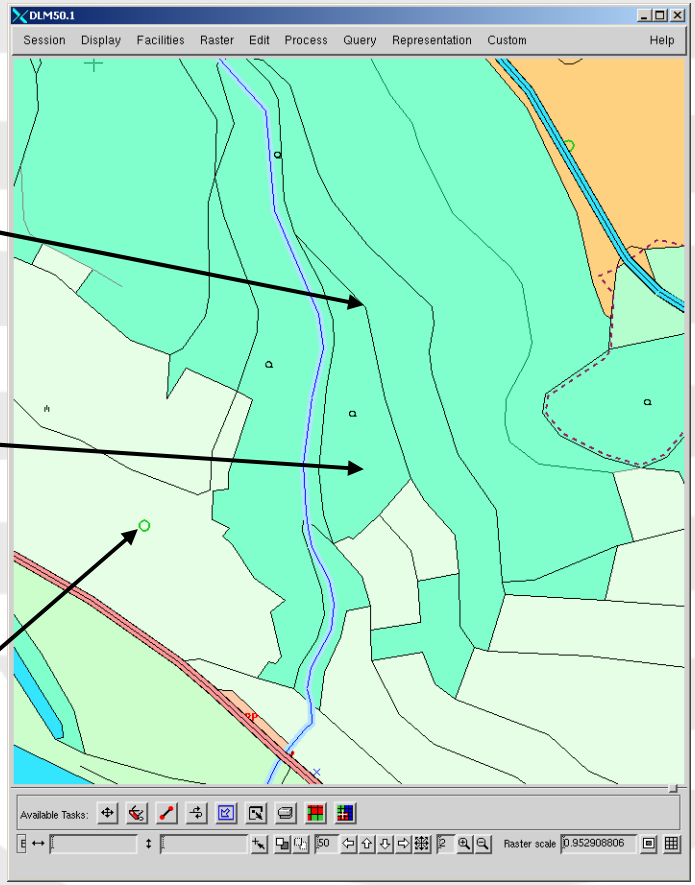


Line Filtering
(Point Reduction)

Area Merging

Geometry Change
(Area to Point)

DLM50.1



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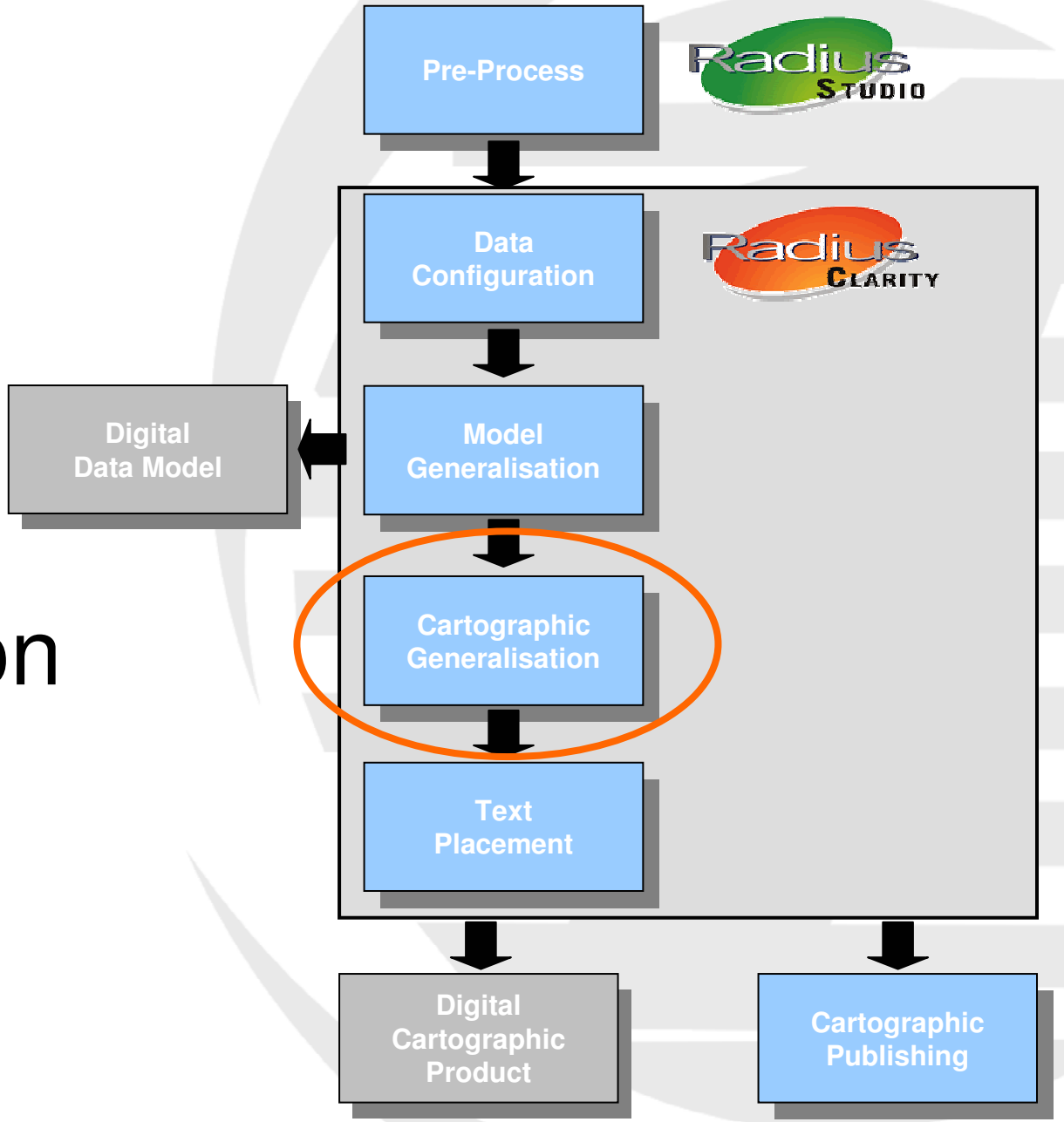
Automatic Generalisation Workflow



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Cartographic Generalisation

Cartographic Generalisation is concerned with the detection and resolution of conflicts between map objects for representation at the target scale. This is achieved by;

- Simplification
- Typification
- Displacement
- Enlargement
- Diffusion
- Exaggeration

Agent Approach

- Map objects (e.g Roads, Buildings) are made Agents, making them self aware

Measures: Indicating the state and surroundings of the object

"How big am I?"

"How close am I to my nearest neighbour?"

Constraints: Asserting the target values

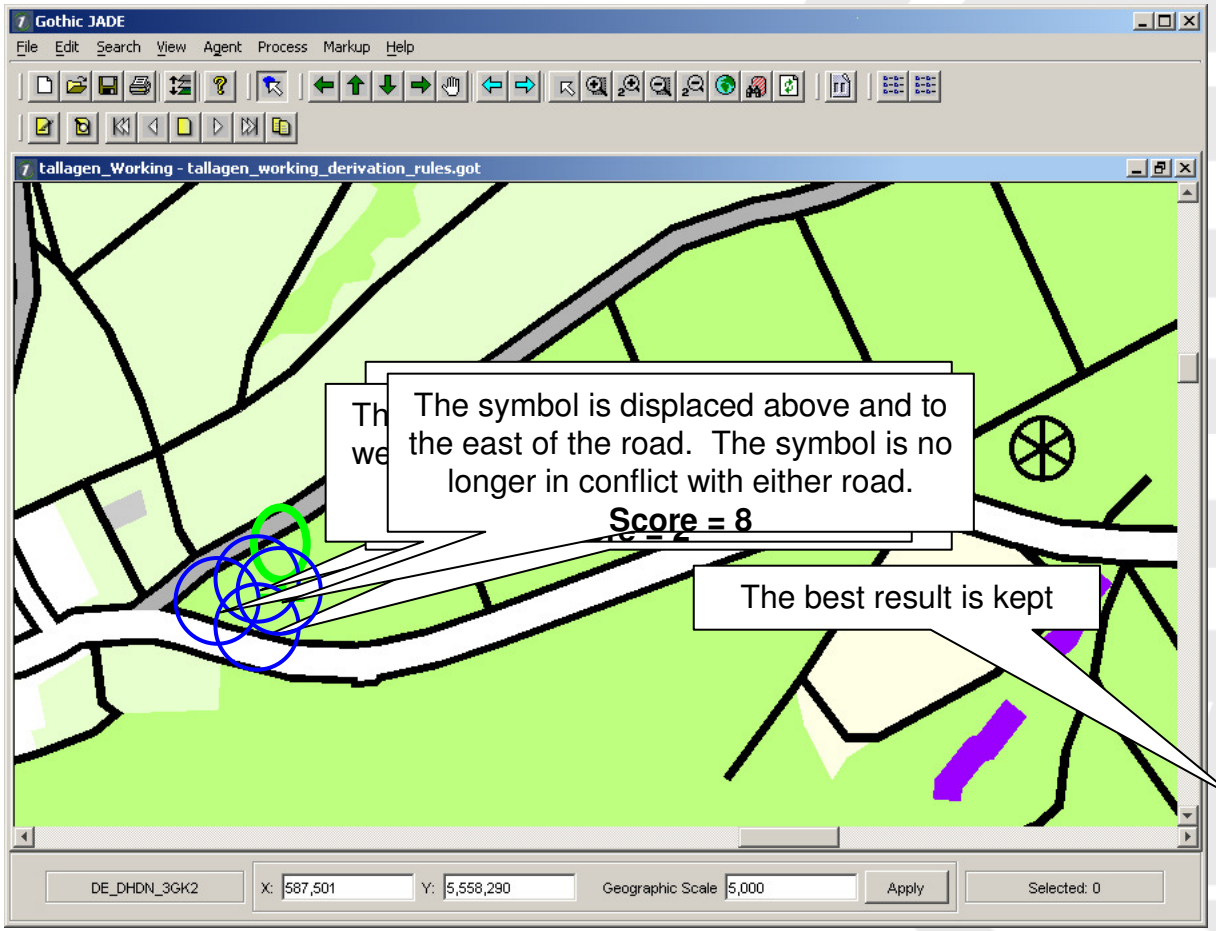
"I am too small for the target scale"

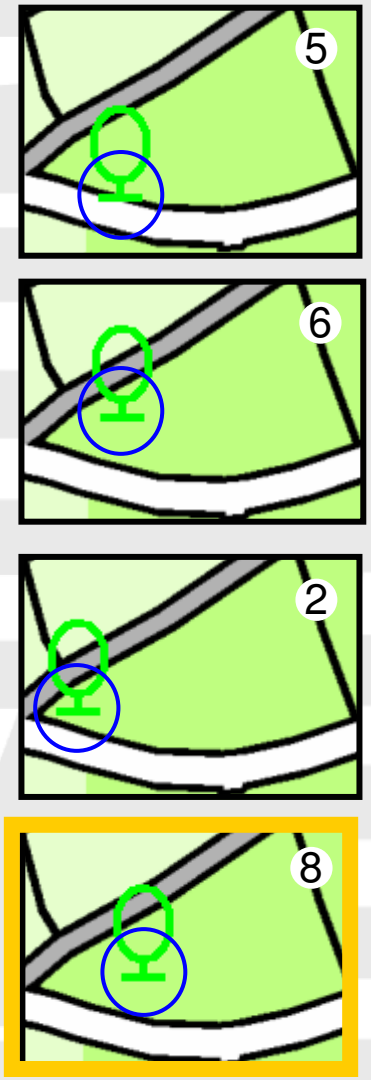
"I am too near the next building"

Algorithms: Change the state in order improve the situation

- Agents enact different generalisation algorithms, to find and keep the best result

Agent Lifecycle





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Data Cases

DC1: Typification[1] of Identical Point Symbols

Ref: AKG 6.1.1 a)
Linked to clarification of Issues005, 006, 010, 103, 216, 222, 229, 230, 302, 303.

1. Brief description

Detects and resolves overlapping symbols using typification to place a smaller number of symbols in positions representative of the original placement.

2. Target object types

See target object types table[2]

3. Flow of processing

3.1. Basic flow

1 Objects which have the same signature number and overlapping bounding geometries[3] (box, circle, or buffer), but which are not separated by any line object are collated
2 Number of symbols to maintain is determined by Topfer's Radix Law[4].
3 Remaining symbols are placed in positions representative[5] of the original placement of symbols

3.2. Alternative flows

1 At 1: If the number of symbols is 2 and the overlap of the bounding geometries of the symbols does not exceed 80%[6], the data case terminates
2 At 3: If the number of symbols to place is 1, it shall be placed at the centre of gravity[7] for the group.
3 At 3: If one single symbol has a NAM,that symbol must be one of the remaining symbols, and should occupy the representative position closest to the original position of the symbol.
4 At 3: If two or more symbols have a NAM, the NAM must be removed from all positioned objects.

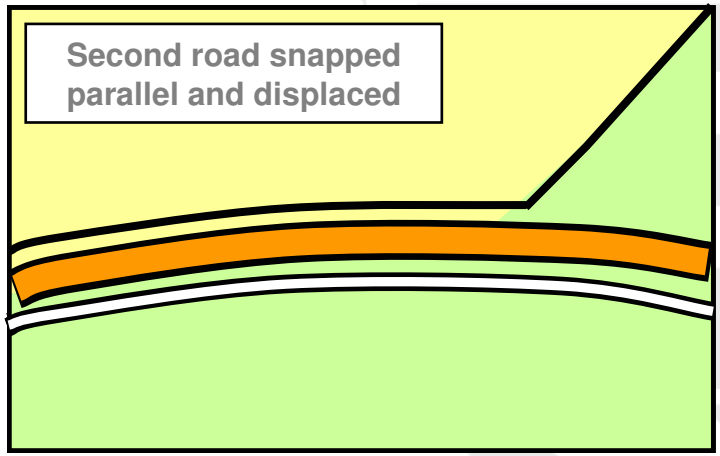
4. Pre-conditions

The[illegible] an overlap between the bounding geometries buffered by the applicable minimum
[illegible]bols with[illegible] signature number[illegible]

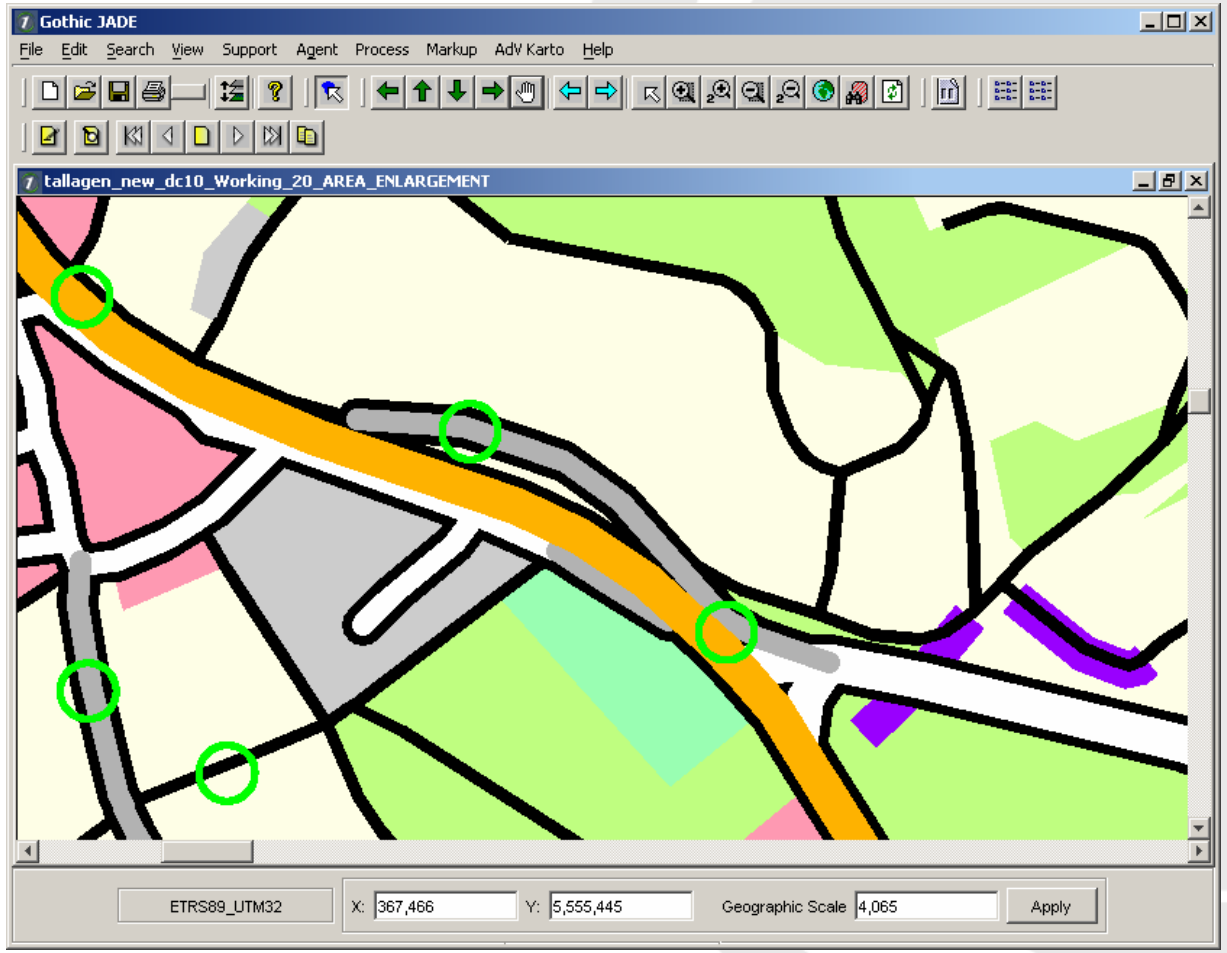
Snapping Lines (to be parallel)

Requirement

- Lines that run close together should be snapped parallel
- The line object with the highest priority should remain fixed
- The two objects are displaced to an appropriate distance for representing at 1:50,000
- Adjacent objects are diffused to preserve topological relationships



Snapping Lines (to be parallel)



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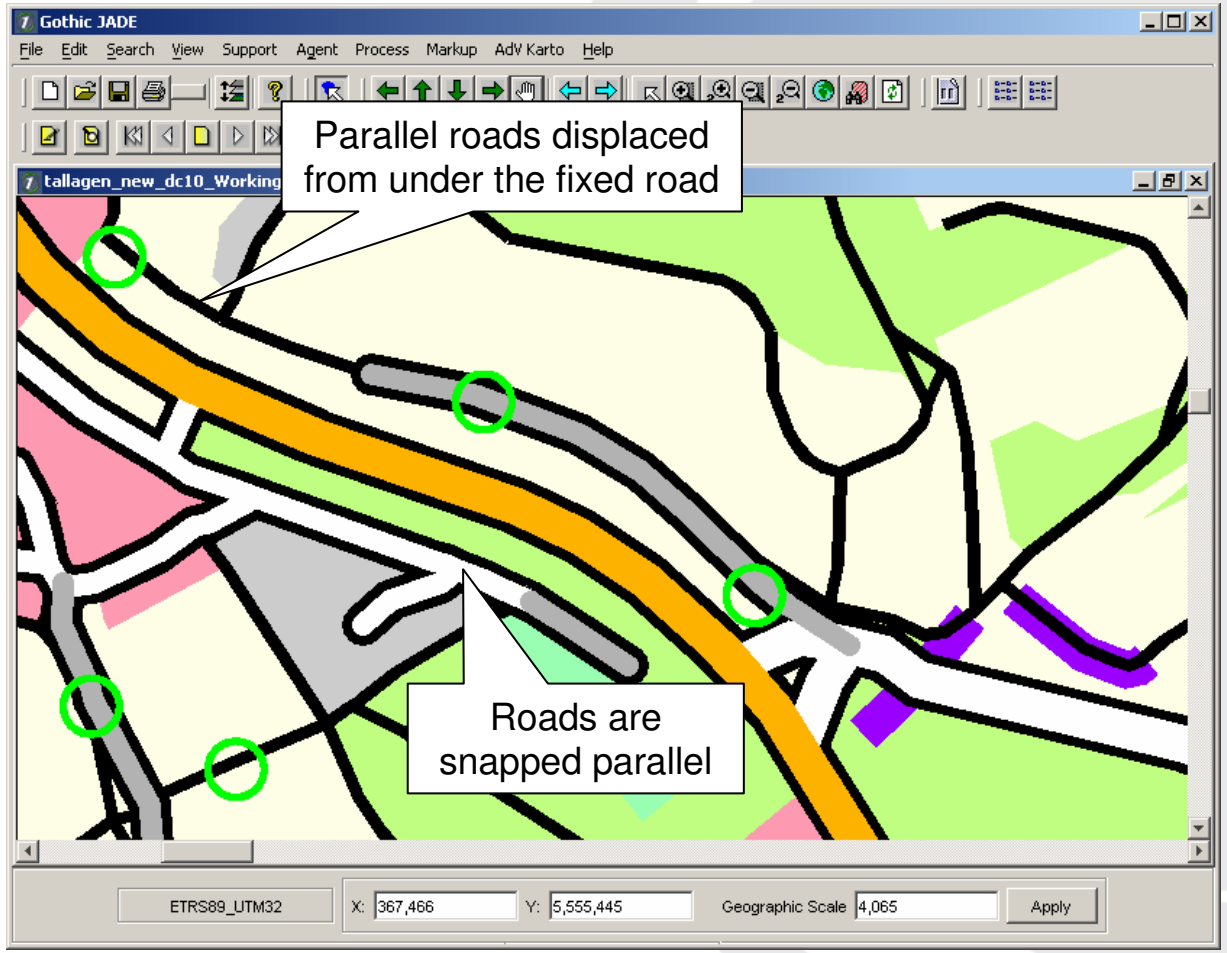
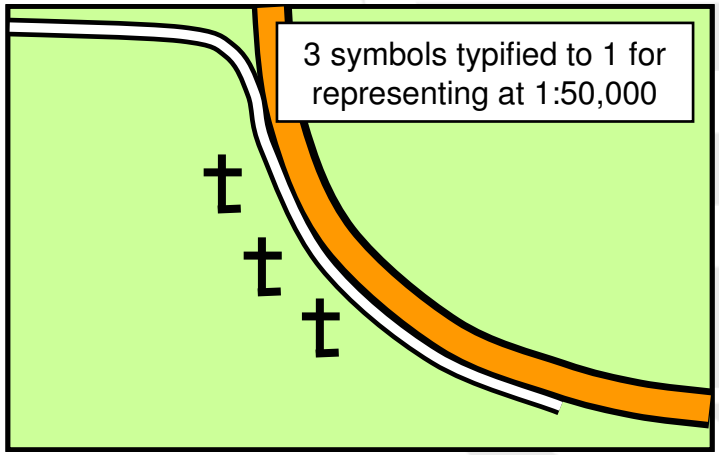


Typification (of identical point symbols)

Requirement

- Point symbols that overlap should be detected and using typification reduced in number for displaying at 1:50,000
- The number of symbols maintained should be determined by Topfer's Radix Law
- The placement of remaining symbols should be representative of original placement of symbols



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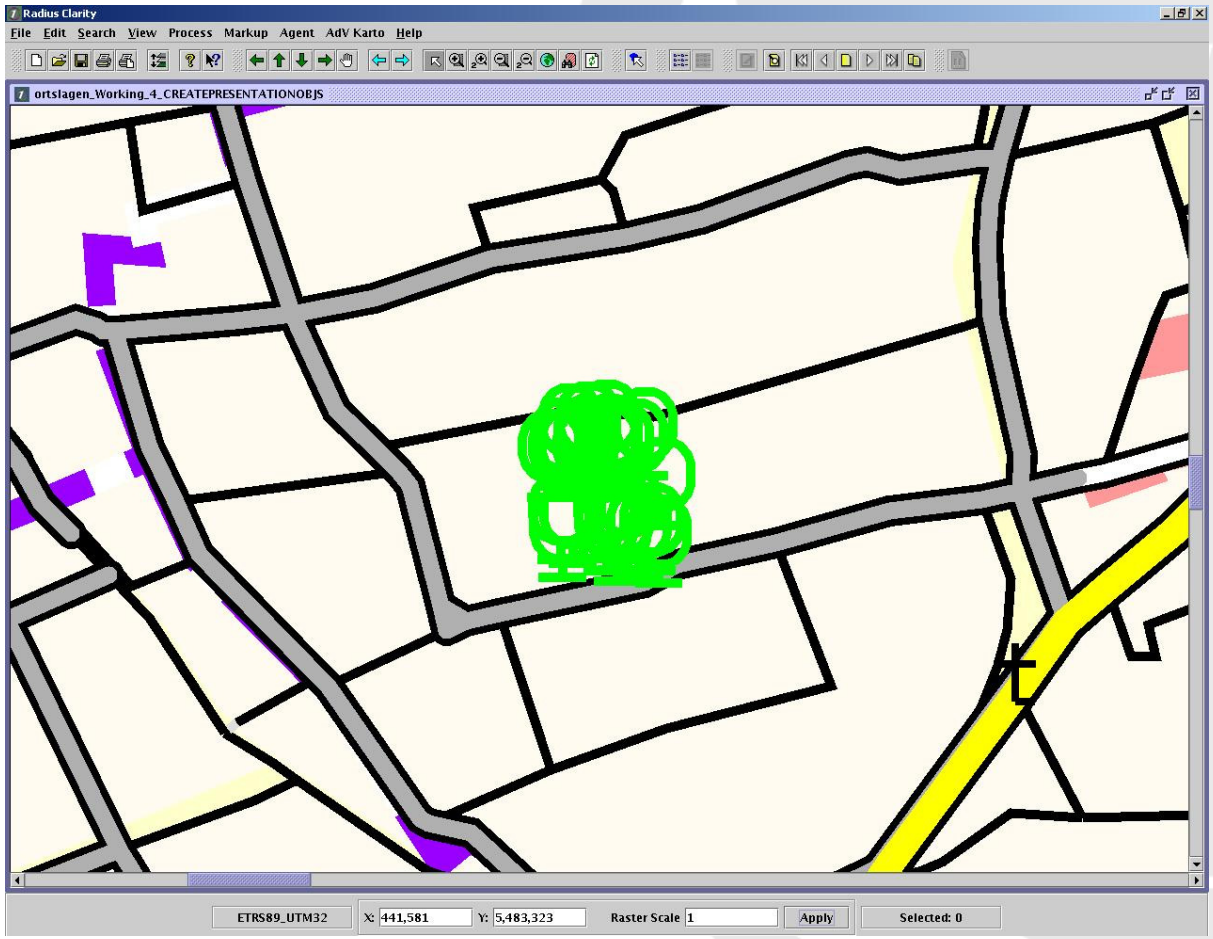
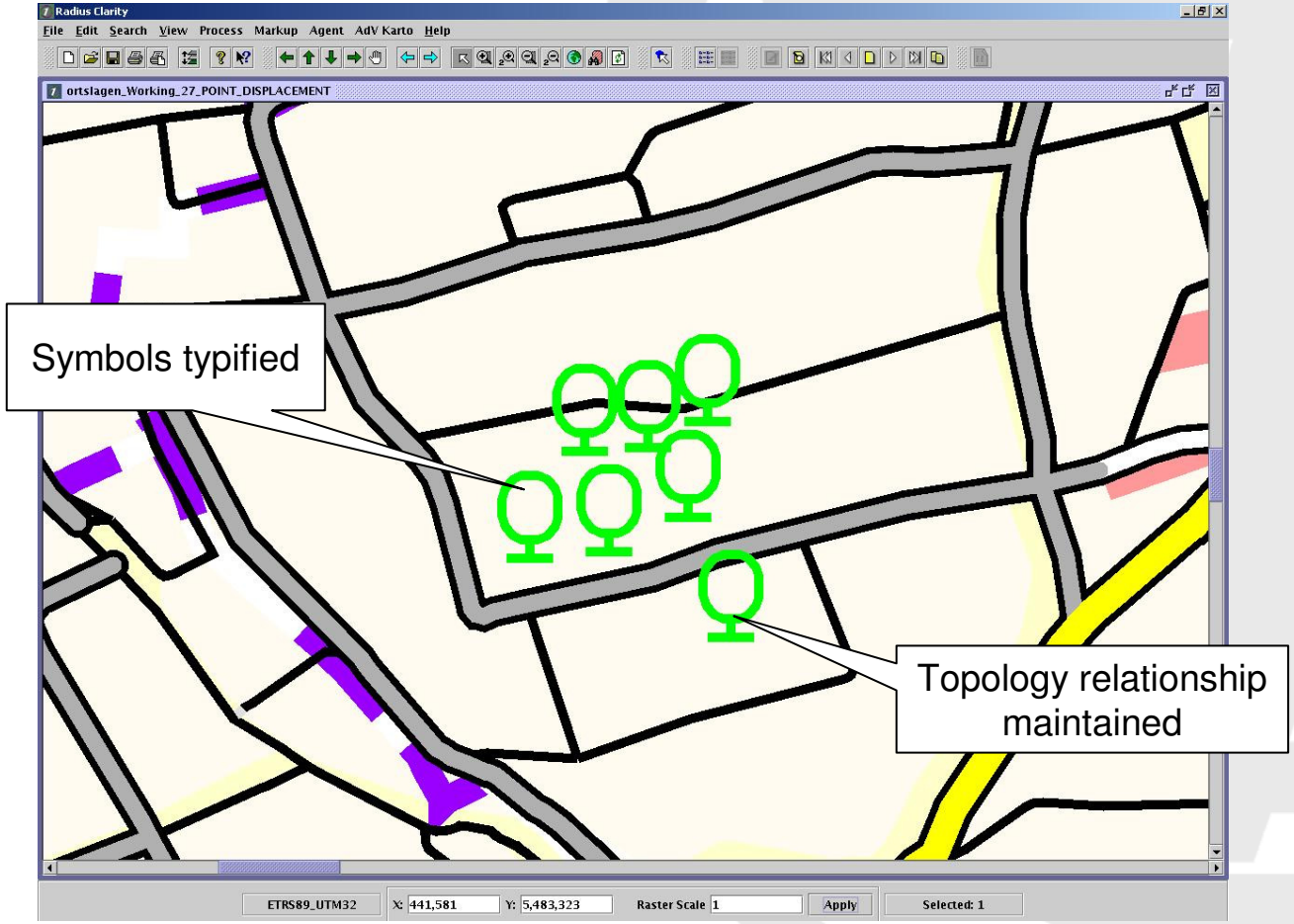


AdV Automatic Generalisation



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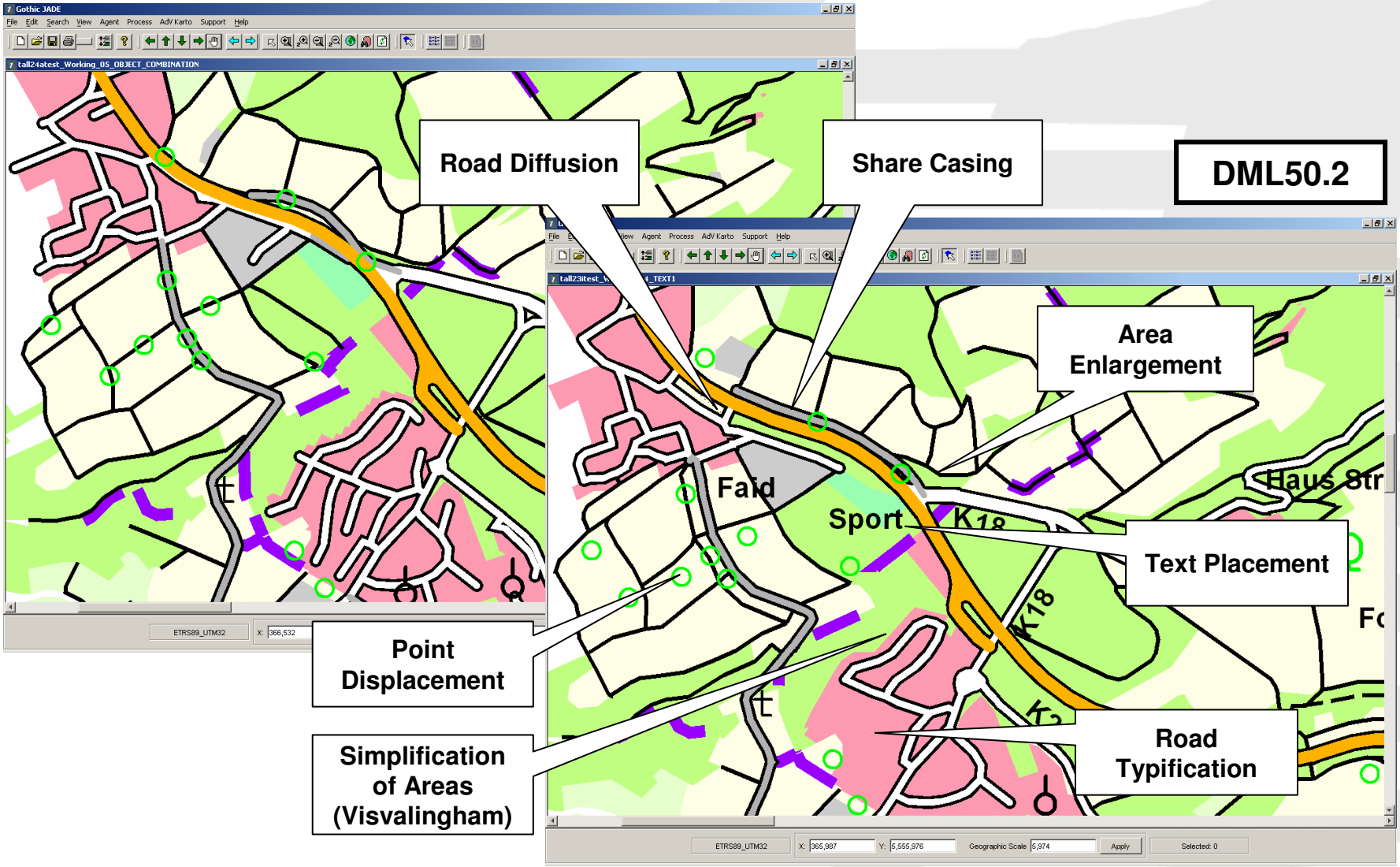

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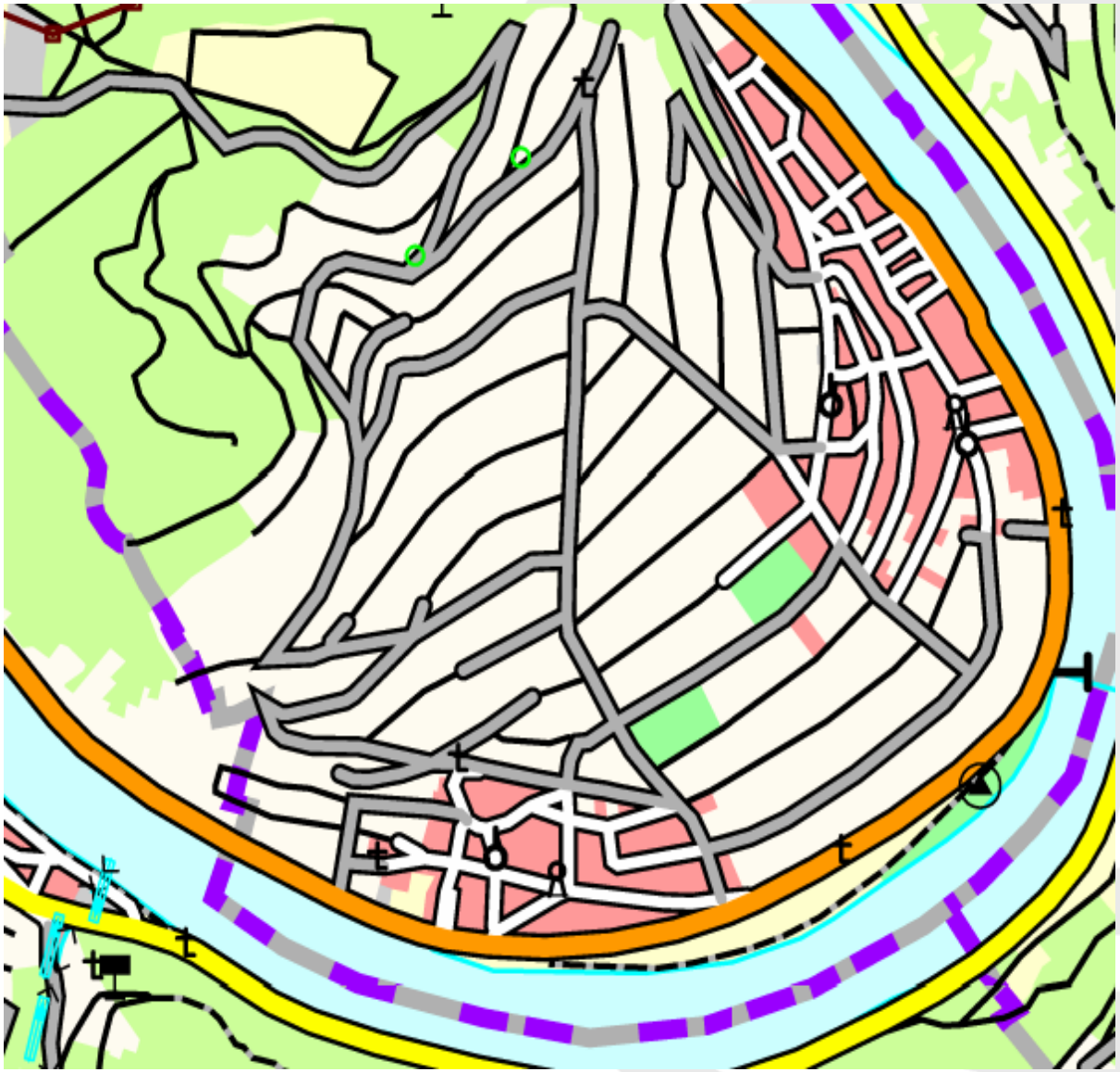

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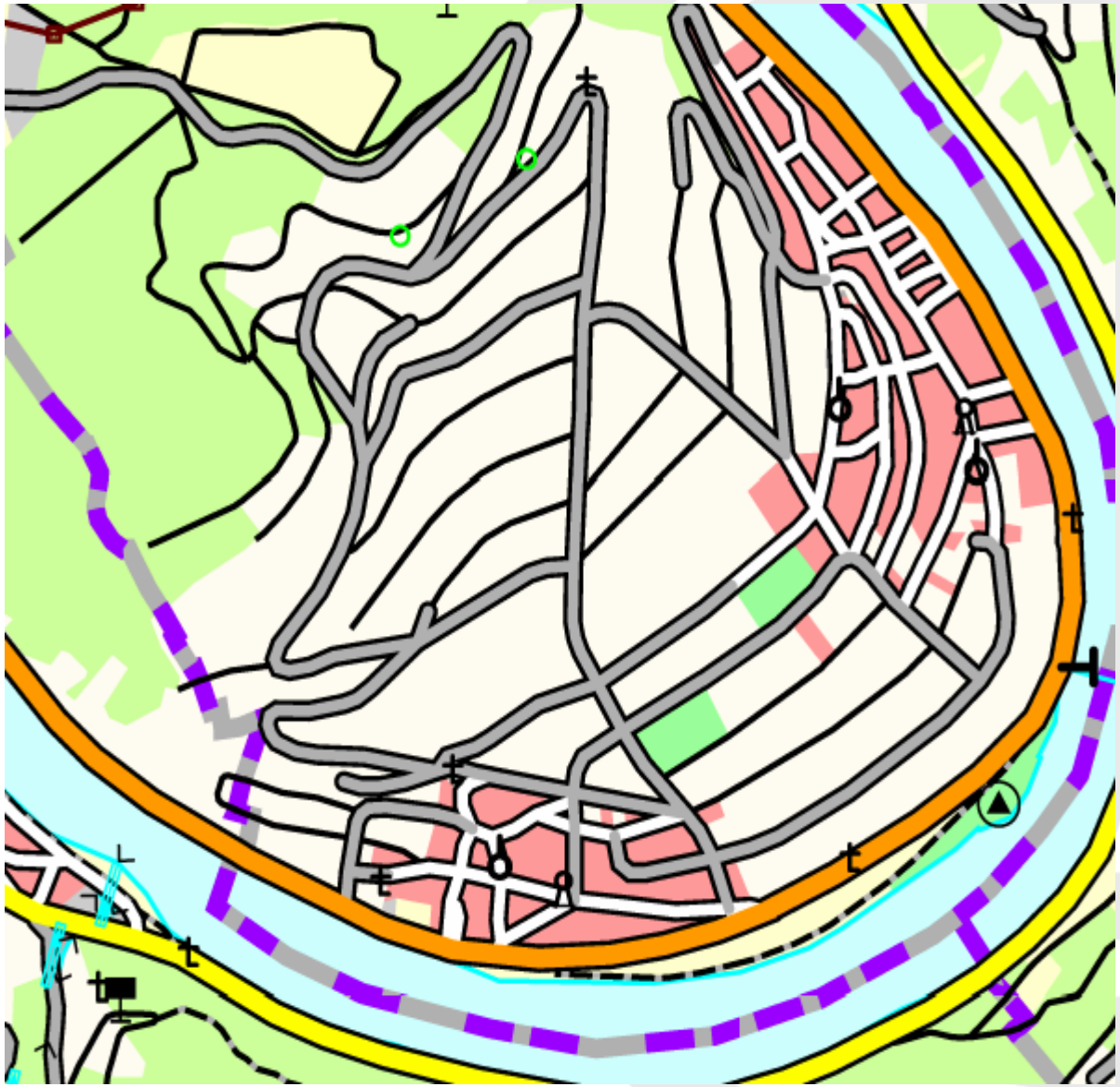

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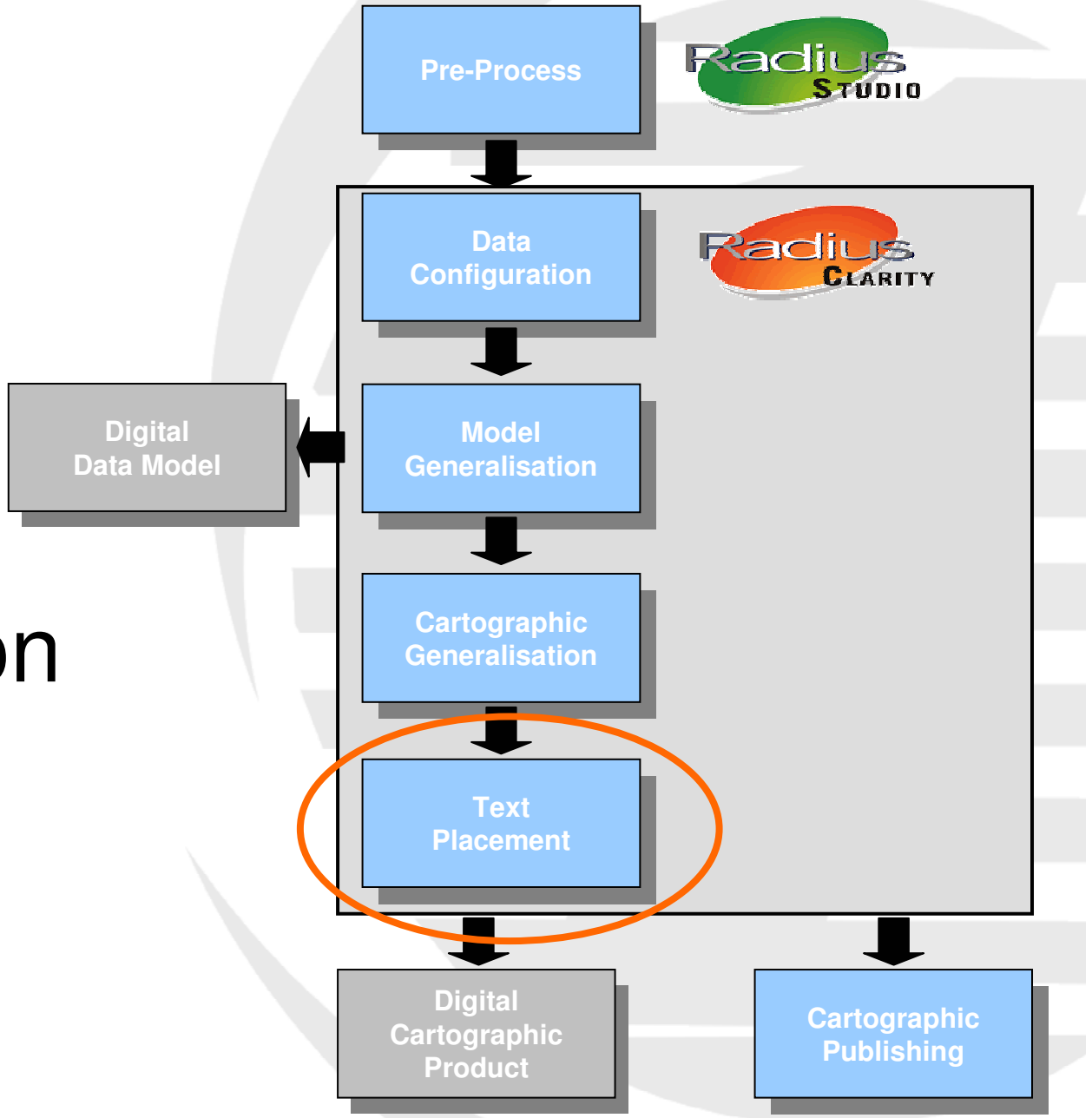
Automatic Generalisation Workflow



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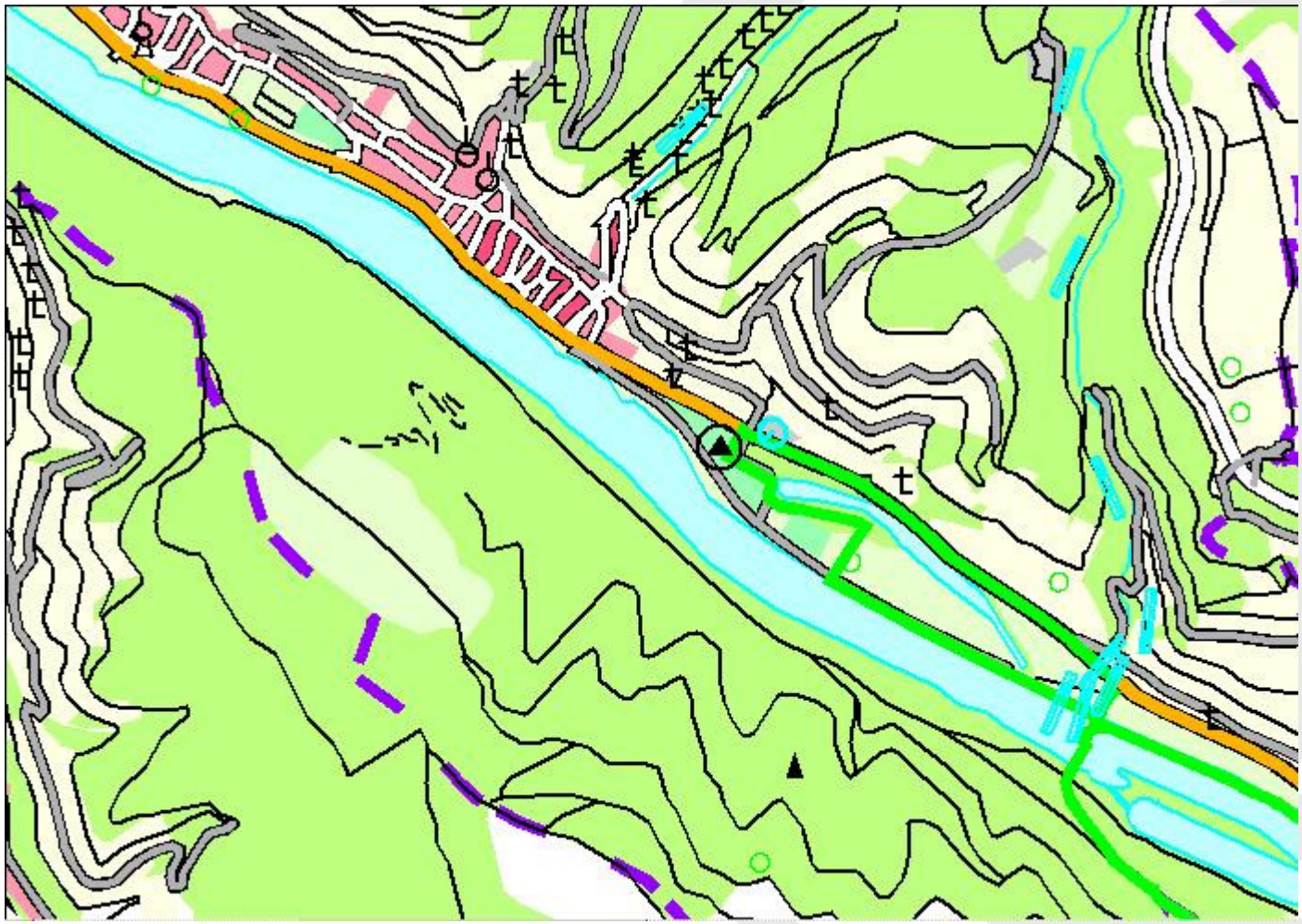

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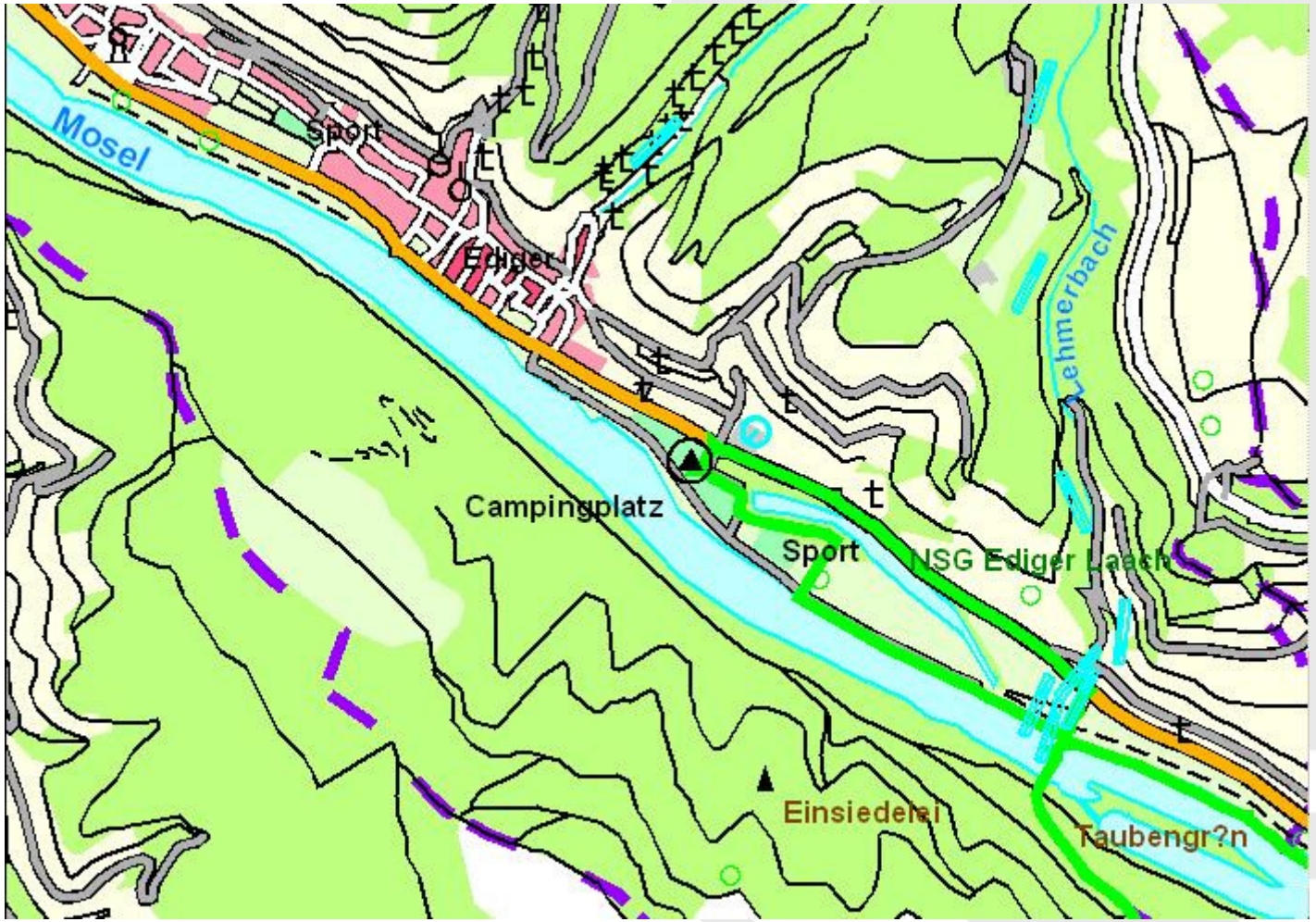
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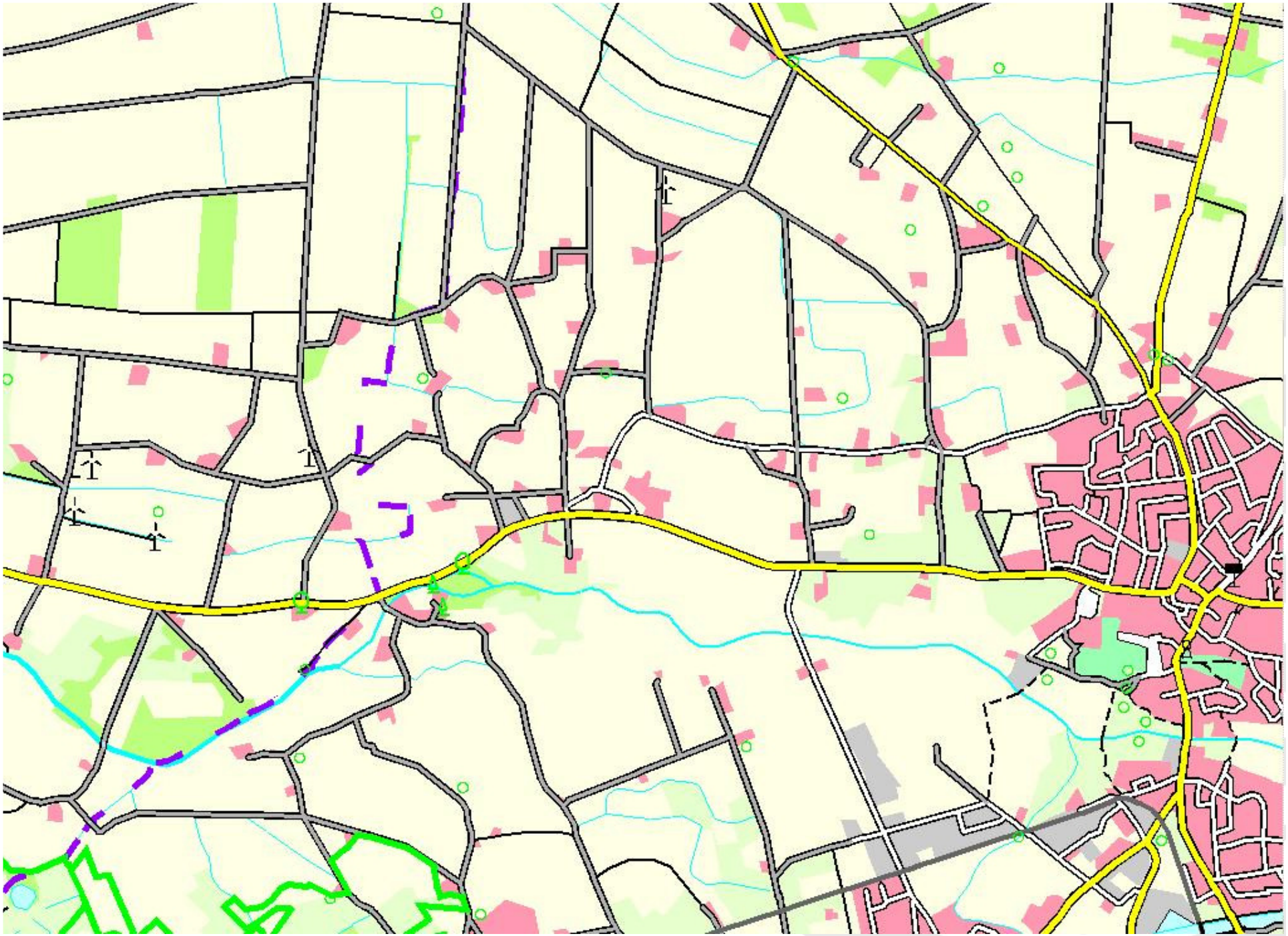

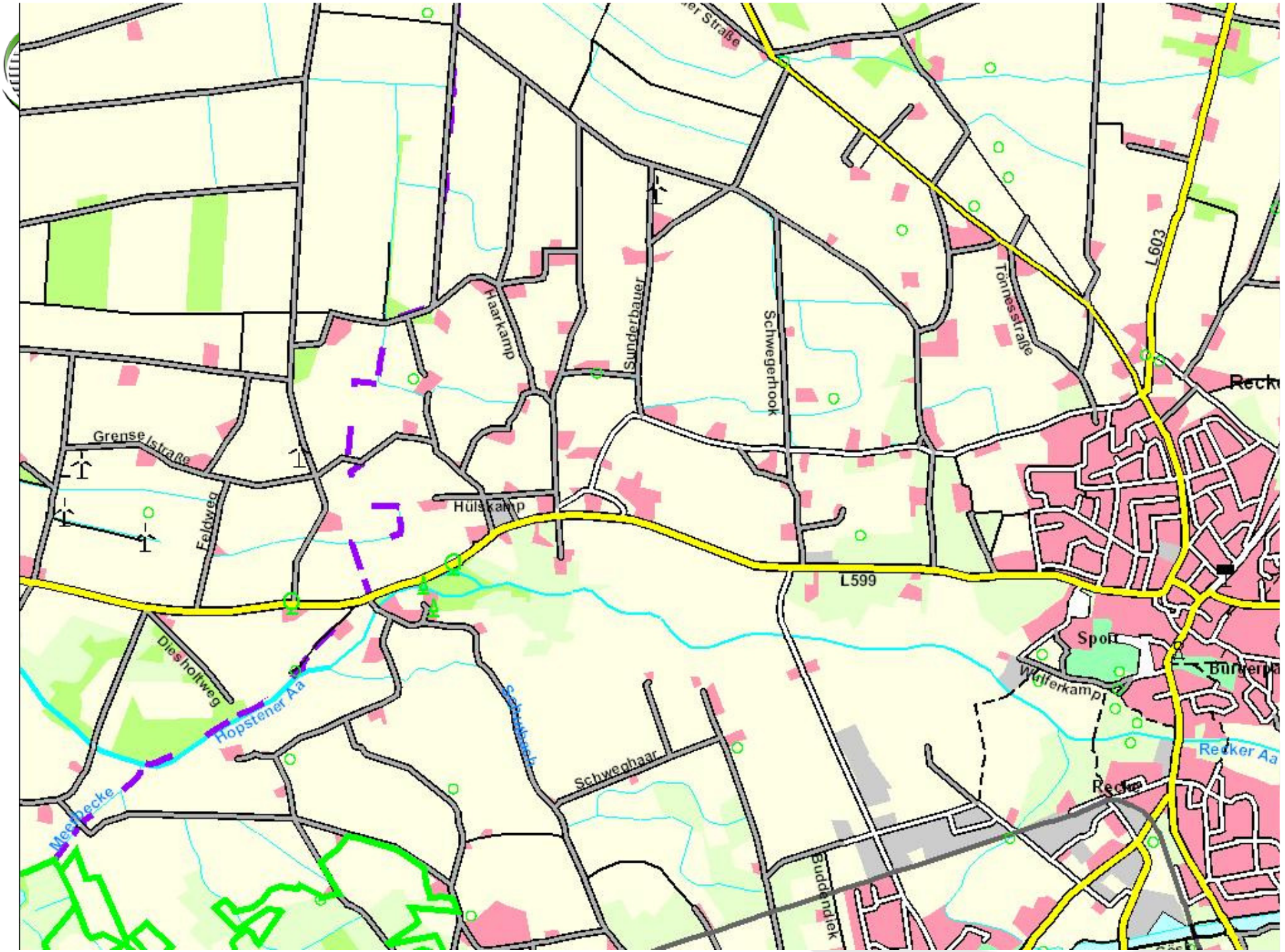
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L599
Diesholtweg
Hopstener Aa
Schweghaar
Meerbecke
Spoh
Wulferkamp
Recker Aa
Buddenbiek

Futures

- Deliver AdV Karto - June 08
  - 30 new algorithms
  - Integrate Radius ClearText with Radius Clarity
  - Implement Region Based Processing
- Clarity 2.7 - Q4 2008
  - Consolidation of functionality
  - IGN France: 1:25K->1:50K
  - MAGNET

ROADMAP

- Extend Model Capabilities in Radius Clarity
- Extended algorithms for further scales
- Web Services