Modernisation of topographical maps

Design and implementation of automatic generalisation in a new production environment
Overview

- Establishment of a new production system
- Implementation of required generalisation processes for 1:50,000.
- Establishment of a generalisation workflow
- Conclusion
Requirements for production system

- One flexible system for the production of existing and new map products – The central database is the *main key*.

- Open interface between the databases and the software tools to be used for the production.

- The software tools for the generalisation and the editing support selected part of the TOP10DK data model.

- The software tools and the production processes from earlier production system of paper maps, will be retained.
Design of production system – 1. version

Basic registration

- Charts
- TOP10DK
- Supl. Data

Derived databases

- MapCheck
- Derived database
- LaserScan

Products

- Processing
- Processing
- Derived databases

Kort & Matrikelstyrelsen
Design of the derived database

- TOP10DK
- TOP25DK
- TOP50DK
- TOP100DK

- raster
- vector
- paper
From 1:10,000 to 1:50,000
Required generalisation processes for D/50

• Generalisation of areas – in TOP10DK the areas are specified not to cross the roads, so they are divided along the roads.

• Generalisation of roads – parallel road centerlines have to be collapsed. Small roads/-parts have to be deleted.

• Generalisation of buildings – different rules for urban and rural areas.
Generalisation of the areas
Selection of buildings
Selection of roads
Generalisation of the larger roads

- Identify sliproads and reclassify sliproads
- Collapse the road centerlines
- Reestablish the topological relation between the collapsed roads and the other roads.
Generalisation of the buildings

- Using **Agent technology** for solving conflicts during simplification and displacement of buildings.

- Setting up constraints for how to simplify and displace buildings or cluster of buildings in a block.

- Symbolization of buildings between 25-400 m² as rectangles or quadrants.

- Farms: simplification or symbolisation by using letter-templates as O-, U-, L-, T-, h, P-, I, or F-shapes.
Farm templates in D/50
Use of farm templates

1:10,000 Typification 1:50,000
Simplification and displacement - farms
Simplification and displacement
Simplification and displacement - farms
Workflow for D/50 paper map

LaserScan
- Generalisation of Roads
  - Selecting Roads
  - Processing Areas
- Selecting Buildings
- Generalisation of Buildings
  - Selecting Roads
  - Processing Areas

FME
- Production DB
- MapPub
- LaserScan Processing Areas
- LaserScan Generalisation of Buildings
- Manuel editing
- FME

2D dataset
- 3D Processes
- 2D dataset
Conclusion

• The framework for a flexible production system is established.

• Further improvement:
  • Specify datamodels for the derived datasets.
  • Handling automatic nameplacement.
  • Implementation of updating processes.
  • Implement full automatical processes for basic derived datasets (Families)

• The future work:
  • Co-operation with the three main partners –
    *Universities* - *Software suppliers* – *NMA’s*
The future production system

TOP10DK

RASTER DXX

VECTOR DXX

PAPER DXX

TOP10DK

TOPXXDK

RASTER DXX

VECTOR DXX

PAPER DXX
Basic and product datasets

- **Basic derived dataset – TOPxxDK**
  - Specific requirements to datastructure
  - Uniform derivation
  - Full automatic generalisation
  - References to the basic dataset – TOP10DK
  - Basic for the cartographic generalisation

- **Product derived dataset – Raster, vector, paper**
  - Requirements to datastructure depend on product
  - Derivation will be done in different tools
  - Both automatic and manual generalisation
  - References to the master dataset – TOPxxDK