Integration of Agent-based Generalisation with Mainstream Technologies and other System Components

Dieter Neuffer, Tony Hopewell and Peter Woodsford
Laser-Scan, Cambridge, UK

www.laser-scan.com
Integration of Agent-based Generalisation with Mainstream Technologies and other System Components

- Extensible Architecture – Open Standards
- Degree of Automation
- Assumptions and Real World Issues
- Data Quality
- Data Models
- Examples
- Incremental Updates
Degree of Automation

(Fully) Automated Generalisation?

Model Generalisation: 95 – 100%
Cartographic Generalisation: 70 – 90%

Refer to user experience papers for time and cost savings

www.laser-scan.com
Assumptions and Real World Issues

- Consistently (very) good quality data
- Suitable and consistent data models – for source and target data models
- Data models must be adhered to

Is this available?
Is validation an integral part of generalisation?

www.laser-scan.com
Data Quality

Why is this crucial for generalisation?

- Context dependent processing
- Reliance on topology
- Reliance on assumptions in the data model
- Any automated process relies on the correctness of the data!
Data Quality

How to cope with ‘real world’ data quality?

• Validate it
• Correct it

Ensure the all processes are ‘robust’ – design and program algorithms defensively

www.laser-scan.com
Robust Processes

- Garbage in – garbage out
- But automatic generalisation is context dependent
- A little garbage in – a lot of garbage out

- Limit the effect of data errors
- Bring the errors to the user’s attention
- Ensure processes are error-tolerant – neither premature termination nor excessive error amplification
Suitable Data Model

- Source and target data model must be consistent and well matched.
- Target data model should be defined with automatic generalisation in mind – as opposed to data collection
- Data model and rules ideally should be ‘machine-readable’ – rules should not be vague
‘The Devil is in the Detail’

- Lack of definition of task
  - ‘all the objects required on a 1:50K map...’

- Necessary data missing in data model
  - ‘include all the masts that are higher than 30m’ - but height is not recorded in the source data model

- Lack of granularity in the data model
  - ‘Distinguish between bridges and underpasses’ – but not differentiated in data model

- Non-explicit constraints e.g. on linear objects derived from area objects
  - ‘Runways and taxiways must be lines, but only runways must be constrained to be straight’
Incremental Updates

- Data currency and quality in the source data model will improve over time
- These changes must be passed on to the target data model(s)
- Close links between the source and target ensure minimal rework
  - References between data models
  - Preservation and integration of manual edits
Thank you!

Questions and Comments?

www.laser-scan.com