



Carto2001 PROJECT



Cartographic Space Odyssey

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Content

-Introduction
-Project workplan
-Detailed axes of development
 - Automated text placement
 - Generalization
 - Updating
-Use of LAMPS2
-Conclusion

Why such a project?

- BDCarto® database
 - Initial scale 1 : 50 000
 - Several themes : roads, hydrography....
 - 1 600 000 edges for roads
 - 2 giga bytes of data
- Future Map :
 - Final scale 1 : 100 000
 - 76 sheets (+ 76 military sheets) with overlapping
 - Topographic and Touristic Map

Problems Review

- 1st Project : 90 - 93
 - Not enough data in BDCarto®
- 2nd Project : 95 - 98
 - Too expensive : 60 000 € / sheet
 - Too Long : 18 months / sheet
 - Text placement
 - Generalization
 - Overlapping between sheets
 - Updating process

New technological environment

- Maturity of research :
 - Automated text placement
 - Automated generalization
 - Automated updating
- New Platform : LAMPS2
 - 1 DB ----> No problem with Overlapping between sheets

Constraints

- 1) Using of pre-defined cartographic specifications
- 2) Updating Cost < 20 kF (3000 €)
- 3) First Map Achieved < 7 Months
- 4) LAMPS2 (Agent results) + Mercator
- 5) Ready to produce < End of 2001

Schedule

| | SUBJECT | PROGRESS |
|---------|--------------------------|----------|
| Start | June 1999 | |
| Phase 1 | Learning | 100% |
| Phase 2 | Automatic text placement | 50% |
| Phase 3 | Updating prototype | 40% |
| Phase 4 | Generalization prototype | 20% |
| Phase 5 | Industrialization | 0% |
| Phase 6 | Evaluation | 0% |
| End | December 2001 | |

Means available

ACTORS

- Project team : 4
- Steering committee
- Production team
- Agent project
- LSL support

MATERIAL

- NT Workstations
- LAMPS2 NT licences
- Mercator NT licences

Automated Text Placement

- Context :
 - Research since 1992 at Cogit laboratory to industrialize (Ph. D. Mathieu BARRAULT)
 - Global need for all series
- Objectives : Independence from scale and GIS
- Results :
 - Horizontal text placement
- Still to come :
 - Road number and kilometer labeling
 - lines and areas features naming

Map Generalization

- Main Problems :
 - Bends Coalescence
 - Roads Proximity
 - Roads sharp intersection
- Results from research
- Objectives : as automatic as possible

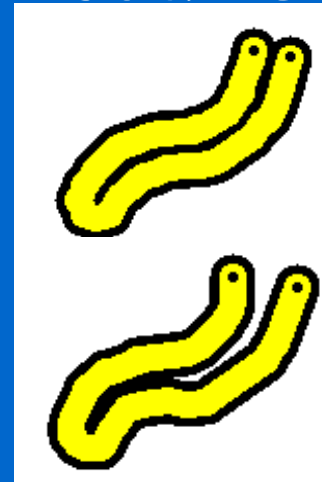
Map Generalization

- New algorithms to solve coalescence :



- Min break

- Max break



- Accordion

- Schematisation

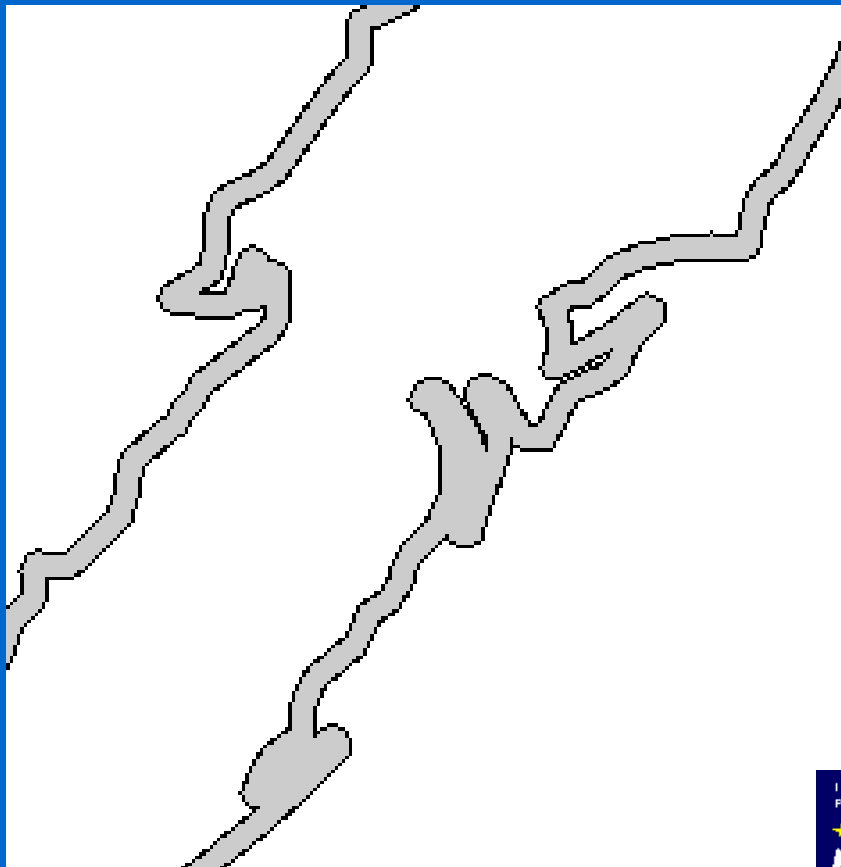


Map Generalization

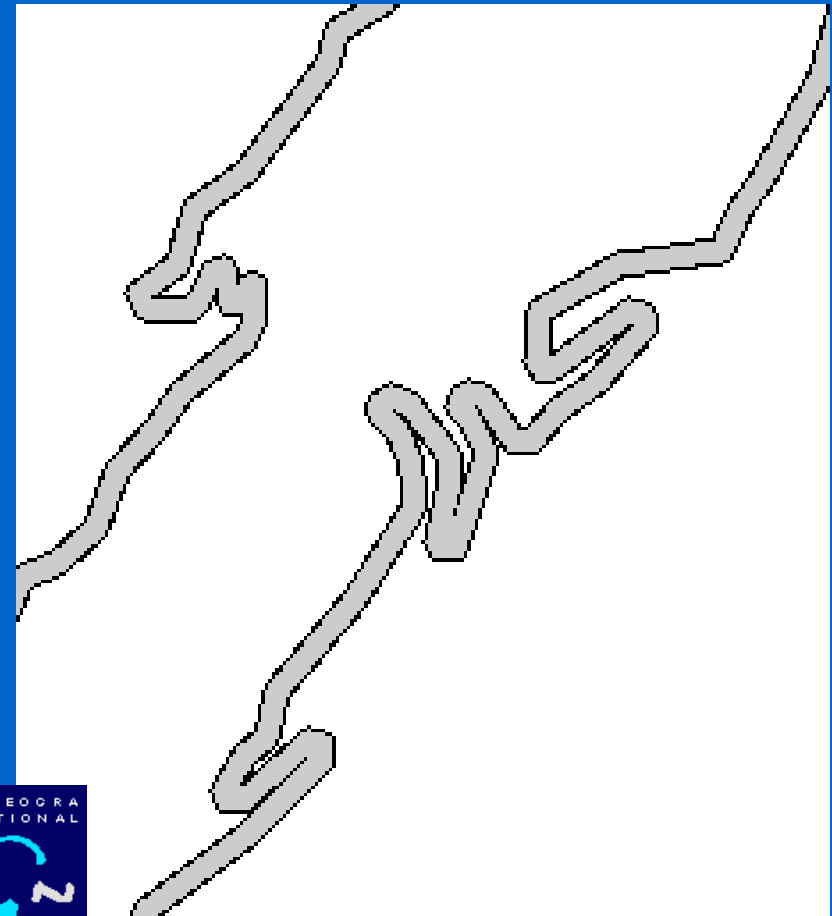
- New algorithms to solve proximity :
 - Displacement (Nickerson, Snakes,....)
- New measures to detect and characterize conflict :
 - Coalescence
 - Proximity
- New Technology
 - AGENT Project

Map Generalization

- Before

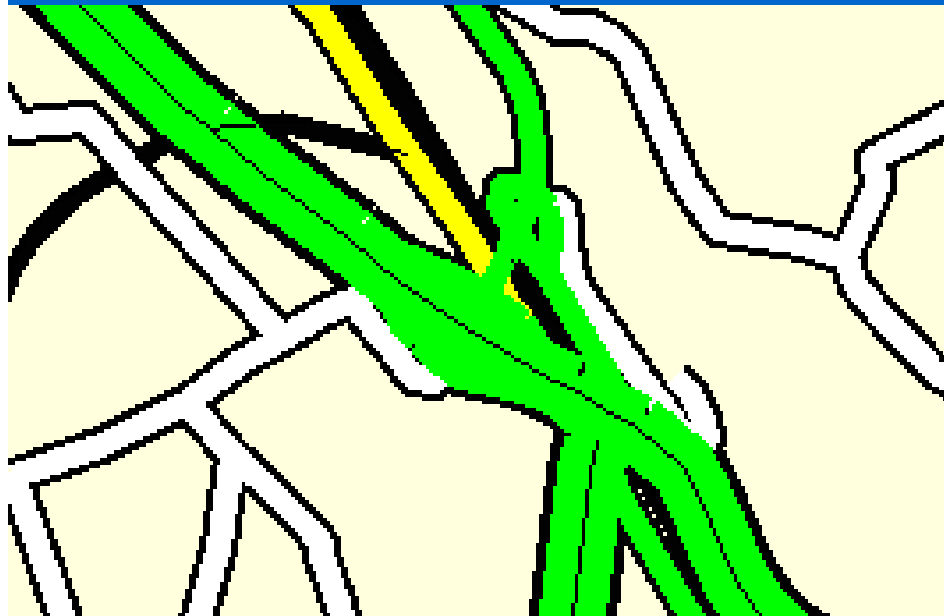


- After one click

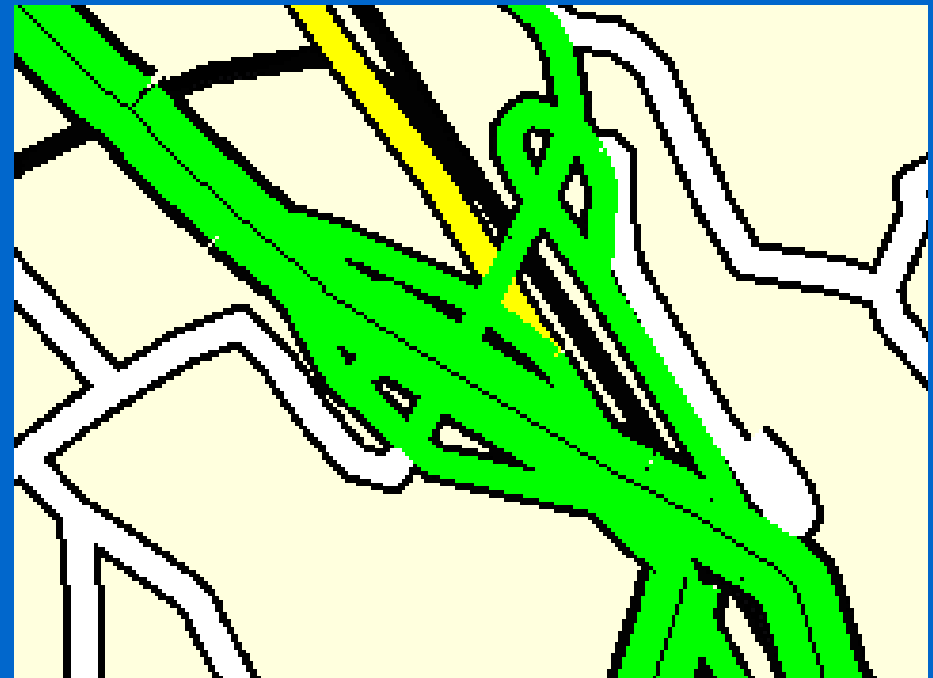


Map Generalization

- Before



- After one click

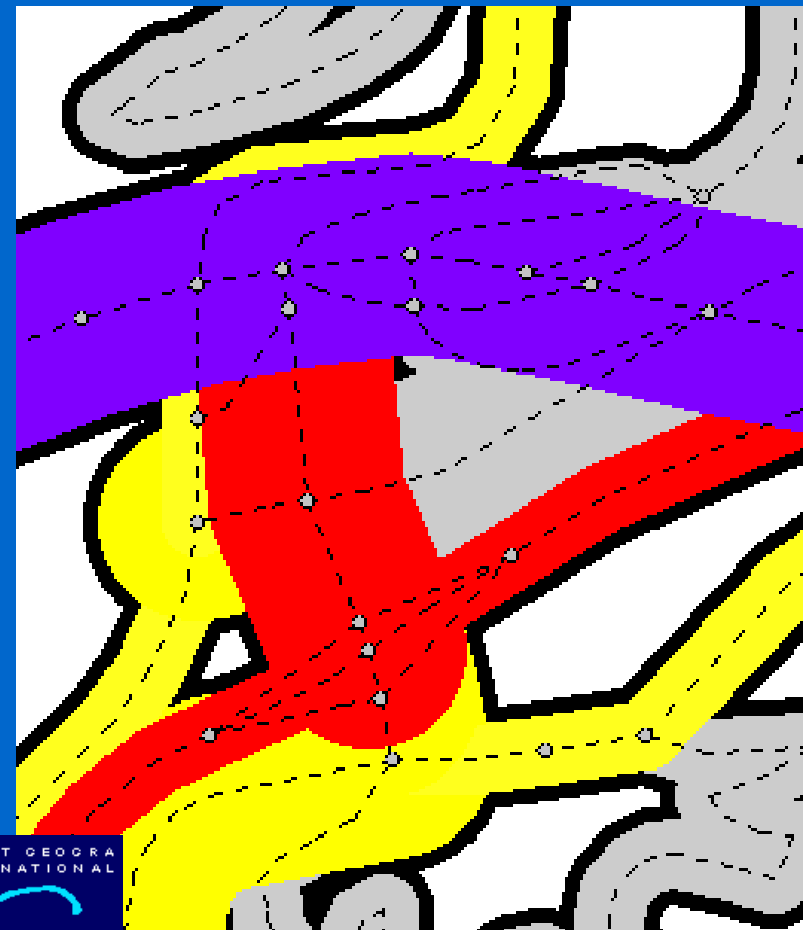
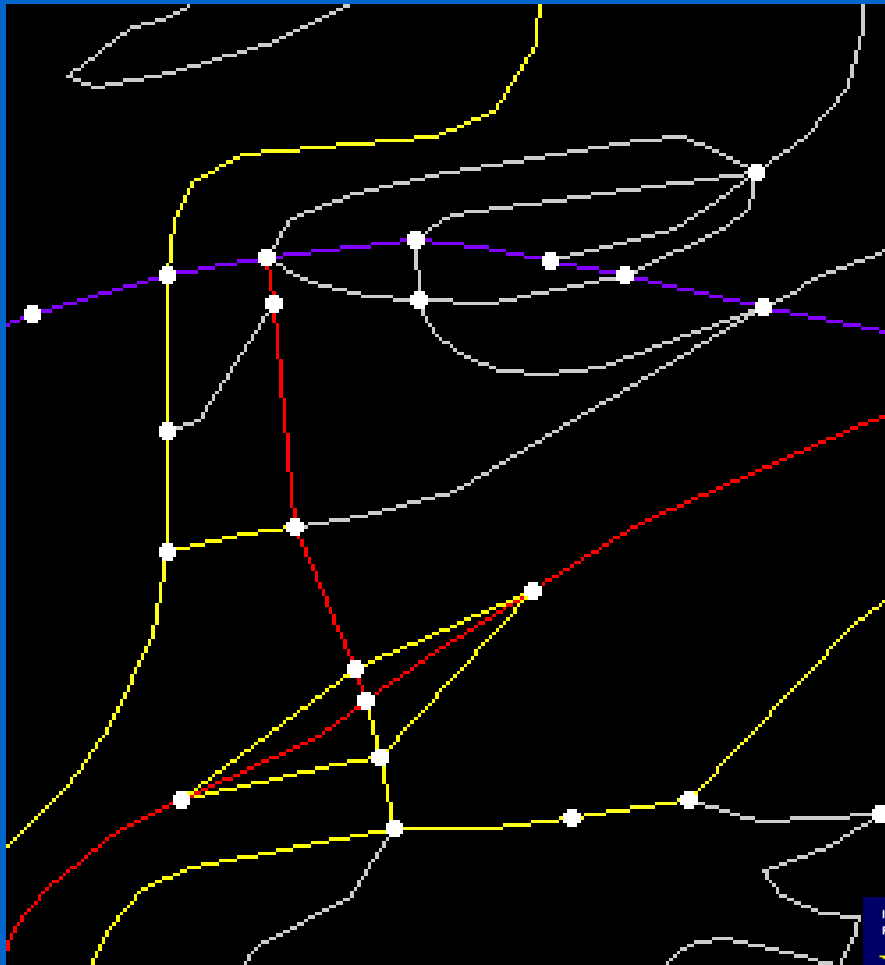


Map Generalization

- To decided :
 - Use of Agent prototype ? Performance ?
 - Automatic tools / interactive tools ?
 - Control tools ?
- Still a lot of problems :
 - Coherence between them (roads /administrative limits)
 - Interchanges

Depending from Agent project results ...

Map Generalization



Updating

- Context :
 - IGN research on
 - Data matching
 - Propagation between different scale databases
 - Database updating
 - Frequency improved
 - Some attempts to update maps from databases
 - "Differential delivery" coming up

Updating

- Objectives : as automatic as possible
if useful
- Results :
 - Solutions compared ==> XML and evolution data
 - Data model designed
 - Data imported into LAMPS2 from XML
- In progress for roads :
 - Integration tools
 - Propagation tools

Depending from
generalization...

Use of LAMPS2

- Import/Export Data
- Data structuration
- Dataset enrichment
- Symbolization
- Texts editing
- Integrating C code for Updating
- Tests of AGENT prototype
- Dedicated ergonomic environment for production

CONCLUSION

- Past 10 years : a lot of progress in research :
 - Automated text placement
 - Automated updating
 - Automated generalization
- But...Still a lot of work on generalization

