Vario-scale geo-information

28-11-2014

1 minute project outline…

STW User Committee meeting, 19 November 2014
Dienst Basisinformatie, Jodenbreestraat 25, Amsterdam

Project outline

Vario-scale data structures (2D + scale) → tGAP structure in DBMS

Covert 2D+scale into smooth 3D → SSC

Better tGAP/SSC content → generalization operators / semantics

Processing large data sets (nation-wide) → parallel processing

Server-client architecture → streaming web-service protocols

Efficient interaction with SSC → GPU for slicing (smooth zoom)

…Update the data content, dynamic data structure

Last results, more details later

- Developed, implemented, benchmarked several variants for the server-client based architecture (on-line versions available for public testing of tGAP vario-scale data)
- Nation-wide road network data set processed in tGAP context using the operational framework for processing large data sets (parallel processing, divide-and-conquer generalization)
- Fast slicing of the 3D space scale cube, Mattijs Driel (MSc thesis)

Recent Presentations

- Radan Suba
  - TU Delft, GISt lunch seminar 23 May'14: 1. An area merge operation for smooth zooming, 2. Road network generalization in Vario-scale
  - 17th AGILE Conference on Geographic Information Science (Castellón de la Plana, Spain), 3-6 Jun'14: area merge for smooth zoom
  - 17th ICA Workshop on Generalisation and Multiple Representation (Vienna, Austria), 23 Sept'14: road network generalization

- Peter van Oosterom
  - Lecture "5D geo-information and point cloud data management" (including vario-scale principles) at Technion, Civil and Environmental Engineering Faculty, Tuesday 4 February 2014, 14:30 hours, Rabin building, Technion, Haifa, Israel

New Publications

Peter van Oosterom and Martijn Meijers, Vario-scale data structures supporting smooth zoom and progressive transfer of 2D and 3D data, International Journal of Geographical Information Science, 2014 (28,3), pages 455-478

Hugo Ledoux and Ken Arroyo Ohori and Martijn Meijers, A triangulation-based approach to automatically repair GIS polygons, Computers & Geosciences, 2014 (66), pages 121-131

Peter van Oosterom and Martijn Meijers and Jantien Stoter and Radan Šuba Suba. Data Structures for Continuous Generalisation: tGAP and SSC, Book chapter in "Abstracting Geographic Information in a Data Rich World", Springer, 2014, pages 83-118

Radan Šuba and Martijn Meijers and Lina Huang and Peter van Oosterom, Continuous Road Network Generalisation, In Proceedings of the 17th ICA Workshop on Generalisation and Multiple Representation, Vienna, Austria, September 23, 2014.

Radan Suba and Martijn Meijers and Lina Huang and Peter van Oosterom, An Area Merge Operation for Smooth Zooming, Book chapter in "Connecting a Digital Europe Through Location and Place", Springer, 2014, pages 275-293

Conclusions

- Fast slicing of SSC is feasible by using the graphics hardware. In future populate with better SSC content.
- International interest in the TU Delft vario-scale approach is growing (longer visits from Lina Huan, postdoc/Wuhan Univ, China, and from Wan Muhd Hairi PhD/UTM Malaysia)
- TUD made patent NL2006630 openly available to community