Vario-scale geo-information
Final status of the project

24-11-2016

STW User Committee meeting, 23 November 2015

Delft University of Technology, Faculty of Architecture and the Built Environment

Awards…

- 25 may'16: TU Delft
  Geospatial World Leadership Awards, Research Institution of the Year 2015

- 22 nov'16: Radan Šuba
  OGT Award OGT (Overlegplatform Gebruikers Topografie), category researchers

- 30 nov'16: Martijn Meijers
  NCG prof. J.M. Tienstra Research Prize 2016

Overview

a. Reminder of original goals of the project

b. New results since last meeting

c. A complete overview of what has been done in the project

d. Recognisable moments of knowledge transfer

a. Reminder of original goals of the project

- From the original project proposal, the research question:

  How can we realize a paradigm shift towards dynamic vario-scale geoinformation with minimal redundancy, supporting delivery of representations at arbitrary scale for different user contexts and progressive transfer for the delivery of refinements?

- Not in proposal, but covered/added later on:
  concept of Space Scale Cube and usability tests
- In proposal, but not covered: dynamic (updates, changes, history)

b. New results since last meeting

- Developed more efficient package based vario-scale server-client based architecture (MSc student Adrie Rovers)
- Actual usability tests conducted (with test persons), and compared true vario-scale to discrete multi-scale representations
- Complete draft PhD thesis by Radan Šuba
- PhD committee proposed
- Cleaned and published large part of the developed code as open source for Vario-scale maps: Python Software Development Kit. SDK developed on Linux, but also works on Windows and Mac
- Made available via updated http://varioscale.bk.tudelft.nl/

Recent Presentations

- Radan Suba
  - Presentation 'Usability test plan for truly vario-scale maps' at 19th ICA Workshop on Generalisation and Multiple Representation, Helsinki, Finland, 14 June 2016
- Martijn Meijers
  - Presentation 'Building Simplification using Offset Curves obtained from the Straight Skeleton' at 19th ICA Workshop on Generalisation and Multiple Representation, Helsinki, Finland, 14 June 2016
  - Presentation 'PhD-research: vario-scale maps' at visit meeting of Prof.dr.ir. T.H.J.J. (Tim) van der Hagen (voorzitter CvB) to OTB/Bk, 22 November 2016
- Peter van Oosterom
  - Plenary lecture 'nD-PointClouds: a model for deeply integrating space, time and scale' at the Joint 3D Athens Conference 2016 in Greece, October 2016

New Publications

Radan Šuba, Martijn Meijers, Peter Oosterom, Continuous road network generalization throughout all scales, ISPRS International Journal of Geo-Information, vol 5, no 8, MDPI AG, August 2016, http://dx.doi.org/10.3390/ijgi5080145

Radan Suba, Mattijs Driel, Martijn Meijers, Peter van Oosterom, Elmar Eisemann, Usability test plan for truly vario-scale maps, Proceedings of AGILE / 19th ICA Workshop on Generalisation and Multiple Representation, http://generalisation.icaci.org/images/files/workshop/workshop2016/genemr2016_paper_08.pdf (Helsinki, Finland, 2016)

Martijn Meijers, Building Simplification using Offset Curves obtained from the Straight Skeleton, Proceedings of AGILE / 19th ICA Workshop on Generalisation and Multiple Representation, http://generalisation.icaci.org/images/files/workshop/workshop2016/genemr2016_paper_11.pdf (Helsinki, Finland, 2016)

Adrie Rovers, Exploring the use of a generic spatial access method for caching and efficient retrieval of vario-scale data in a client-server architecture, TU Delft, MSc thesis, November 2016

c. A complete overview of what has been done in the project

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

Convert 2D+scale into smooth 3D → SSC

Better tGAP/SSC content
- → generalization operators / semantics (concept of groups)
- → focus on road networks

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

Server-client architecture → streaming web-service protocols

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

List of presentations, publications in final report

d. Recognisable moments of knowledge transfer (plans)

- International presentations and publications, open software
- Used in ELF project, various master theses
- Finalize PhD-thesis Radan Šuba
- International seminar vario-scale, near PhD-defense Radan, 2017
- Agreed publications GeoInfo, Dutch professional magazine 2017:
  a. Vario-schaal in geoweb context,
  b. Parallel processing technieken om voor omvangrijke datasets,
  c. Wegen netwerken in vario-schaal structuren en
  d. Eerste vario-schaal usability study.
- Outside scope current project:
  a. realize vario-scale Shenzhen,
  b. new research proposal dynamic vario-scale maps,
  c. MSc thesis project IJsbrand Groeneveld (vario-scale river networks),
  d. MSc thesis project Yueqian Xu (web-based GPU/SSC viewer supporting large data sets)