- TileGen –
An open source Software for applying cartographic Generalisation to Tile-Base Mapping

Ralf Klammer
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DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur

0. Structure of the presentation

1. Motivation

2. Facts & Terms

3. TileGen - Concept

**4. TileGen - Implementations**

5. Conclusion & Outlook

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1. Motivation

source: en.wikipedia.org/wiki/Web_2.0

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1. Motivation – Web Generalisation Services

status-quo ▬▬▬ needed developments ▬▬▬

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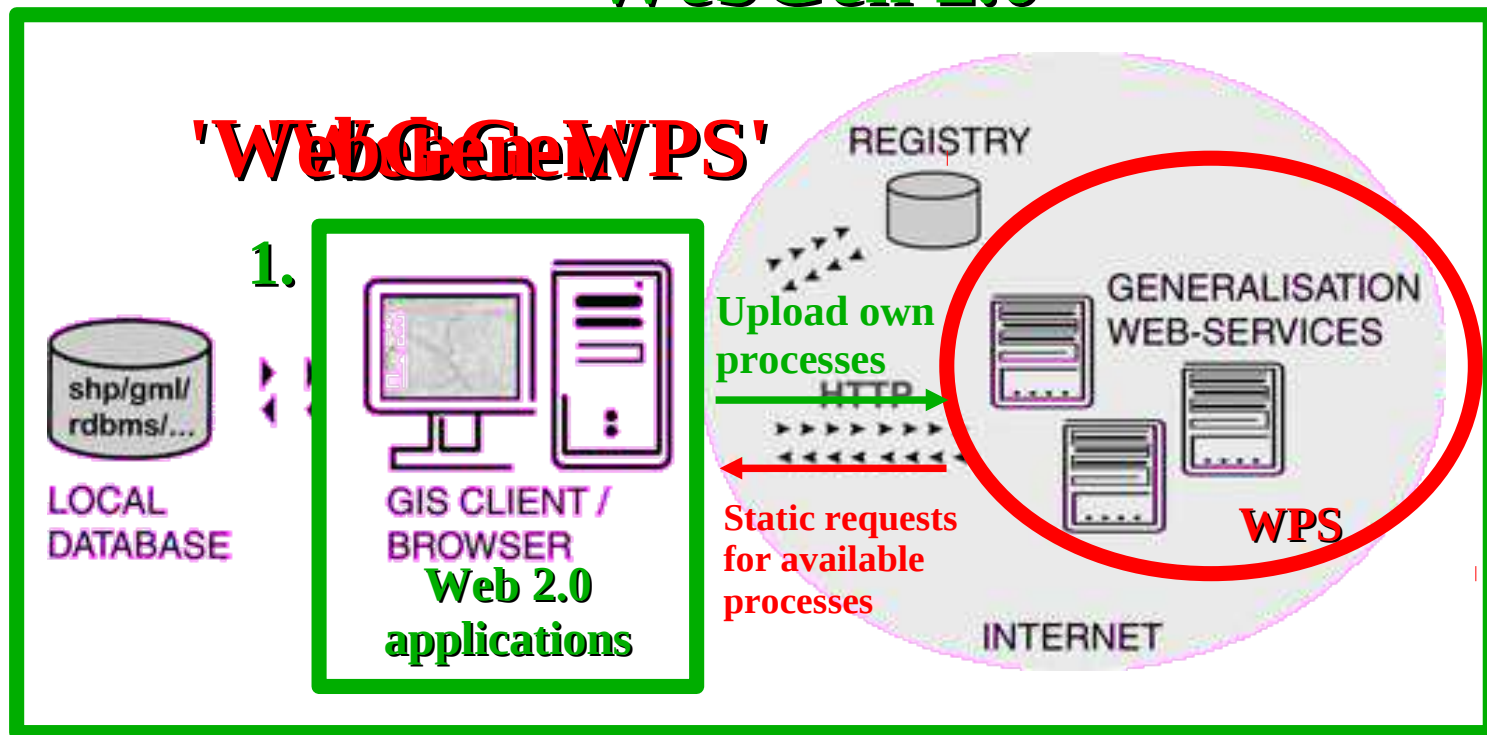
2. Facts & Terms

tile

tile-based mapping system

tile-based

Mapnik

tile-based mapping

tile-based map

cartographic parameter

renderer

Web 2.0

automatic rendering

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What is a tile-based mapping system?

map tiles

Tile-based mapping system

| Data & cartographic definition | → | Rendering & Storing of Tiles | → | Downloading & Assembling of Tiles |

zoomlevel 1

2. Multiple image tiles are used to virtualize a single map view

3. Image tiles are accessible using a discrete addressing scheme

4. Tiles are sent to client with minimal processing – as much as possible is done ahead of time

(cf. Sample & Ioup 2010)

Tasks to set up a tile-based mapping system

Klammer, R. & Burghardt, D. (2012): Approaches for enhancing tile - based mapping with cartographic generalisation. In: Proceedings 15th ICA Workshop on Generalisation and Multiple Representation, Istanbul, Turkey

manual generalization

1st: organize geospatial data   (*prepare* a tile-based map)
→ primary 'language': GIS (SQL, shapefile, …)

2nd: define cartographic   meters   (*prepare* …)
→ primary lan

TileGen

3rd: init   omatic rendering   (*generate* …)
→ primary language: Python

automatic generalization

4th: build a mapping framework   (*display* …)
→ primary language: JavaScript

[5th: add mash-ups, interaction, statistics, etc. (*refine* …)
→ primary language: JavaScript

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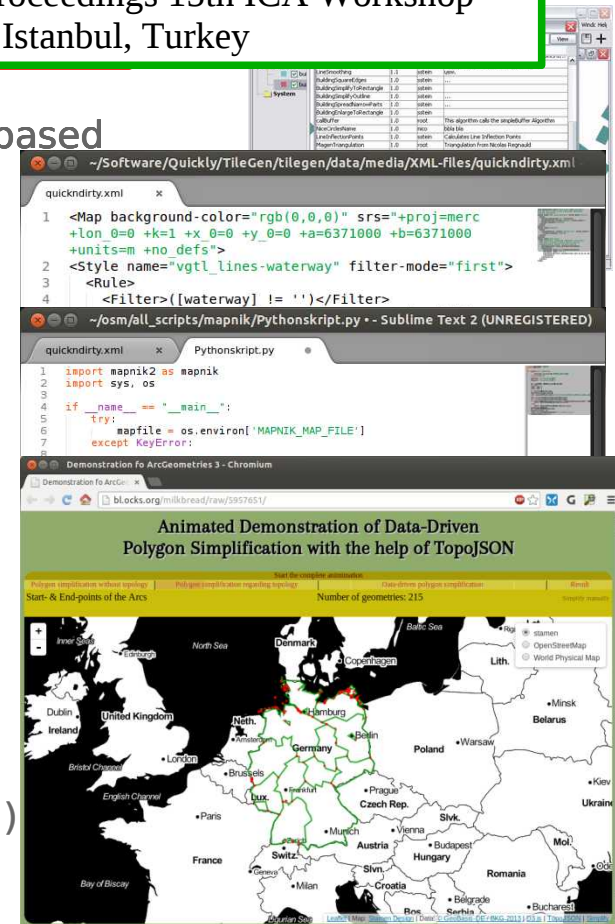
3. TileGen – The Concept

1. Graphical User Interface, for visual:

- definition of cartographic parameters

- evaluation of (carto-) graphic quality (readability & legibility)

- semantic selection and classification (schematic transformations)

2. Automatic Topological Evaluation

3. Test and Define Spatial Transformations
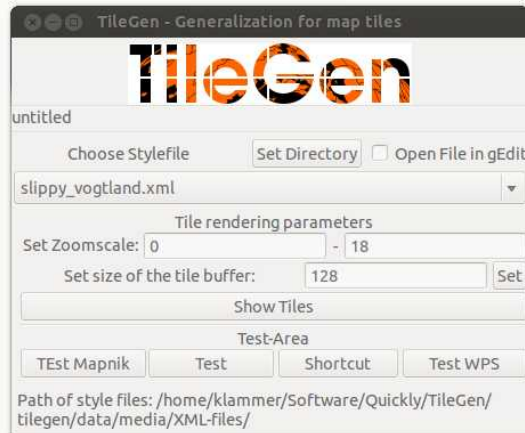
4. Export WPS-Execute-Parameters for automatic processing

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4. TileGen - Implementation

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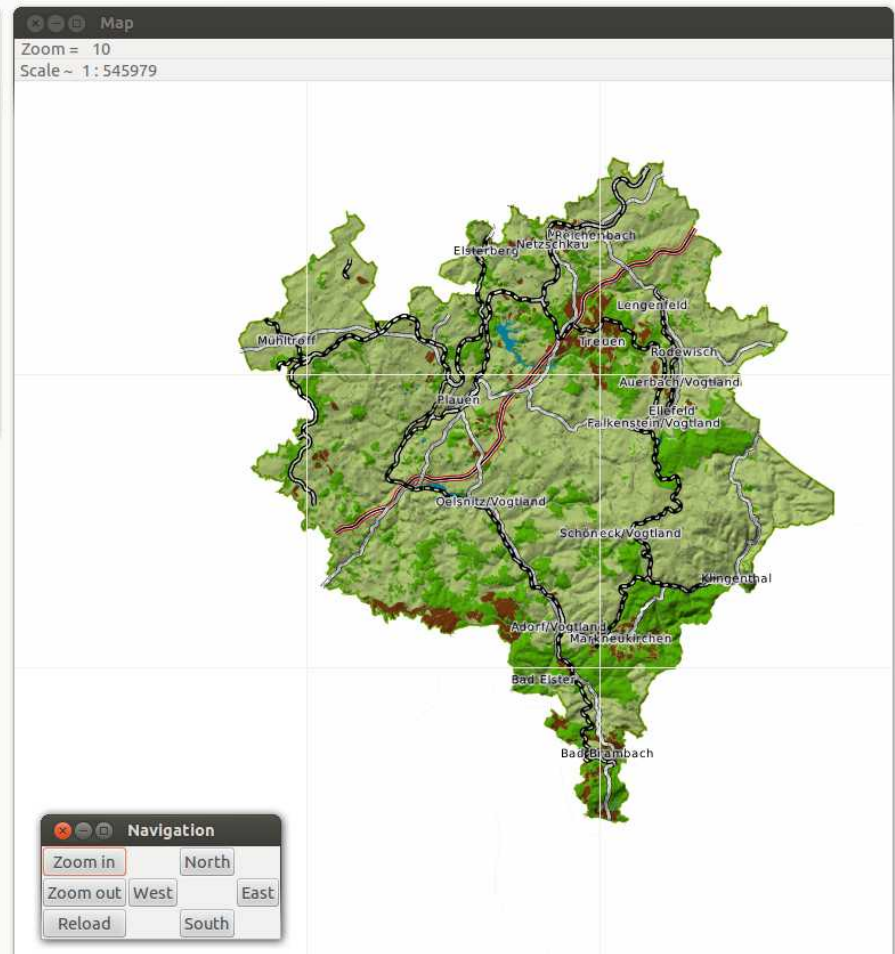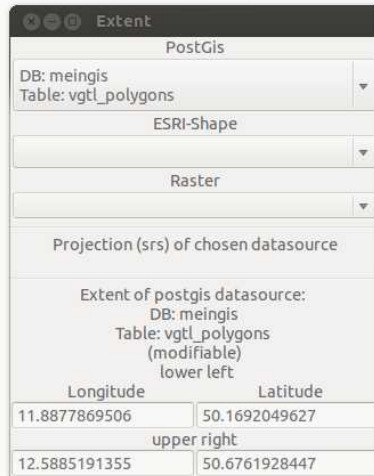
Styling and Information retrieval

Immediate preview

evaluate topographic constraints

Read XML-file

Define cartographic parameters

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Spatial Transformation

Evaluate result of processing

Select feature type

**Execute
web generalization service**

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5. Conclusion

- proof-of-concept implementation

- general feasability of concept demonstrated

- visual feedback supports definition of cartographic parameters

- WebGen-WPS applicable, but should be developed to:
  → enable Web2.0 communication structure
  → good to have also evaluation processes

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5. Outlook

- implement export & automatic processing

- outsource topologic evaluation to WebGen

- implement as online-tool

- further experiments on client-applications

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Other Web2.0 Applications???

JavaScript-frameworks build with
D3.js, Leaflet.js & TopoJSON

For example...scale dependent simplification

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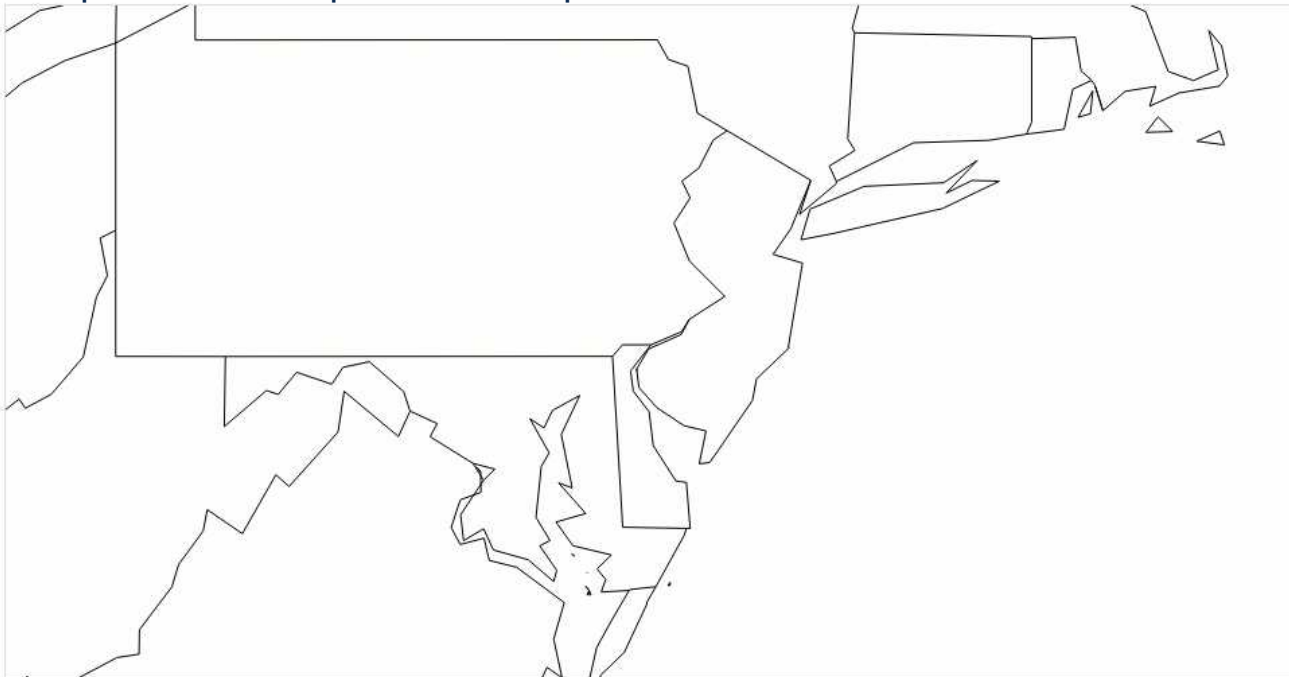
Resources & Contact

About TileGen:

https://github.com/milkbread/TileGen

Thank you for your attention! Questions!?!

About WebGen:

http://kartographie.geo.tu-dresden.de/webgen_docs/

About me:

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http://wwwpub.zih.tu-dresden.de/~rklammer

"Whether for good or bad, online mapping is currently in a tile-based era and will likely be so for the foreseeable future"

Michael P. Peterson (2012)

The Tile-Based Mapping Transition in Cartography. In: L. Zentai, J. R. Nunez (eds.): *Maps for the Future, Children, Education and Internet.* Lecture Notes in Geoinformation and Cartography, 5:151-163.