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Blind Friendly Maps

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Introduction

- Tactile map is the most appropriate source of spatial information for blind users
- Traditional map production is a matter of time consuming manual work
- We have developed Blind Friendly Maps, a web service providing instant access to tactile maps of arbitrary area

http://hapticke.mapy.cz

Methods

- Rendering with Mapnik [2], using the same pipelines and from the same database as standard maps
- Developing a special map key, many constraints:
  1. Fixed size of Braille characters
  2. White margins around objects
  3. Limited number of used textures
  4. Low density of displayed objects
- Map lettering in Braille code using locally unique acronyms (3 letters for street names, 4 letters for square names)

History of BFM

2006 Beginning of collaboration between CTU in Prague and Seznam.cz
Goal: improving accessibility of web interfaces of Seznam.cz (“Czech Google”)


2007 Development of raster-based BFM
- Several prototypes developed
- Rendering tactile maps from raster maps (no vector geodata available at that time)
- Comprehensibility of obtained maps very limited (many artefacts in the images, no street names, etc.)

2011 Seznam.cz acquired vector geodata
- Acquisition of the PlanStudio company with its geographical information system (GIS)

2011 Development of vector-based BFM
- Individual steps:
  1. Development of a map key
  2. Development of a generator of Braille code acronyms
  3. Integration of BFM into Mapy.cz
  4. Testing with blind users

2014 Blind Friendly Maps released
http://hapticke.mapy.cz (see the highest zoom)

Current state

- Rendered for the entire Czech Republic at a single scale of 1:1500
- Publicly available within the most popular Czech map portal Mapy.cz
- Regularly updated in the same mode as standard maps

Ongoing work

1) Smaller scales (almost finished)
2) Extension to Slovakia (almost finished)
3) Extension to the entire world
   - Map key for Open Street Maps geodata [3]
   - Acronym generator for international names

Results

Printing and preparation

STEP 1 (1 minute)
Open http://hapticke.mapy.cz, find area of interest and download your map sheets.

STEP 2 (1 minute)
Using a standard printer, print map sheets on swell (microcapsule) papers.

STEP 3 (2 minutes)
Apply a heating machine [4, 5] on your sheets to obtain the final tactile relief.

STEP 4 (1 minute)
Print supplementary information on a Braille embosser (or use it as a text file).

Blind Friendly Maps 5 minutes

References