Linked Data in Crisis Management

Cerise – Symposium Linked Data 29-09-15

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MSc Geomatics – Synthesis Project
Decentral Solar Energy Database

- Providing a reliable and up-to-date registration of the installed decentral PV panels

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Introduction

- Focus on the recent development of renewable decentral energy sources applied by private owners in the Netherlands
- For this Project we focused on:
  - Solar energy in the form of electricity via PV (photovoltaic) panels
  - The network operator: Alliander
  - The contribution in Crisis Management
- Important Geographic component: exact location of PV panels
  - Pilot area: Stevenshof (Leiden)

Objective

- Improving and validating the current registration (EDSN-PIR) of decentral installed PV panels
- Note: for this presentation we will not incorporate the:
  - Part of the (anonymized) PIR data which can be found on the website: www.klimaatmonitor.databank.nl
  - Amount of power (kWh) calculation produced by the PV panels
    - (per year)

PV Panels: crisis management
Both a source and a risk

Need for a central PV panel database

- Buildings equipped with solar power systems introduce unfamiliar hazards that require new firefighting strategies and procedures.
- Create a new up-to-date and reliable database
  - Including data of the existing sources
    - e.g. PIR (voluntary registration), BAG
- Data obtaining
  - Location of PV panels
  - PIR database
  - Aerial imagery (of the focus area)
- BAG database
- Postal code division in the focus area per neighbourhood

Image Processing

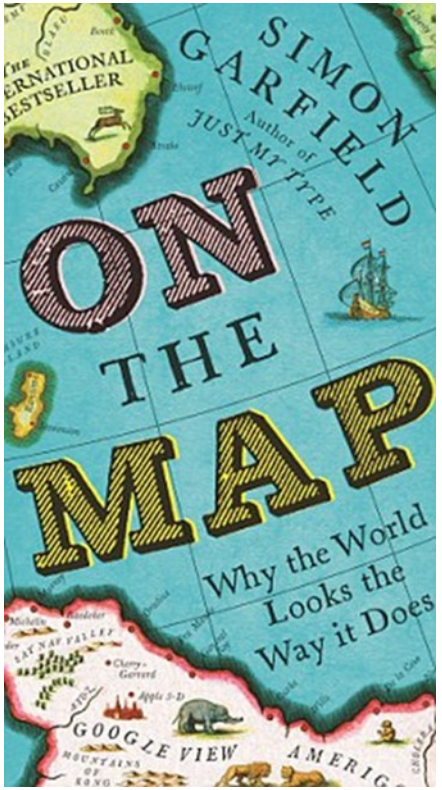


Image Processing Buro Karto

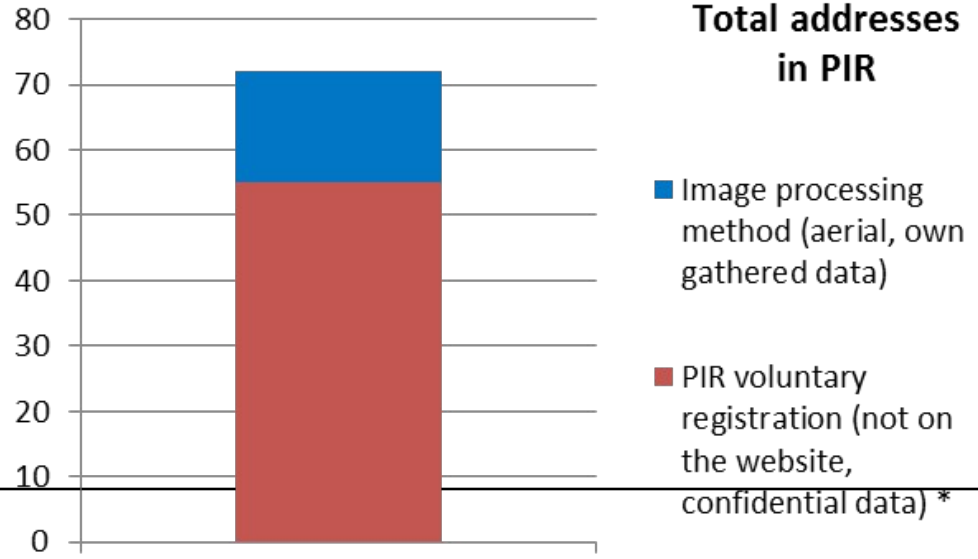
- Detected 778 PV panels
- Manual check of algorithm
  - Which PV panels were not found by the algorithm
  - Whether the founded PV panels/markers of the algorithm, were PV panels or not.
  - Detected 118 more PV panels
- 13,17 % of the PV panels were not found with the algorithm
- 0 % of the PV panels were wrong assigned
- Total: 896 PV panels
  - Area: Stevenshof

Compare PEER+ / PIR Validation Survey

- Postal Code; BAG Link; Field trip

72 addresses in Image processing (PEER+)
55 addresses in PIR (Voluntary)

17 addresses not in PIR



PV Panels
Limitations

- Aerial pictures could be outdated;
- Some PV panels are located on walls, vertically;
- Some PV panels may be located under a tree, so are not traceable on aerial imagery;
- The development of PV panels in the form of roof tiles may not be tracked;
- Semi glass – PV panels may not be tracked.



Conclusion: Linked Data principle Stakeholders

- All involved, responsible parties in the energy sector
- Crisis Managements
  - Fire Brigade, Crisis Team Alliander, Safety Regions
- Green energy mapping
  - Stakeholders: producers of PV panels; Statistics Netherlands (CBS)
- Insurance policies
  - Stakeholders: multiple insurance companies
- Focused marketing research
  - Stakeholders: advertising companies