

BeGeo 2024

LA CONNEXION A L'ETAT PUR
DE ULTIEME CONNECTIE



Geolokalisatie in België: adressen en zoekwoorden omzetten in
coördinaten (en vice versa) met de nieuwe nationale geocoder

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Sponsored by





NGI IGN



Smals
ICT for society

Gedeelde doelstellingen

Parallele ontwikkeling

Samenwerking



Introductie

Concepten

Bestaande tools

BeST adressen

Ontwikkeling

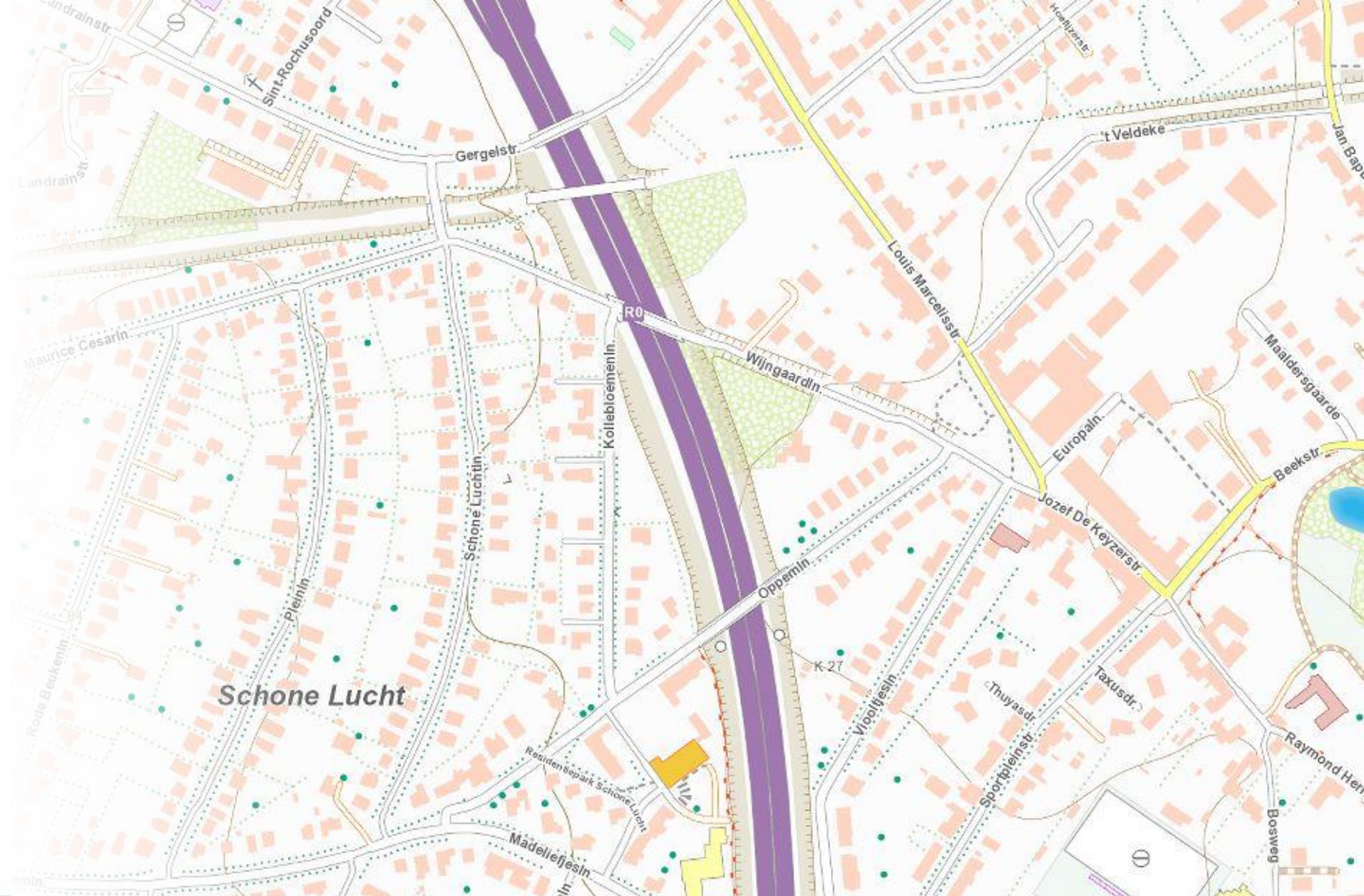
Smals

Test – Benchmark

NGI

Roadmap

NGI

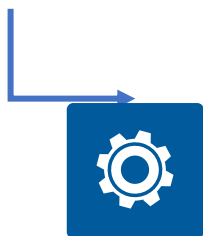


Geocoding: concept

Geocoding = (1) Address standardization + (2) Geolocation

Geocoder = API (Application Programming Interface)

“Av. Cortenbergh 115, 1000 Bxl”



```
{“street” : “Avenue de Cortenbergh”,  
“housenbr”: “115”,  
“zipcode” : “1000”,  
“city” : “Bruxelles”,  
“country” : “Belgique”,  
“location”: [50.8460,4.3921]}
```

(2) Geolocation:

- Visualization
- Controls
- Spatial (GIS) analytics
- ...

(1) Address standardization:

- Data quality:
 - Standardization
 - Deduplication
 - Matching
- Auto-completion
- ...

Geocoding: concept

Reverse geocoding

lat: 50.8460, lon: 4.3921, range: 10m



```
{“street” : “Avenue de Cortenbergh”,  
“housenbr”: “115”,  
“zipcode” : “1000”,  
“city” : “Bruxelles”,  
“country” : “Belgique”,  
“location”: [50.8460, 4.3921]}
```

Tools

- **Cloud commercial** providers:

- Here we go
- Bing maps
- Google maps
- TomTom
- Sometimes free in specific conditions



Google Maps



- Mainly 3 **open-source/open-data** solutions:

- OpenStreetMap/**Nominatim**
- Photon (OSM + ElasticSearch)
- Pelias
- **On-premise** possible for a specific region

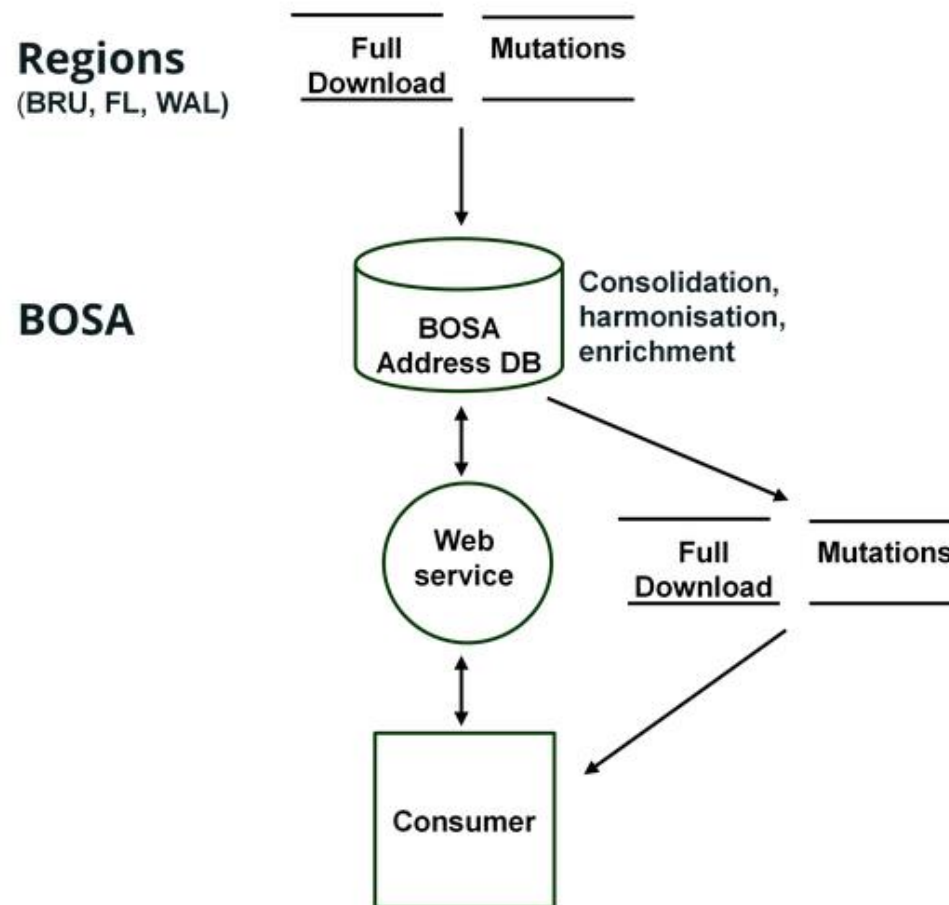


OpenStreetMap



BeSt Address

- Eén authentieke bron voor Belgische adressen en straten
- BOSA verzamelt de regionale authentieke bronnen : Urbis, Adressenregister, ICAR
- Elk adres heeft een BeSt ID die gebruikt kan worden in andere toepassingen
- Kan worden gebruikt door bestanden te downloaden (publiek) of via API (eGov)
- Veel diensten beschikbaar (maar geen 'fuzziness') - > geen resultaat als de zoekopdracht niet volledig gelijk is aan de Best Data (straatnaam, huisnummer)

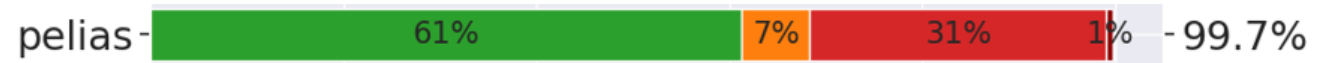




Pelias

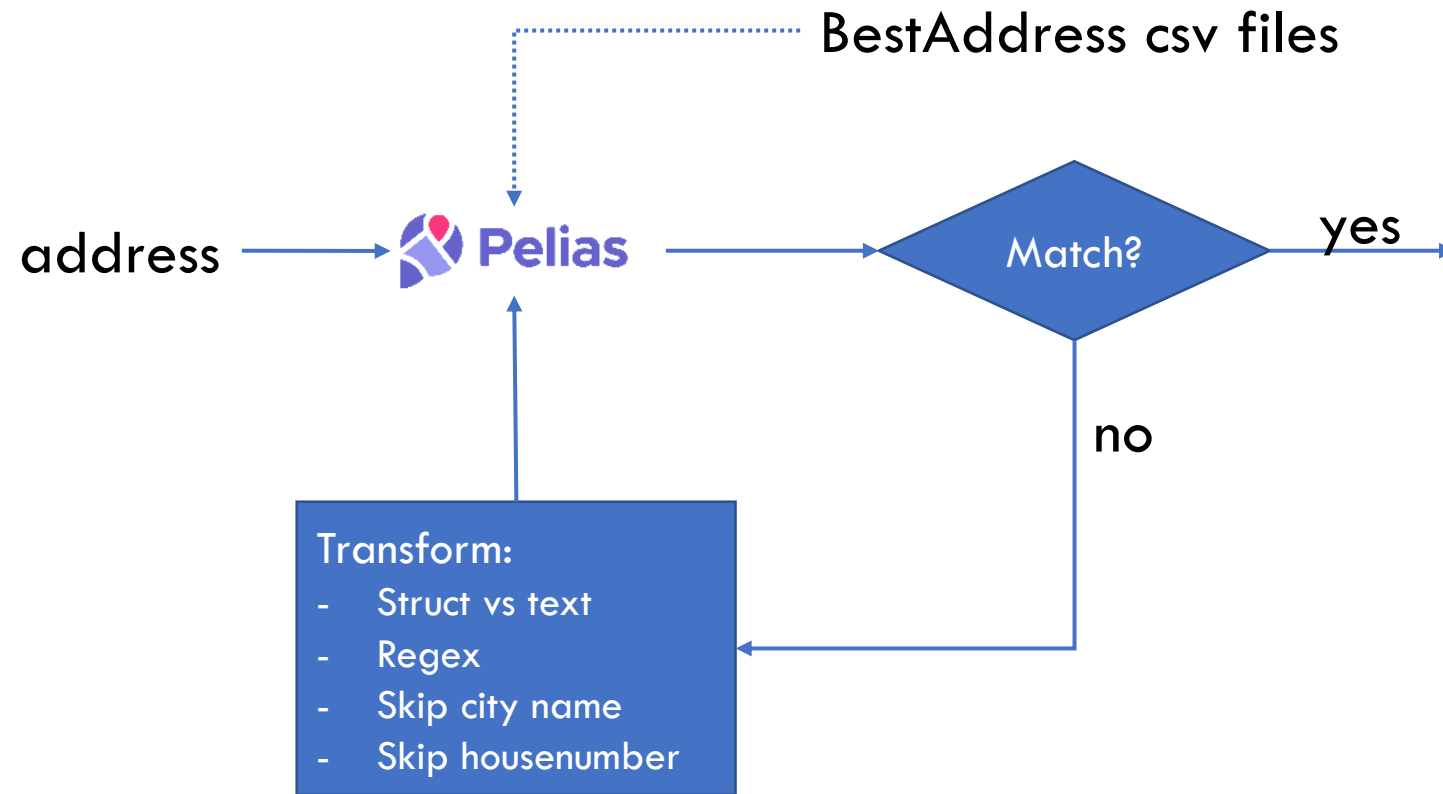
- Open source (<https://github.com/pelias/docker>) :
 - On-premise geocoder with your own dataset
 - Several cities/countries available, including Belgium (via openaddresses.io/BeSt Address)
- **Data-source** problems:
 - **Not updated since Feb 2021** (several issues)
 - Not street level/empty streets geocoding

- **Robustness** problem:



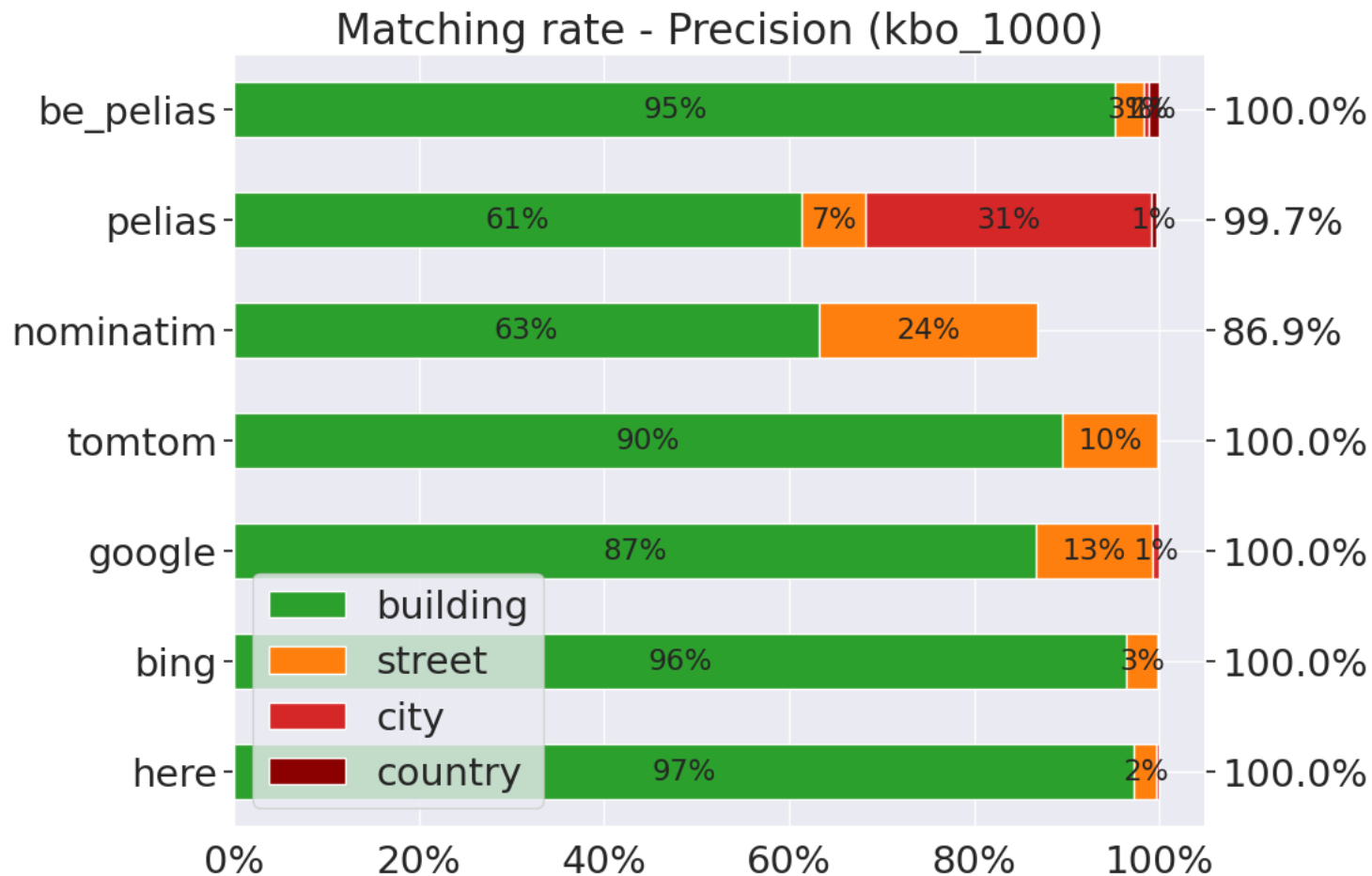
- If **structured version** doesn't work, sometimes **unstructured version** does (and vice-versa)
- If none works, some **simple transformations** often allow matching:
 - {"postalcode": 1160, "locality": "Auderghem"} → {"postalcode": 1160}
 - Cleansing text, removing parenthesis in street, non-digits in housenumber...

bePelias



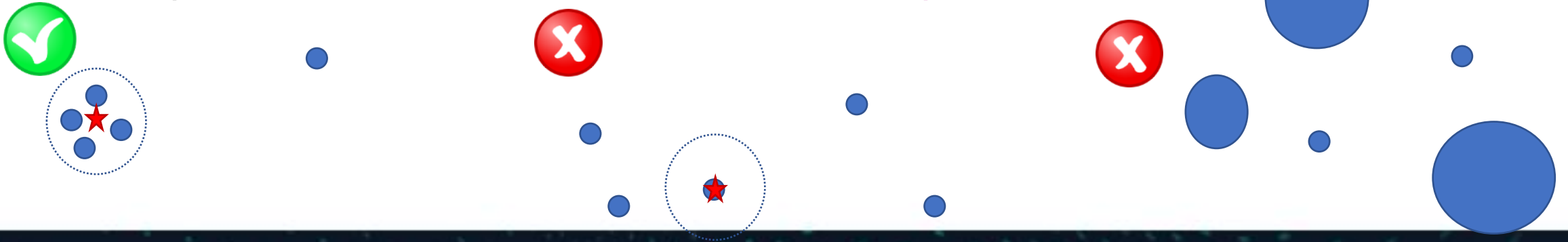
- Completely **new dataflow** from BestAddress CSV's, by-passing OpenAddresses.io
- Add a layer above Pelias. Basic idea: if no match, “transform” address before resending
- <https://github.com/SmalsResearch/bePelias>

bePelias: matching rate



Benchmark methodology

- Collect a (not too clean) **address dataset** → 1 000 addresses from KBO
- Send this dataset to **several coders** → here, bing, nominatim, google...
- Use **median point** for each address as reference (with **some conditions**: enough (precise) matches, enough answers close to median)
- Compute misc. stats about « **distance to median point** »



NGI
Nationaal
Geografisch
Instituut



IGN
Institut
Géographique
National

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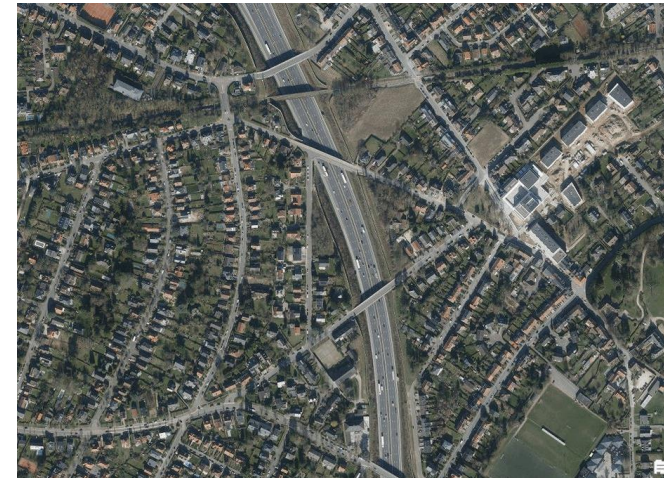
19/03/2024 - Brussels Expo

NGI Geocoder

Process Model

- Ontwikkeling vanaf nul
- NGI = eigenaar van de oplossing (totale onafhankelijkheid op vlak van licenties en gebruikersrechten)
- Specifiek voor de Belgische context
- Multisourcing met authentieke gegevens
- API

NGI-gegevens in combinatie met BestAddresses zullen doorzoekbaar zijn (POI, Toponymy, roadsegments, cadastral parcels etc.)



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Technology

1. GeoSearchEngine Loader

- Feeds and consolidates one database from different sources & different formats

2. GeoSearchEngine API

- Search logic and providing an API via endpoints

3. BelPostal Package

- Transforms raw user input into an object that can be used by the API

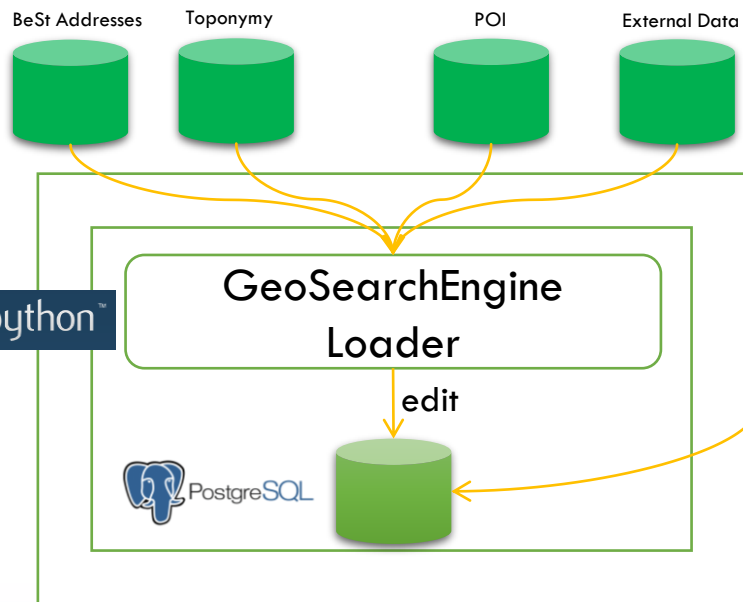
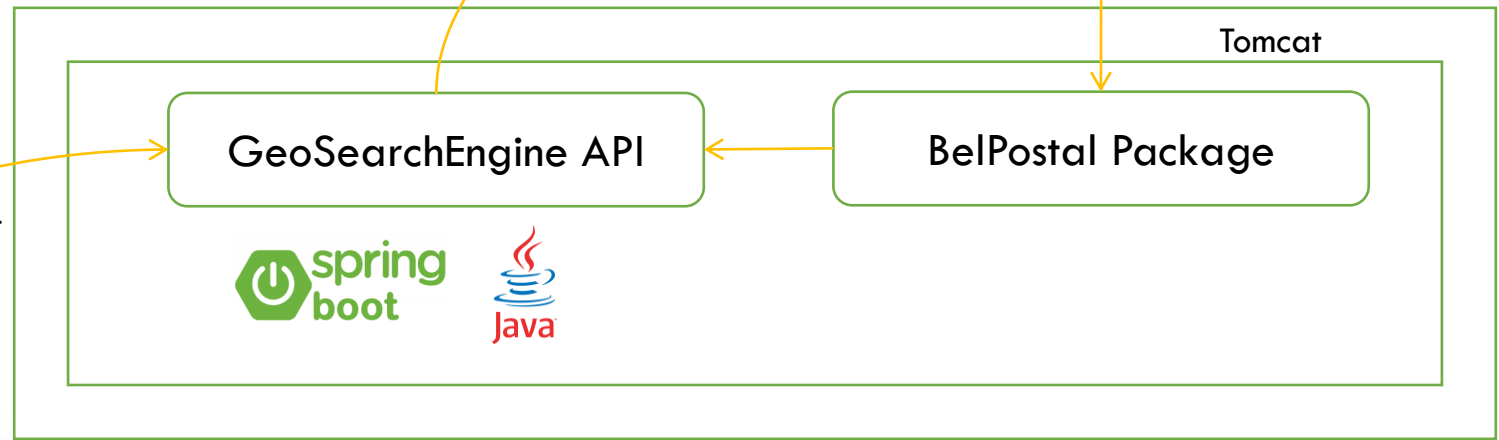


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input

Output (XML/JSON)



Usecases



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Avenue Cortenbergh 115, Bruxelles

```
{  
  "x":  
    645567.19058324,  
  "y": 672139.3692815,  
  "proj": "EPSG:3812"  
}
```

Raw
search



Parsed
search



Reverse
search



Batch
search



GeoSe
API

```
{  
  "street": "Avenue Cortenbergh",  
  "houseNumber": 115,  
  "municipality": "bruxelles"  
}
```

CSV file

Roadmap

1. API (BeSt Adress Compliant) + Batch
2. Testing with Smals
3. Corrections/ improvements (*2,16 % of BeST Addresses don't have a geometry*)
4. Benchmarck Smals
5. Documentation + Code information
6. On premise Solution



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Q2 2024

Q3 2024

Q4 2024

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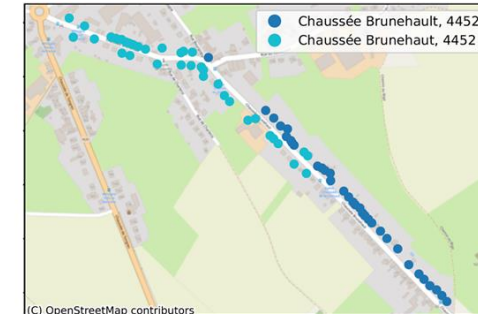
1. Quality control (on going)

- Detectie van postcodes die niet compatibel zijn met de bPost-repository
- Detectie van kleine tekstuele verschillen tussen geografisch dichtbij gelegen straten
- Detectie van atypische geometrische straatvormen

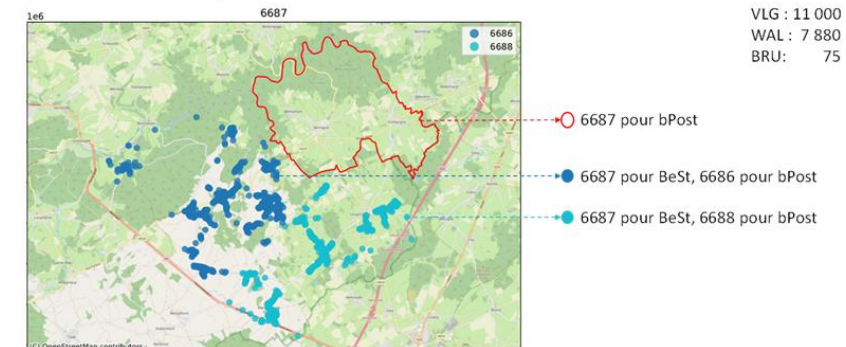
2. Multisourcing met NGI gegevens?

3. ...

Incohérence de noms



Frontières postales





Bedankt ! Merci ! Thank you !

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