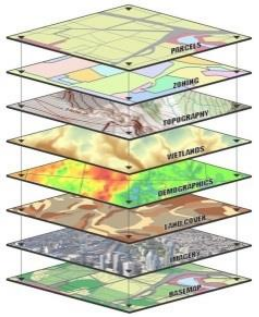
Addressing the EU need for multi-scale, up-to-date and historical geographical information

TDKEN Webinar - Generalisation – Quality – Life-cycle

Julien Gaffuri

27 June 2024

GISCO – GIS at the Commission



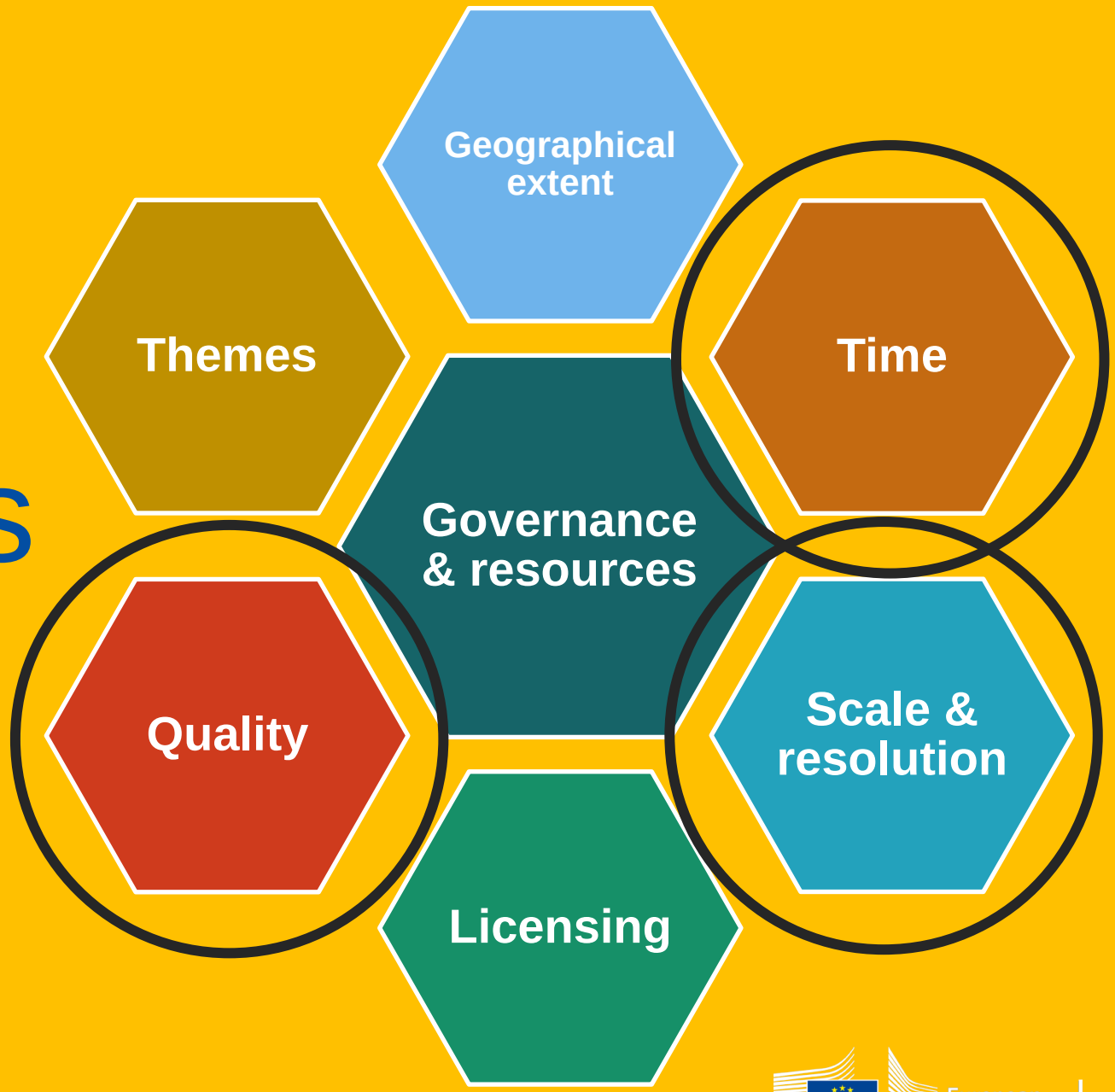
GISCO is a permanent service of Eurostat that answers the common needs of Eurostat and the European Commission for geographical information at the level of the European Union (EU), its Member States and regions.

- Provision of GIS (reference) data, services and software,
- Support cartographic and spatial analysis activities,
- Stimulate the use of GIS to support commission activities,
- Support Eurostat activities on the integration of statistical and geospatial information.

- https://ec.europa.eu/eurostat/web/gisco

Requirements

7 main requirements for pan-European datasets



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Quality

- See papers
  - “Some activities on geographical data quality management at Eurostat GISCO”, 4th International Workshop on Spatial Data Quality, 11-12 October 2023. https://eurogeographics.org/app/uploads/2023/05/3.-20231011_SDQ2023_eurostat_gisco_gaffuri.pdf
  - “Geographical data quality for spatial analysis and geospatial statistics”, European conference on quality in official statistics, 2024.
- ISO 19157-1:2023 – Geographical information – Data quality https://www.iso.org/standard/78900.html

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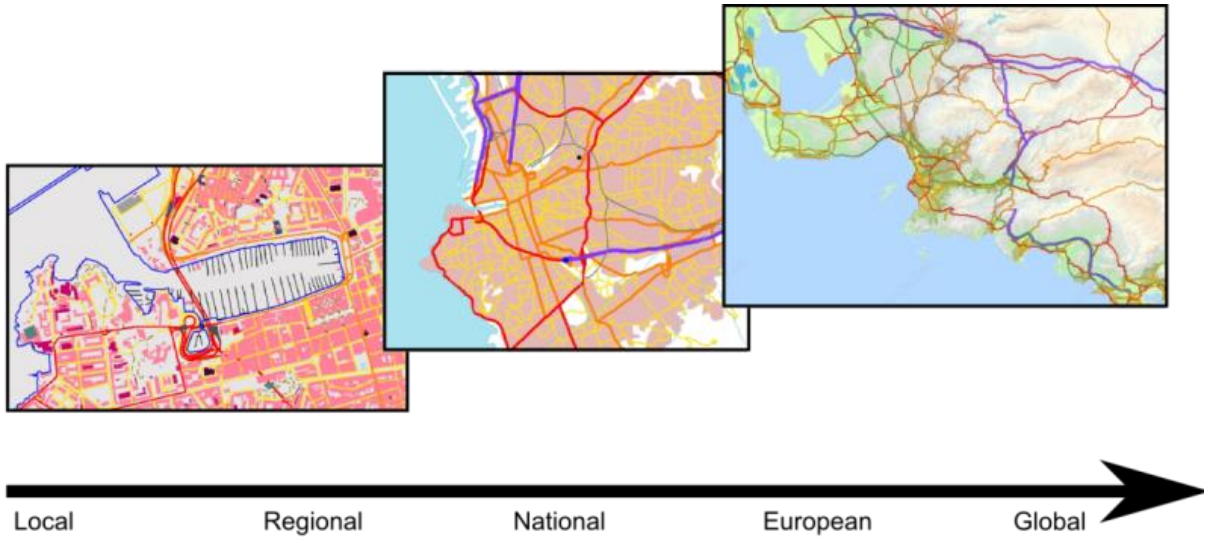
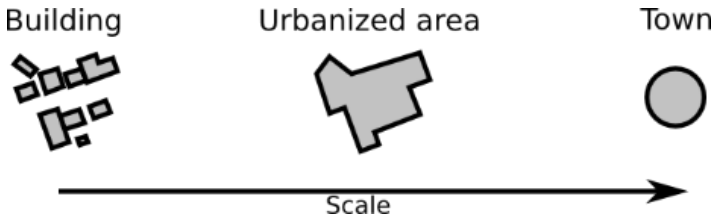
Generalisation and multi-scale data

- Need for detailed data (1:10k) **and** generalised data (1:50k, 1:100k, 1:250)
- Generalised data is not lower quality information, but different information.
- Need for **multi-scale** data – derived with AI-based automated generalisation.
- Generalisation is not only for maps – Model VS Graphic generalisation

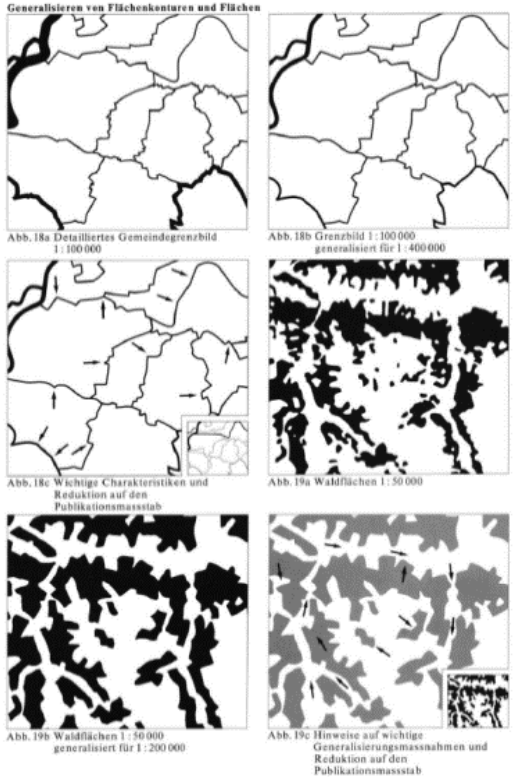


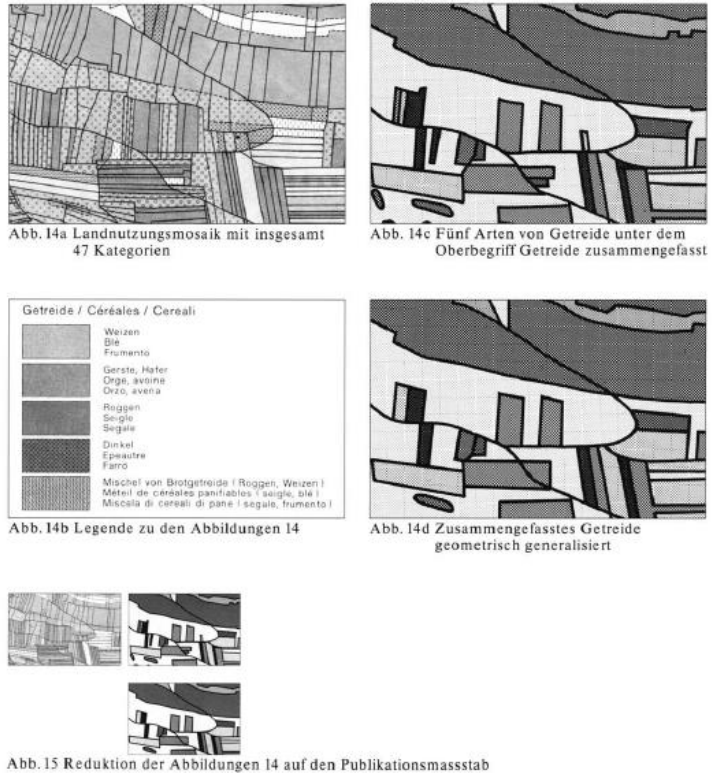


Generalisation and multi-scale data

- Generalisation at Eurostat GISCO for administrative and statistical units
- Minimum mapping unit / distance

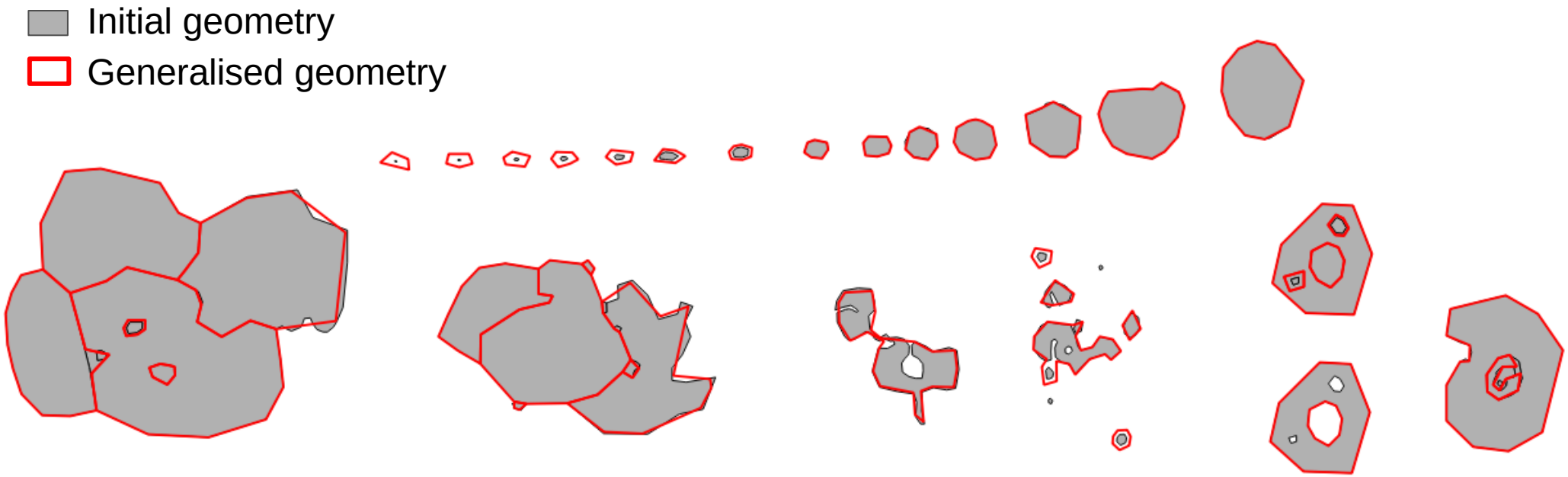
Scale	Resolution in map mm	Resolution in ground meter
1:1M	0.2mm	200m
1:3M	0.2mm	600m
1:10M	0.2mm	2km
1:20M	0.2mm	4km
1:60M	0.2mm	12km





Generalisation and multi-scale data

- **RegionSimplify** tool (https://github.com/eurostat/RegionSimplify/)
- Constraint optimisation with multi agent system principles



Generalisation and multi-scale data

- Key resources:

- ICA commission on generalization and multiple representation
https://generalisation.icaci.org/
- Generalisation in Practice Within National Mapping Agencies, 2014, Duchêne et al., DOI: 10.1007/978-3-319-00203-3_11
https://link.springer.com/chapter/10.1007/978-3-319-00203-3_11

Temporal aspects

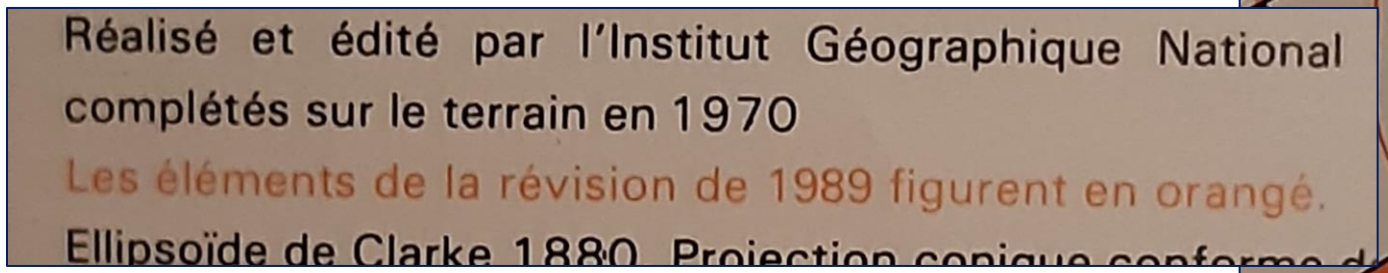
- Overall objective: **Measure evolution**

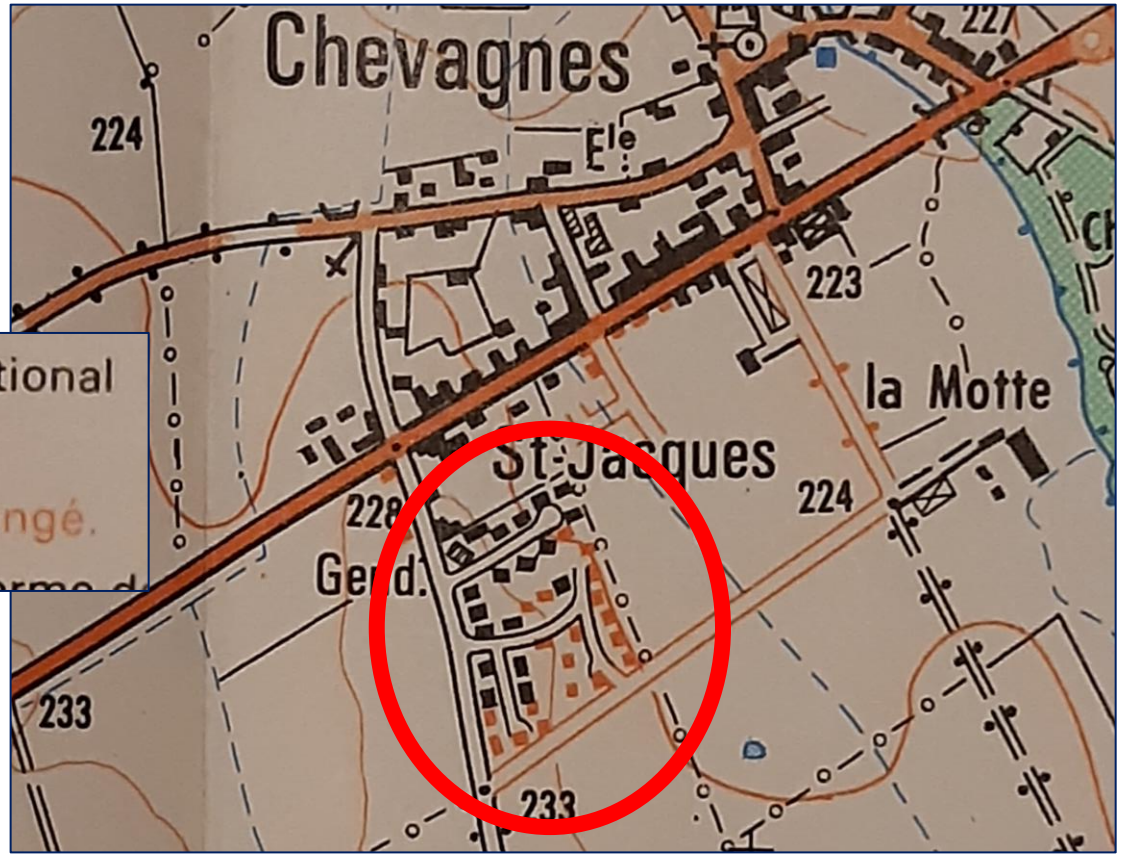
- Known reference year – a geographical dataset version is a picture taken on a date D. Correction ≠ updates
- Suitable updates frequency
  - The more detailed the data, the more frequent the updates

- Specification stability (comparability accross time)
- Unique identifiers
- Dissemination as differencial datasets

Temporal aspects

- Differential datasets
- Example on IGN-F map (1992)





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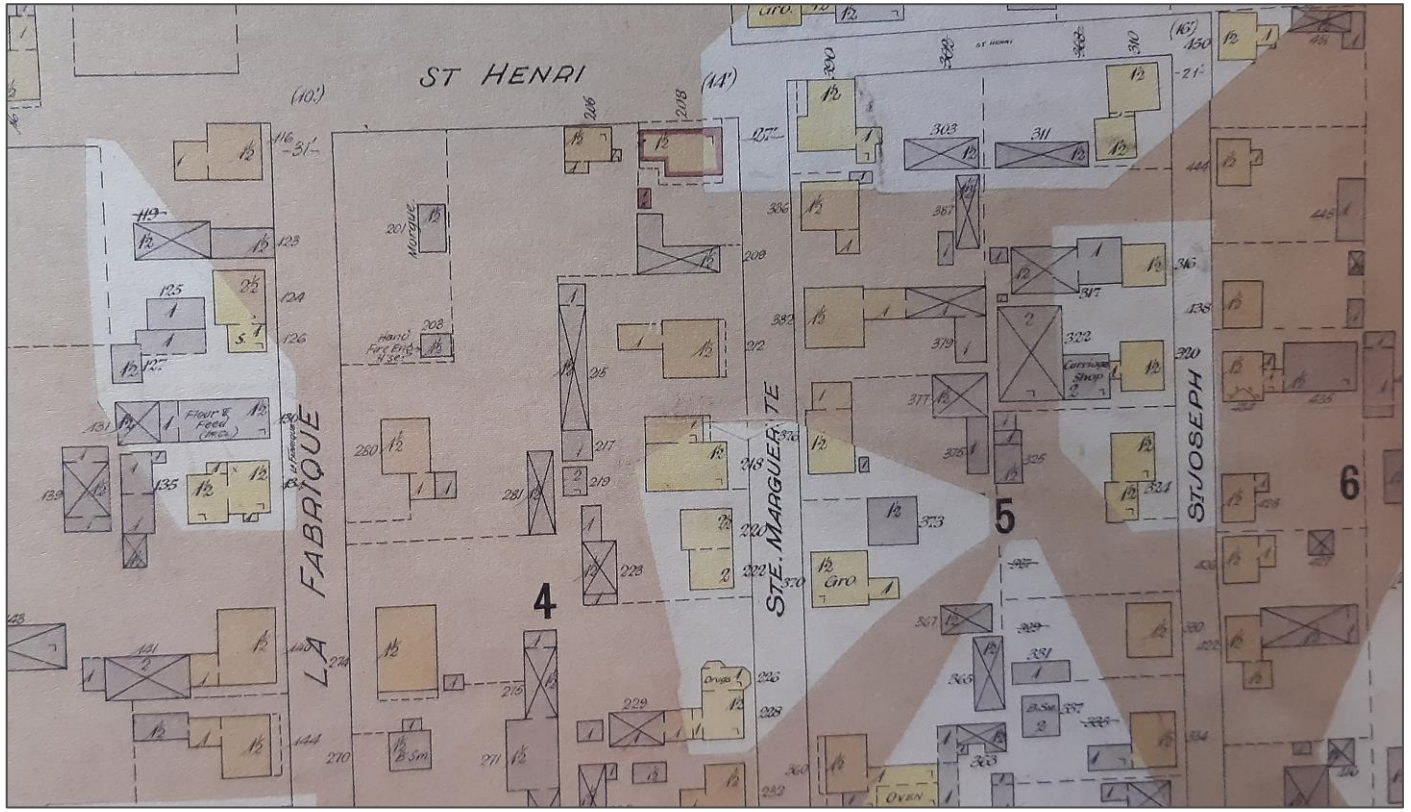
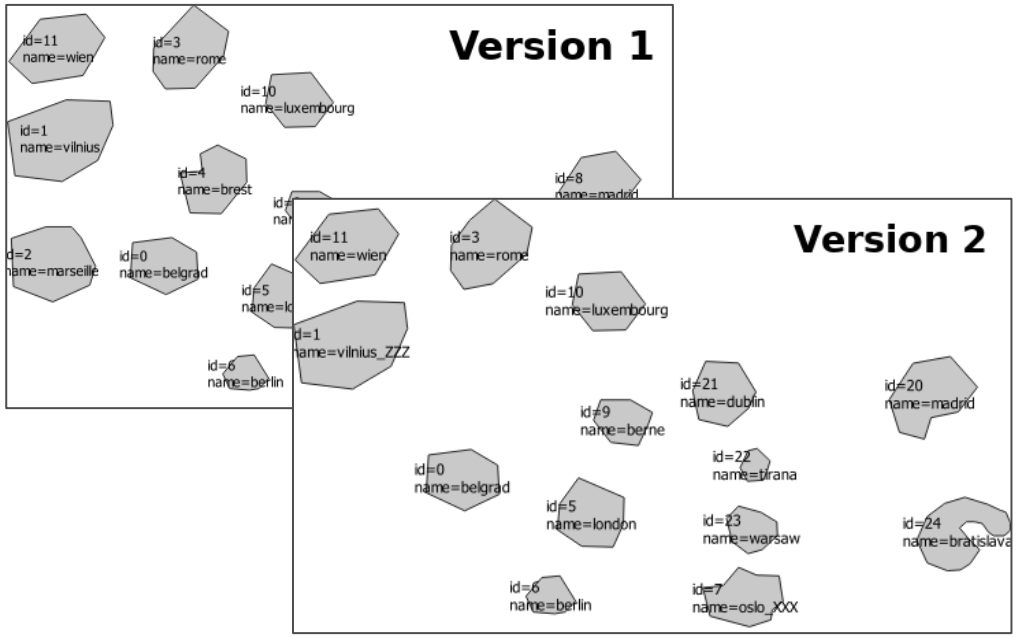
Temporal aspects

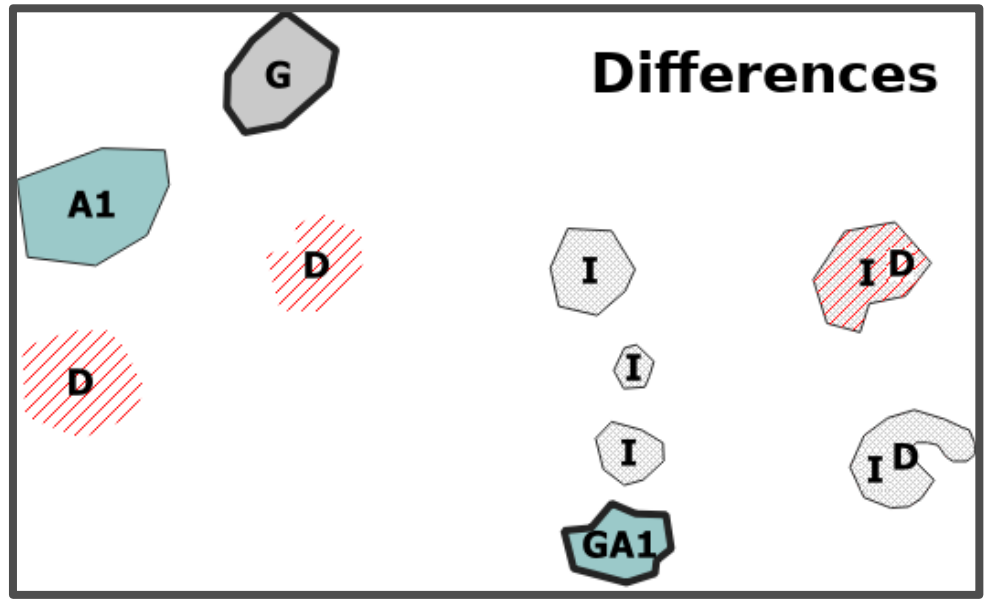
- Differential datasets
- Example on Canadian map (1905) – "Butterfly service"



Temporal aspects

- **GeoDiff** format and tool for differential datasets (https://github.com/eurostat/GeoDiff)





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Summary

- Quality
- Généralisation and multi-scale data
- Temporal aspects

Thank you

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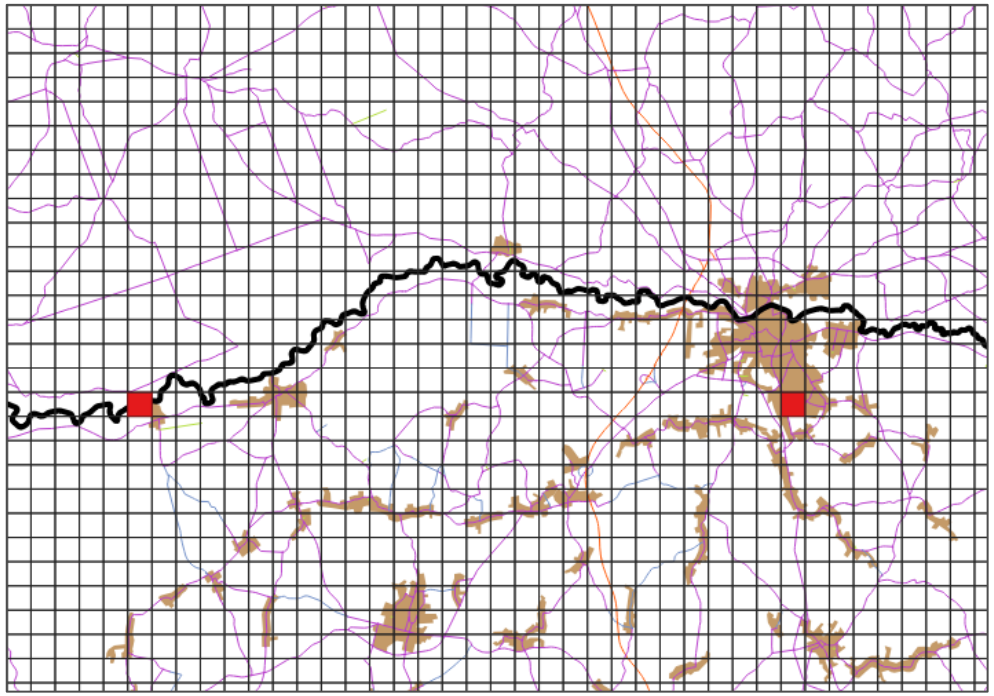
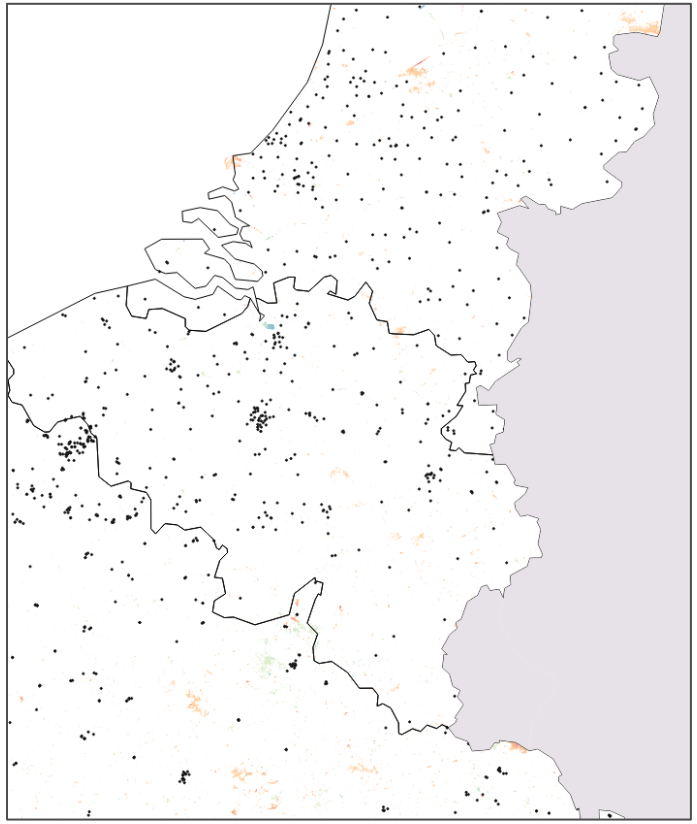
Quality control – Completeness

- Assess the number of omissions and commissions for some feature classes.
- Pseudo-random sampling – of 1km grid cells:
  - 30 grid cells (one per country)
  - 17 cross-country grid cells
- For each grid cell:
  - Cross-source comparison

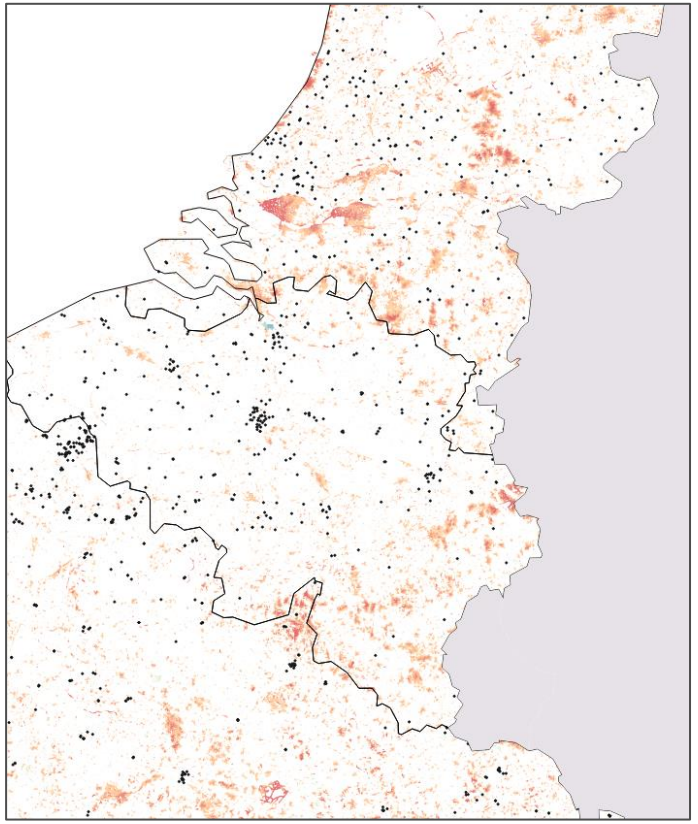


Healthcare services accessibility analysis

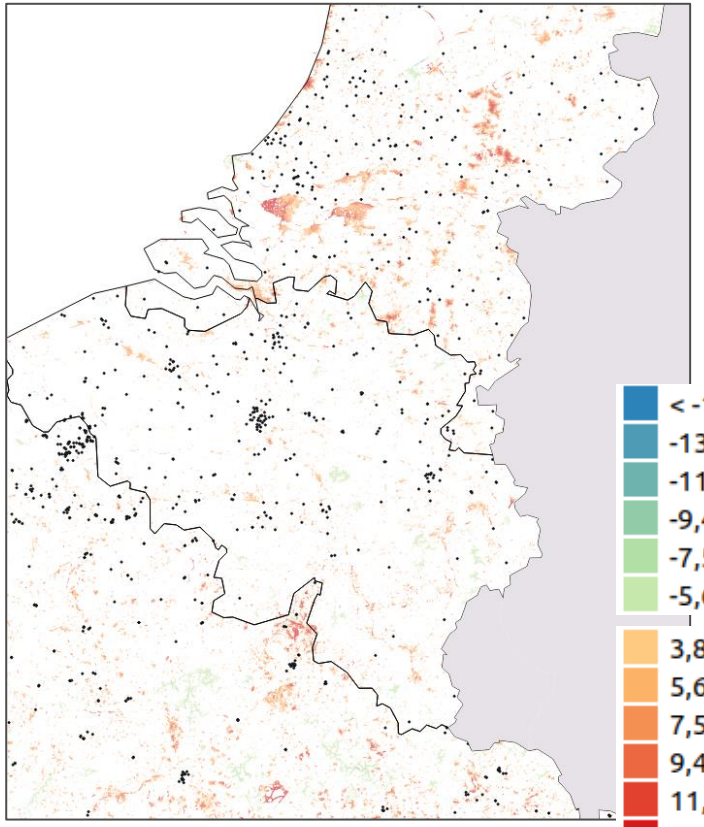
OME2 - Tomtom

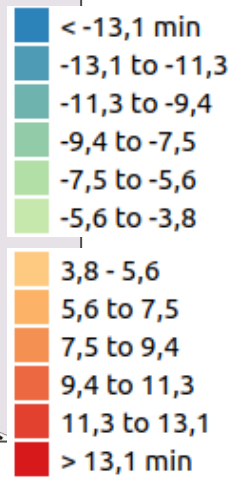


OME2 - OpenStreetMap



Tomtom - OpenStreetMap





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