Projet Belle Epoque

Géocodage historique

T. Geraud, R. Cura, A. Riva, P. Lagneau-Ymonet

Plan

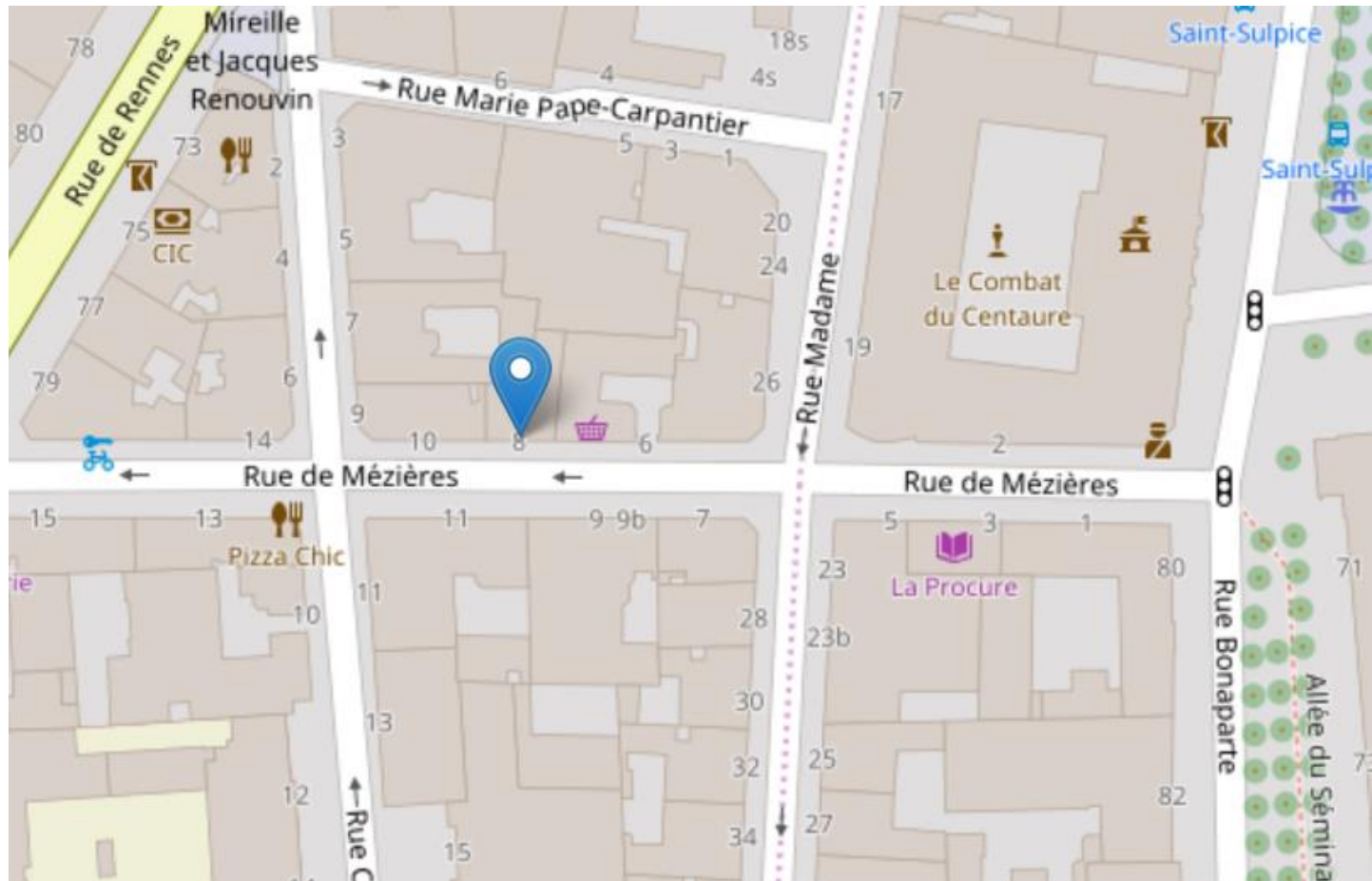Historical Geocoding?

Context

Building historical gazetteers

Geocoding is matching

Web interface and collaborative editing

conclusion/perspective

Geocoding

- What is geocoding?
- "8 rue de Mézières, Paris"
  →

Historical geocoding

- What is **historical** geocoding?
- "5 rue de Jérusalem, Paris" ; 1846
  →

Street doesn't exist anymore

Historical geocoding

- OK, I have a map from 1820-1840
  - Got to Bibliothèque Historique de la Ville de Paris
  - Start searching (for each address!)….

Historical geocoding

- 54 large sheets, good luck

Our method

- Extract information from historical maps (street name, building number)

- Construct gazetteers (**geographical index)** (at this period, this street is here...)

- Build a search function

- A nice web interface for collaborative control and edit of results

- Proposed solution

Our method

- Proposed solution
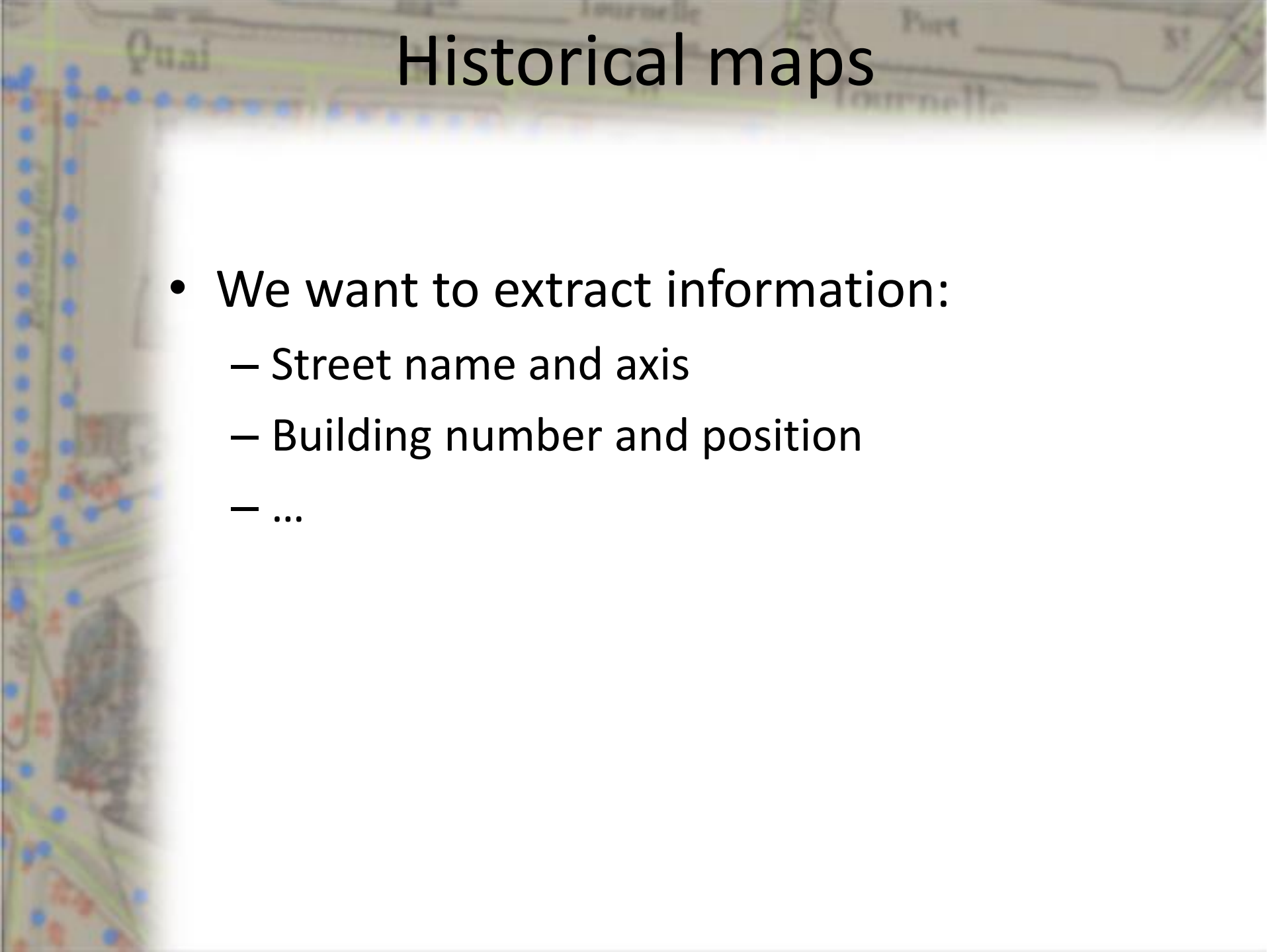
Historical maps

- We want to extract information:
  - Street name and axis
  - Building number and position
  - …

Historical maps

- Maps have to be georeferenced → can be used with other data.
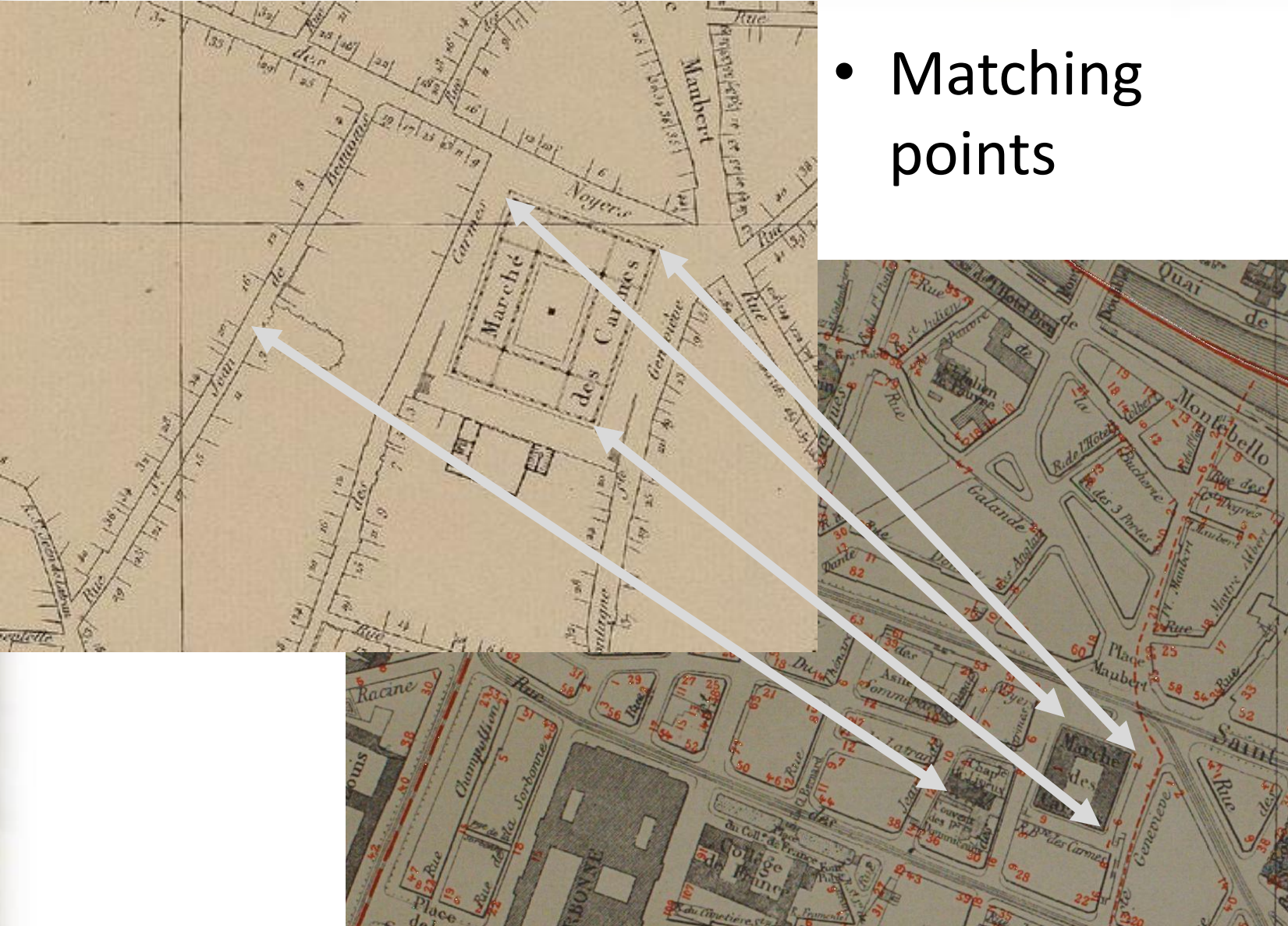
- Ex: for this room
  - Local : 200m SW of building entry
  - Georeferenced: **48°50'27.8"N 2°35'17.1"E**

- How does it work for historical map?
  - Complex
  - full PHD : Bertrand Dumenieu
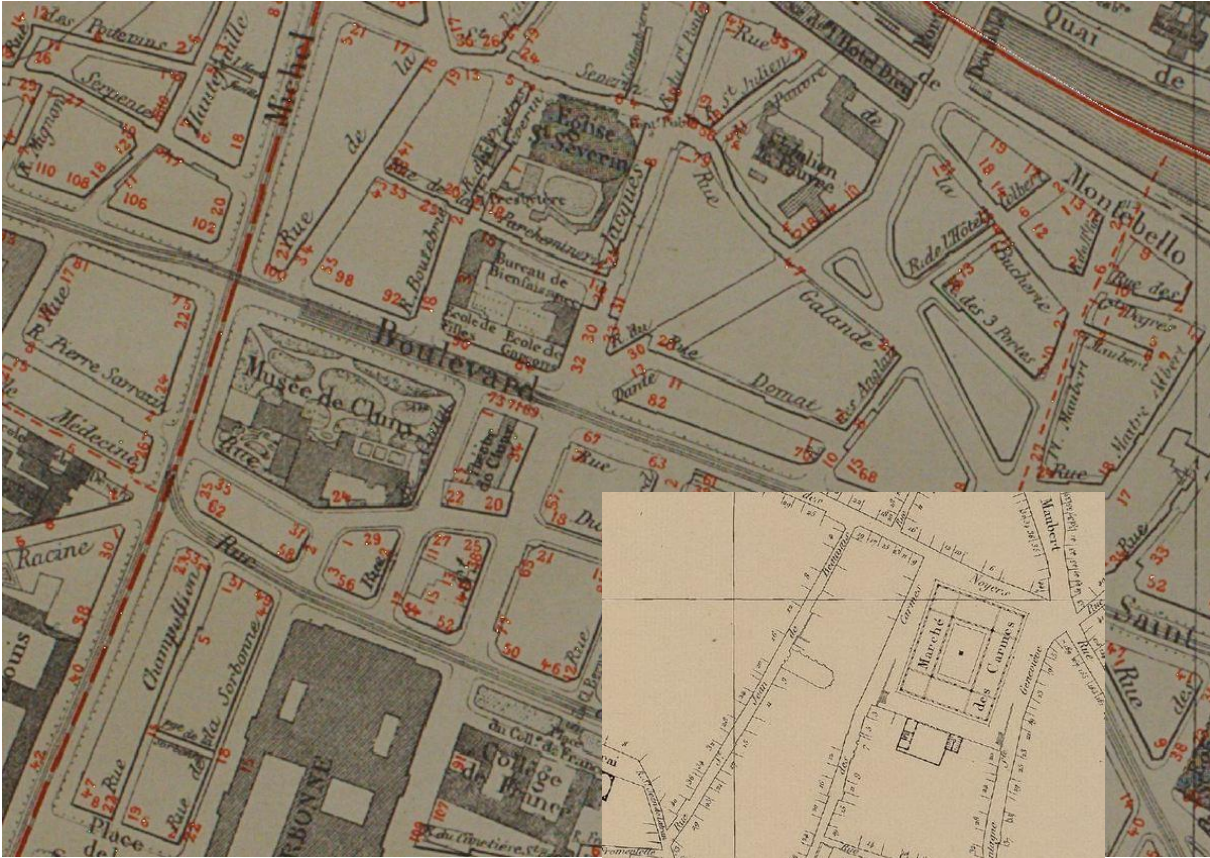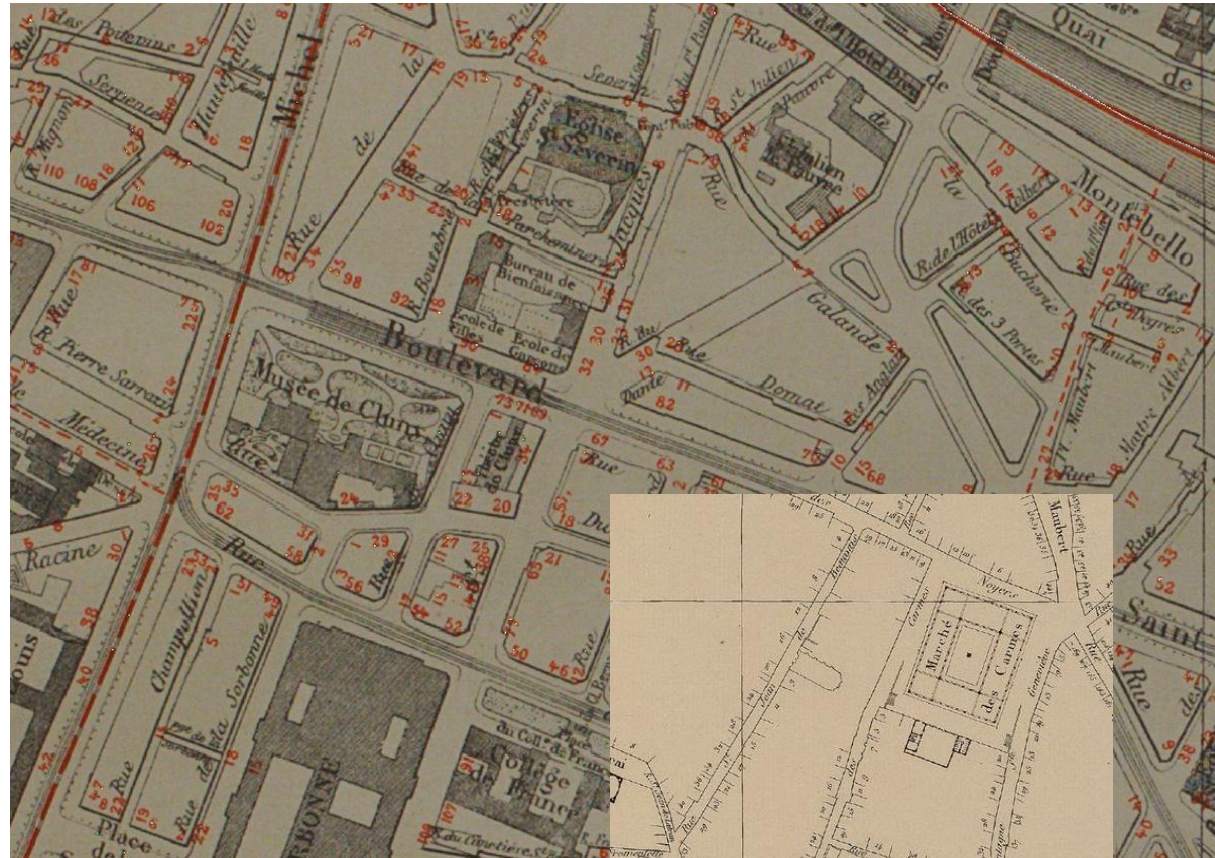
Historical maps

- Matching points
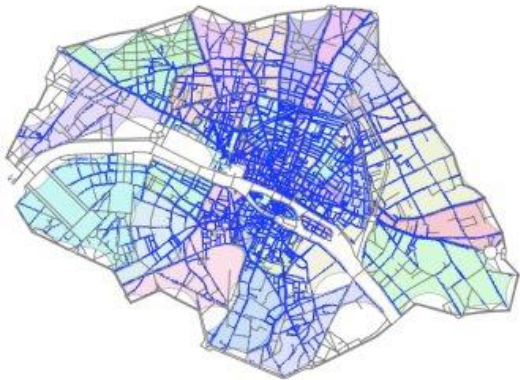
Historical maps

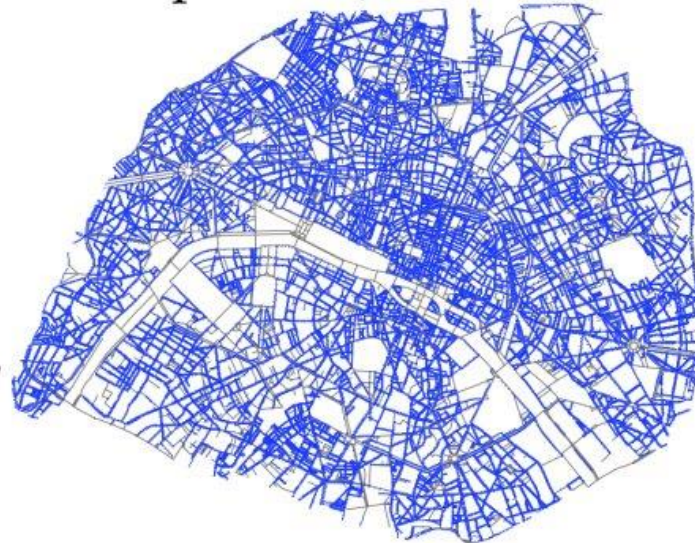- Appropriate warping

Historical maps

- Extracting information
  - Mostly manual (collaborative)
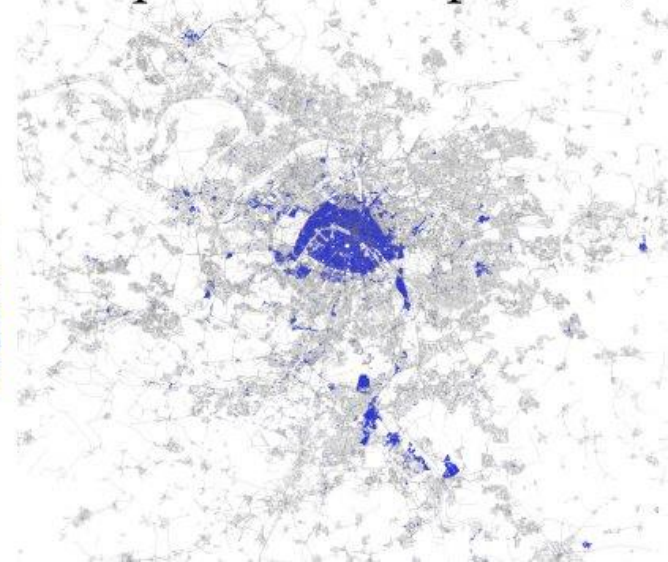 - Complex again : Full Phd : Benoit Costes

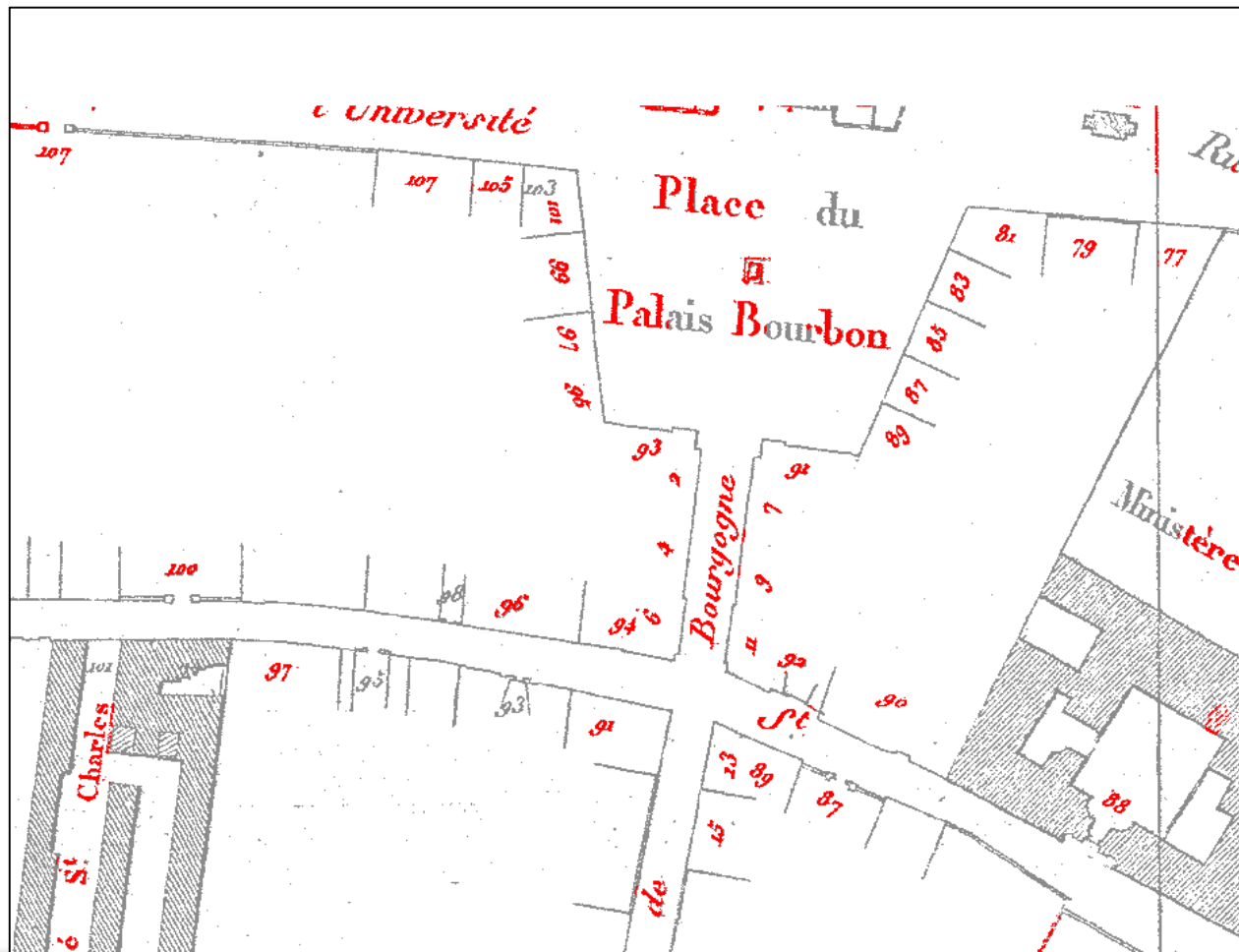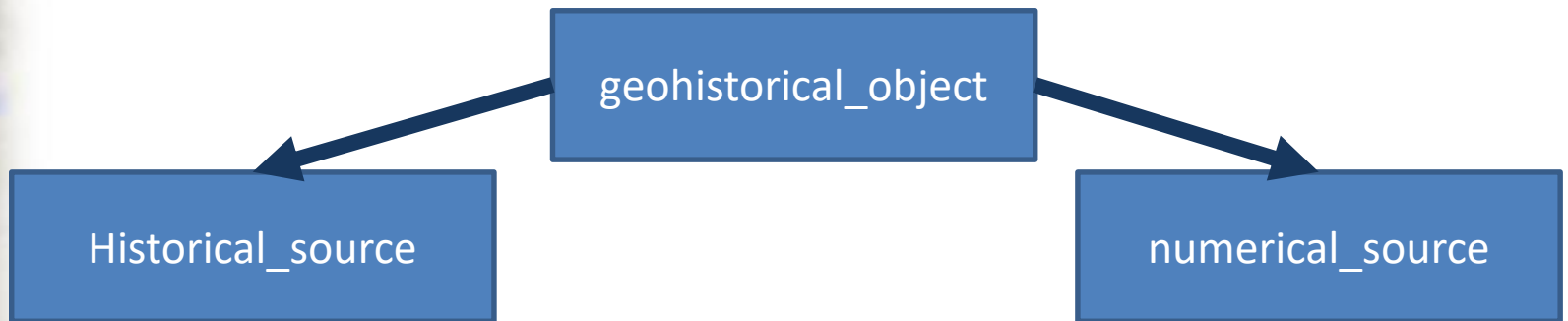Jacoubet (1825-37)   Alphand (1887-89)   OpenStreetMap (2016)

Historical maps

- Extracting information

  -Some test for automatic extraction : hard

GeoHistorical object

- Model for extracted information :
- Geohistorical object

```
           geohistorical_object
    ↙                              ↘
Historical_source          numerical_source
```

GeoHistorical object

- Model for extracted information :
- Name + position

8 rue des Noyers, Paris

GeoHistorical object

- Model for extracted information :
- Historical source

8 rue des Noyers, Paris

Jacoubet Map, created ... by ... Confidence...

GeoHistorical object

- Model for extracted information :
- Geohistorical object

8 rue des Noyers, Paris   **1826-35**

Jacoubet Map, created … by … Confidence…

GeoHistorical object

- Model for extracted information :
- Digitizing process

8 rue des Noyers, Paris

1826-35

Jacoubet Map, created ... by ... Confidence...

Digitized ... Georeferenced ... Editing process... Precision...

GeoHistorical object

- Model for extracted information :
- Full Geohistorical object

8 rue des Noyers, Paris

1826-35

Jacoubet Map, created ... by ... Confidence...

Digitized ... Georeferenced ... Editing process... Precision...
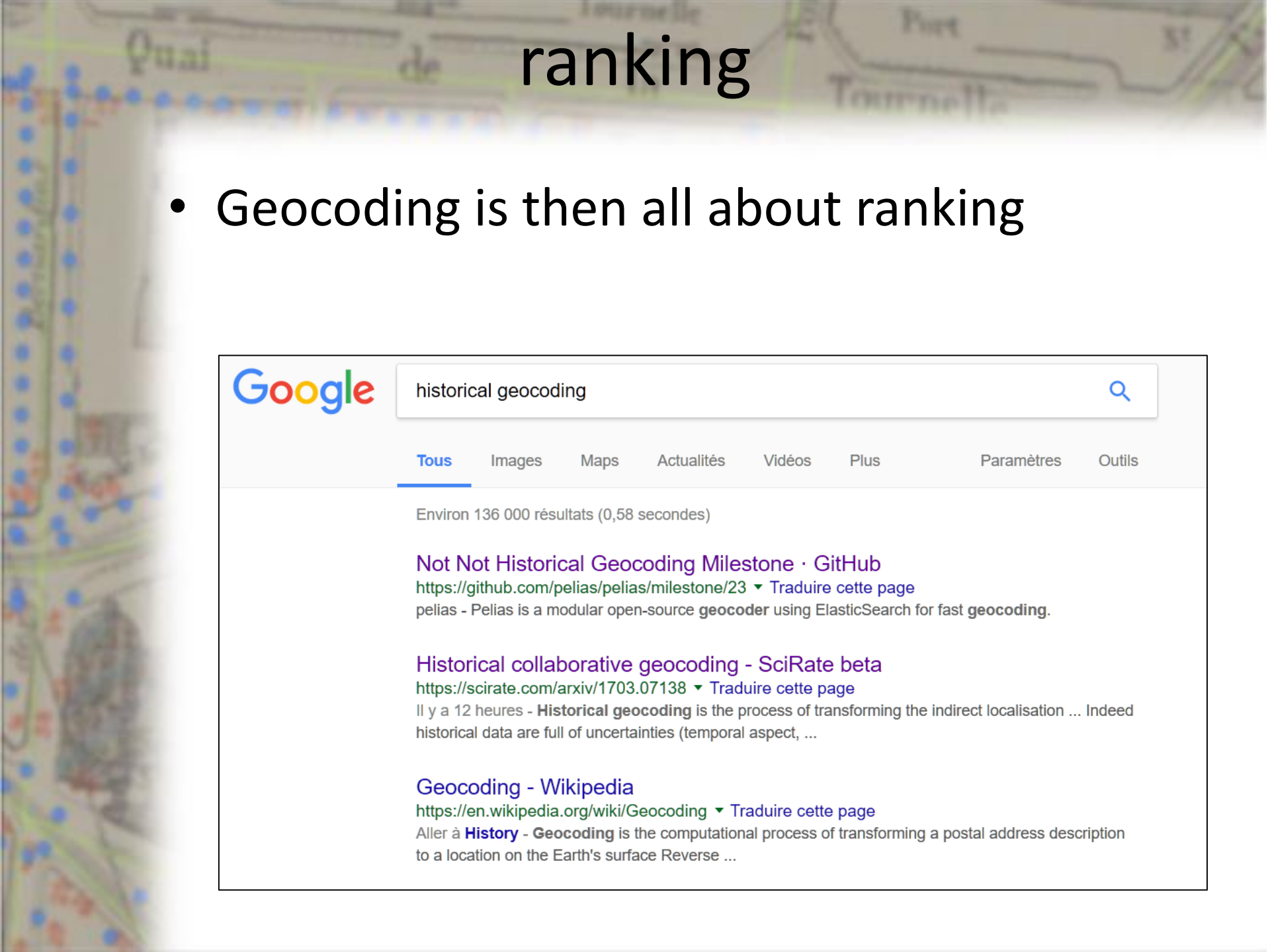
Our method

- Proposed solution
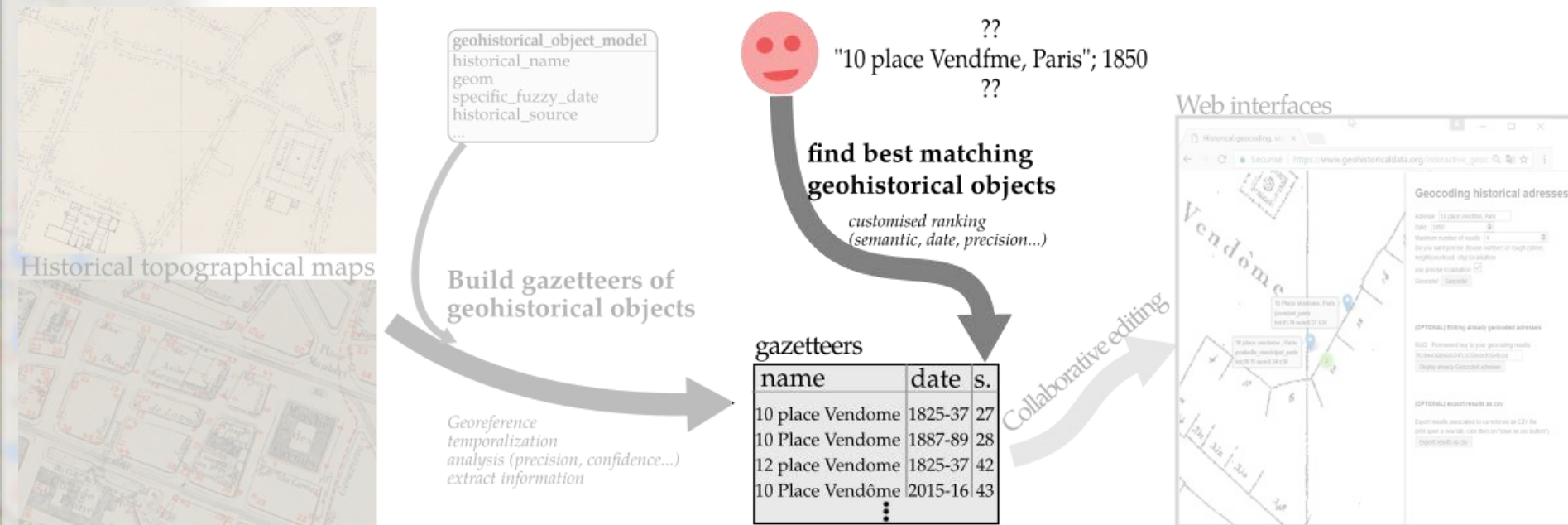
ranking

- Geocoding is then all about ranking

ranking

- Ranking metrics?

10 place Vendôme, Paris ; 1850

Semantic : how close are the text (trigrams)?

12 pl. Vendome, Paris ; 1870

ranking

- Ranking metrics?

10 place Vendôme, Paris ; 1850

temporal : how close are the (fuzzy) dates?

12 pl. Vendome, Paris ; 1870

ranking

- Ranking metrics?

10 place Vendôme, Paris ; 1850

Building number: distance including parity?

12 pl. Vendome, Paris ; 1870

ranking

- Ranking metrics?

10 place Vendôme, Paris ; 1850; precision=10m

Spatial precision of source

12 pl. Vendome, Paris ; 1870; precision=2m

ranking

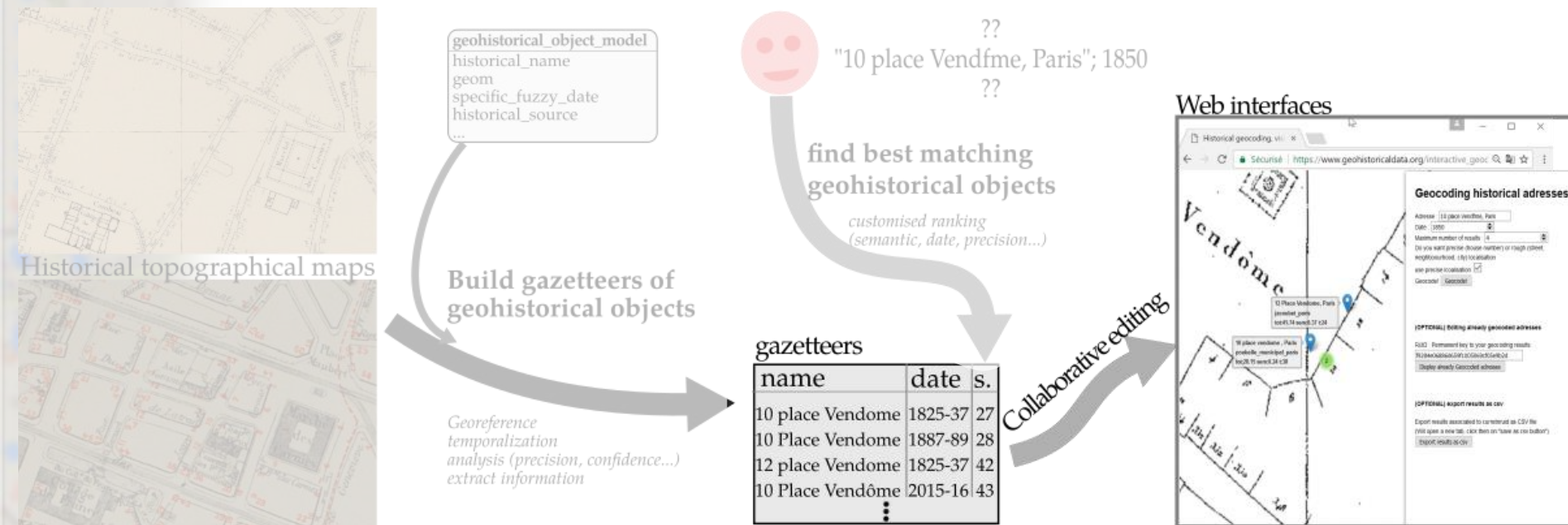- ## Ranking metrics?

Quartier Vendôme, Paris ; 1850;

Geographique Scale
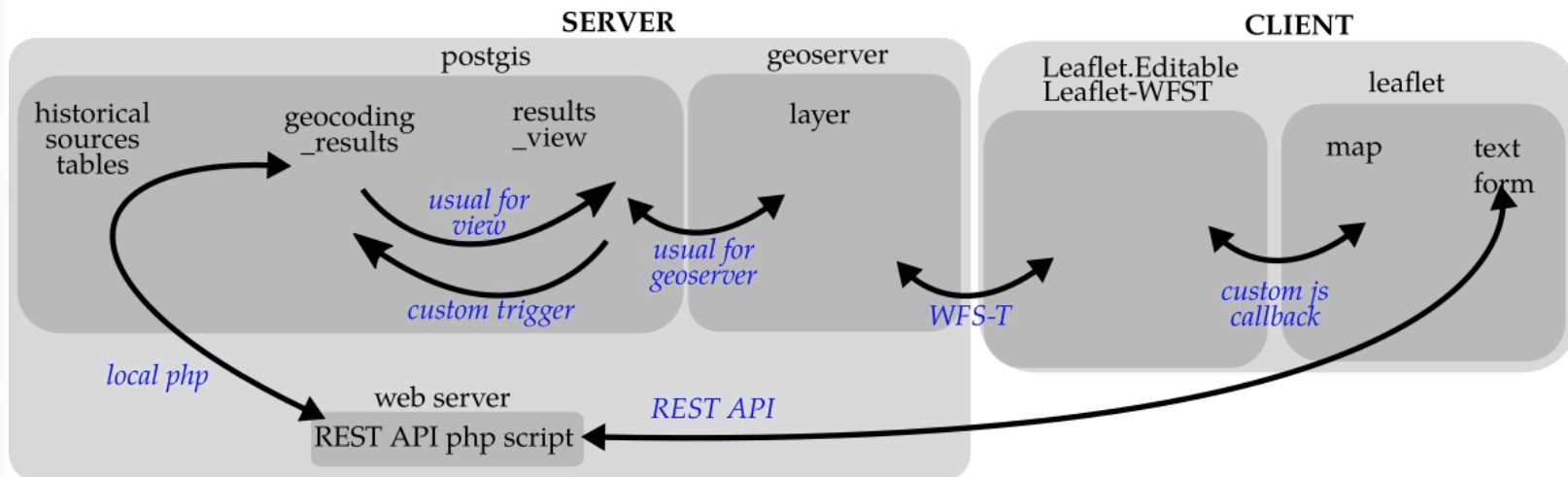
12 pl. Vendome, Paris ; 1870;
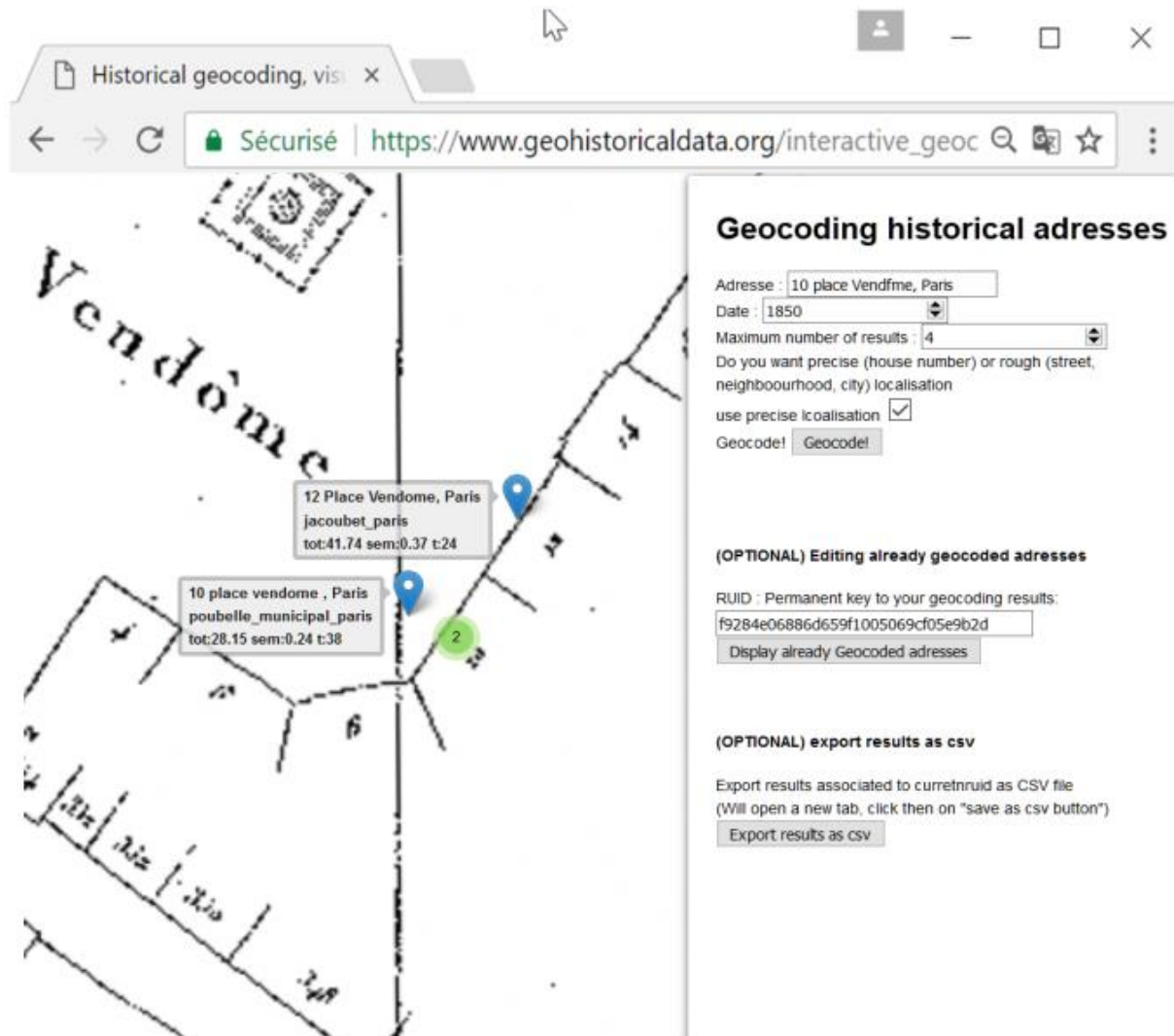
Collaborative editing

- Proposed solution

Collaborative editing

Whole web stack …

Collaborative editing

## Edit are stored and used by geocoder

Results

Thousands of historical addresses geocoded

Table 1. All geocoded historical datasets facts.

Dataset name	input addresses	found addresses (rough)	second per k addresses
South Americans	13991	13743 (250)	138
Textile	5777	5688 (16)	135
Textile 2	3070	3053 (2)	110
Artists accommodations	13907	10215 (2955)	244
Health administrators	1887	1698 (171)	316
Belle epoque (0.3)	6467	3880(337)	280
Belle epoque (0.5)	6467	6000	351

radius ~ spatial precision

Jacoubet (1825-37)

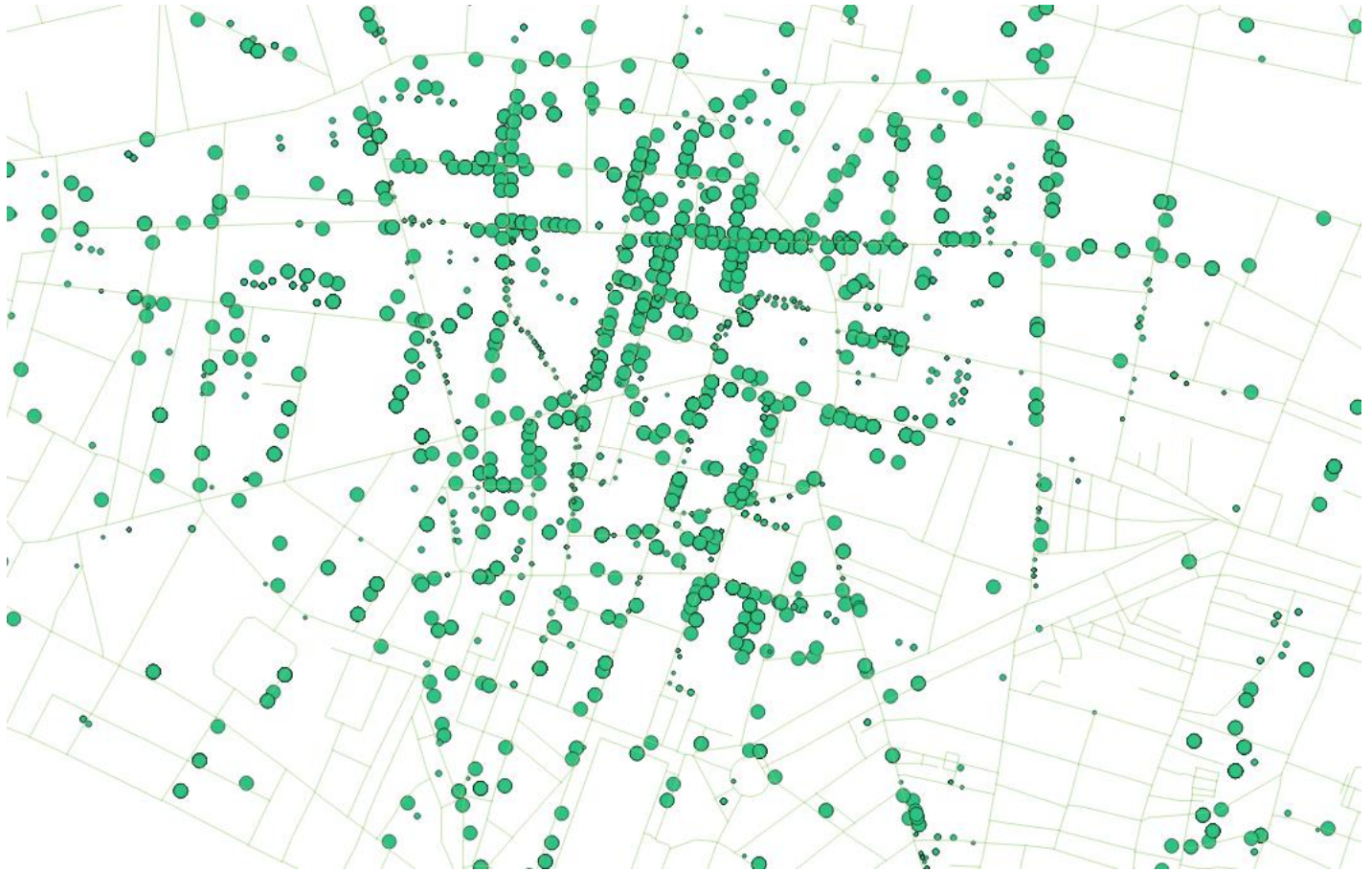Poubelle (1887-89)

Open Street Map (n)
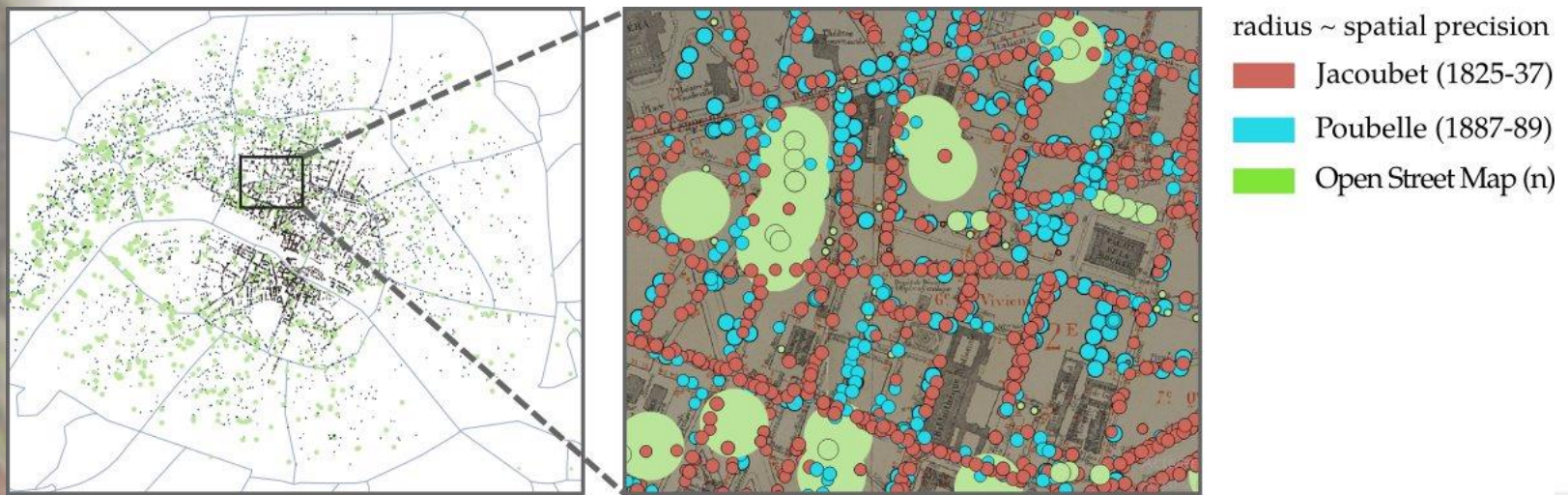
Results

Example : bankers extracted by Theo (previous presentation)

Results
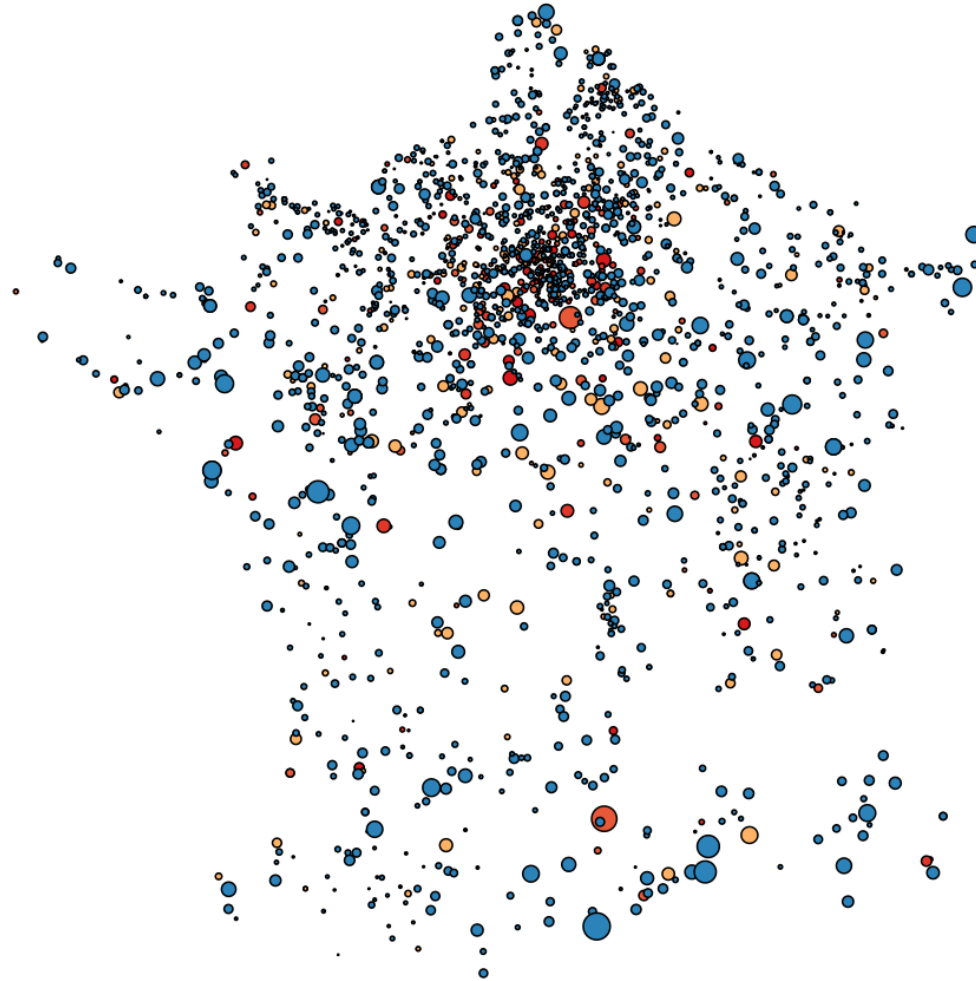
- Full bottin : fuzzy results

Results

- Using various EHESS datasets
  - People arrested in 1848

Results

- Also works on other scales

Conclusion

- After this:

  Historian work!