BUDAPEST HARMONY

Where should you install your startup headquarter to guarantee a pleasant working and rest environment to your collaborators?

Antony Borel

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1.

Introduction: background and problem

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- A Hungarian startup is quickly growing
- Needs to relocate its headquarter in Budapest

Particular attention given to the well-being of the collaborators and the partners visiting the company

What is the best place in Budapest allowing relaxing and/or facilitating the daily harmony between their professional and personal activities?

1. Introduction: background and problem

List of criteria that the new headquarter location should meet:

- 1 of the famous official (thermal) bath from Budapest
- 1 conference center
- 1 library

→ **Less than 1km (as the crow flies) from the headquarter**

- 1 restaurant providing vegetarian or vegan food
- 1 restaurant providing Hungarian food
- 1 fitness center

→ **Less than 500m (as the crow flies) from the headquarter**

- Going to the Liszt Ferenc International Airport of Budapest should take less than 45 minutes by car/taxi.

In case of more than one location responding to all the criteria, the duration of the trip from/to the airport could be used to hierarchize these locations.

2.
Data acquisition and cleaning

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Geopy: obtain latitude and longitude of Budapest city and Budapest international airport

Foursquare API: obtain latitude and longitude associated with name and categories of each of the venues of interest
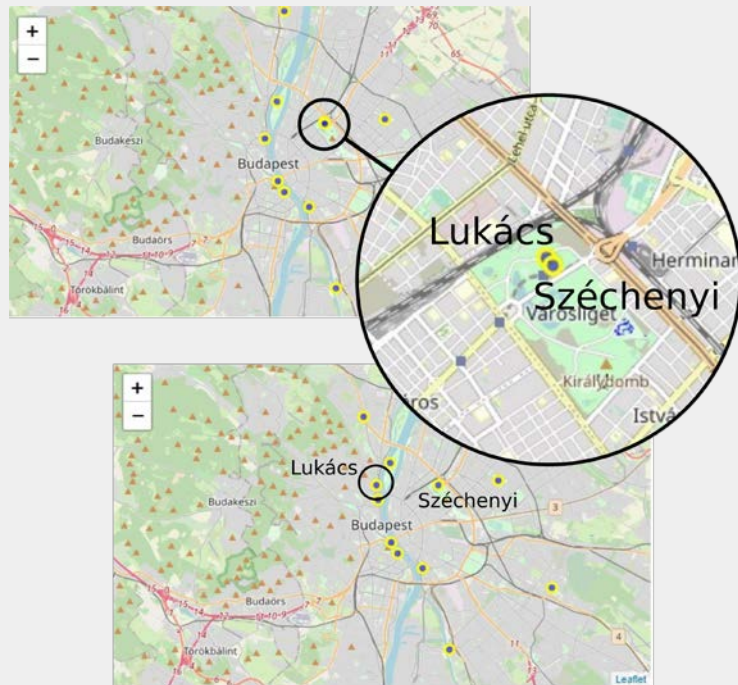
Mapquest API: obtain distance and trip duration to the airport from each venues

2. Data acquisition and cleaning

Foursquare results were filtered to keep the 12 official city baths only, based on www.budapestgyogyfurdoi.hu

Foursquare results were also filtered to keep relevant category of each venue of interest.

Quick visualization with folium library to verify the consistency of the returned venues locations.

DATASETS

	name	categories	lat	lng
0	Rudas Gyogyfurdo es Uszoda	Spa	47.489188	19.047761
1	Szent Gellert Gyogyfurdo es Uszoda	Spa	47.483917	19.052256
2	Szent Lukacs Gyogyfurdo es Uszoda	Spa	47.517898	19.036682
3	Dandar Gyogyfurdo	Spa	47.476337	19.071061
4	Szechenyi Gyogyfurdo es Uszoda	Spa	47.518302	19.082394
5	Kiraly Gyogyfurdo	Spa	47.510608	19.038185
6	Palatinus Strandfurdo	Water Park	47.529170	19.046946
7	Paskal Gyogy- es Strandfurdo	Water Park	47.520571	19.127469
8	Romai Strandfurdo	Pool	47.574811	19.052087
9	Punkosdfurdoi Strand	Pool	47.594627	19.067900
10	Pesterzsebeti Jodos-Sos Gyogy- Es Strandfurdo	Pool	47.435448	19.090965

103 venues:
12 baths, 23 vegetarian/vegan restaurants, 10 Hungarian food restaurants, 28 fitness centers, 11 conference rooms and 19 libraries

	from	Distance_to_airport_in_km	Duration_to_airport
0	Rudas Gyogyfurdo es Uszoda	21.684301	00:24:08
1	Szent Gellert Gyogyfurdo es Uszoda	20.799162	00:23:35
2	Szent Lukacs Gyogyfurdo es Uszoda	24.338109	00:29:37
3	Dandar Gyogyfurdo	18.787482	00:20:08
4	Szechenyi Gyogyfurdo es Uszoda	22.585534	00:25:20
5	Kiraly Gyogyfurdo	25.413151	00:27:43
6	Palatinus Strandfurdo	26.441522	00:29:48
7	Paskal Gyogy- es Strandfurdo	22.505066	00:26:37
8	Romai Strandfurdo	47.091015	00:36:15
9	Punkosdfurdoi Strand	44.725279	00:32:55
10	Pesterzsebeti Jodos-Sos Gyogy- Es Strandfurdo	19.347534	00:20:56

3.
Methodology

3. Methodology

Folium library: explore geospatial data and observe the venues organization in Budapest

Scikit-learn library: cluster analysis (DBSCAN algorithm) to identify clusters of venues where the HQ would be close enough to everything
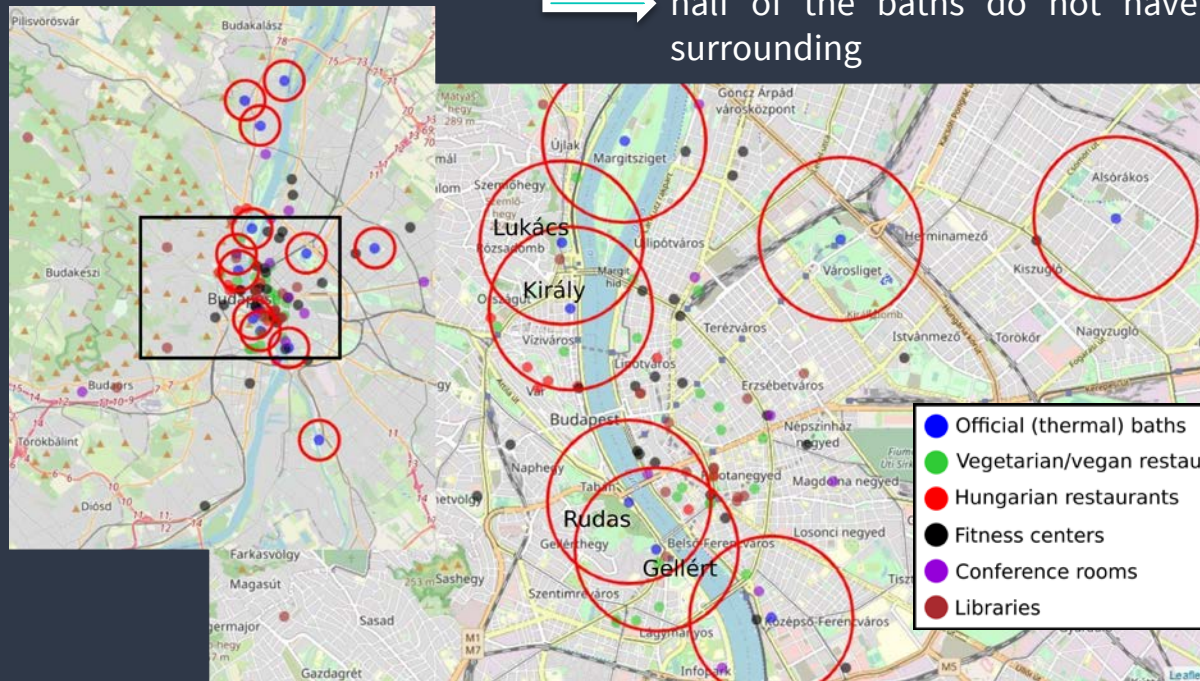
[features: distance of each venue to the airport and the corresponding trip duration as well as latitude and longitude]

4.

Results

Exploration of geospatial data

⟹ most baths are on Buda side (West of the Danube)

⟹ most venues of interest are on Pest side (East of the Danube)

⟹ half of the baths do not have any venue of interest in their surrounding

Official (thermal) baths
Vegetarian/vegan restaurants
Hungarian restaurants
Fitness centers
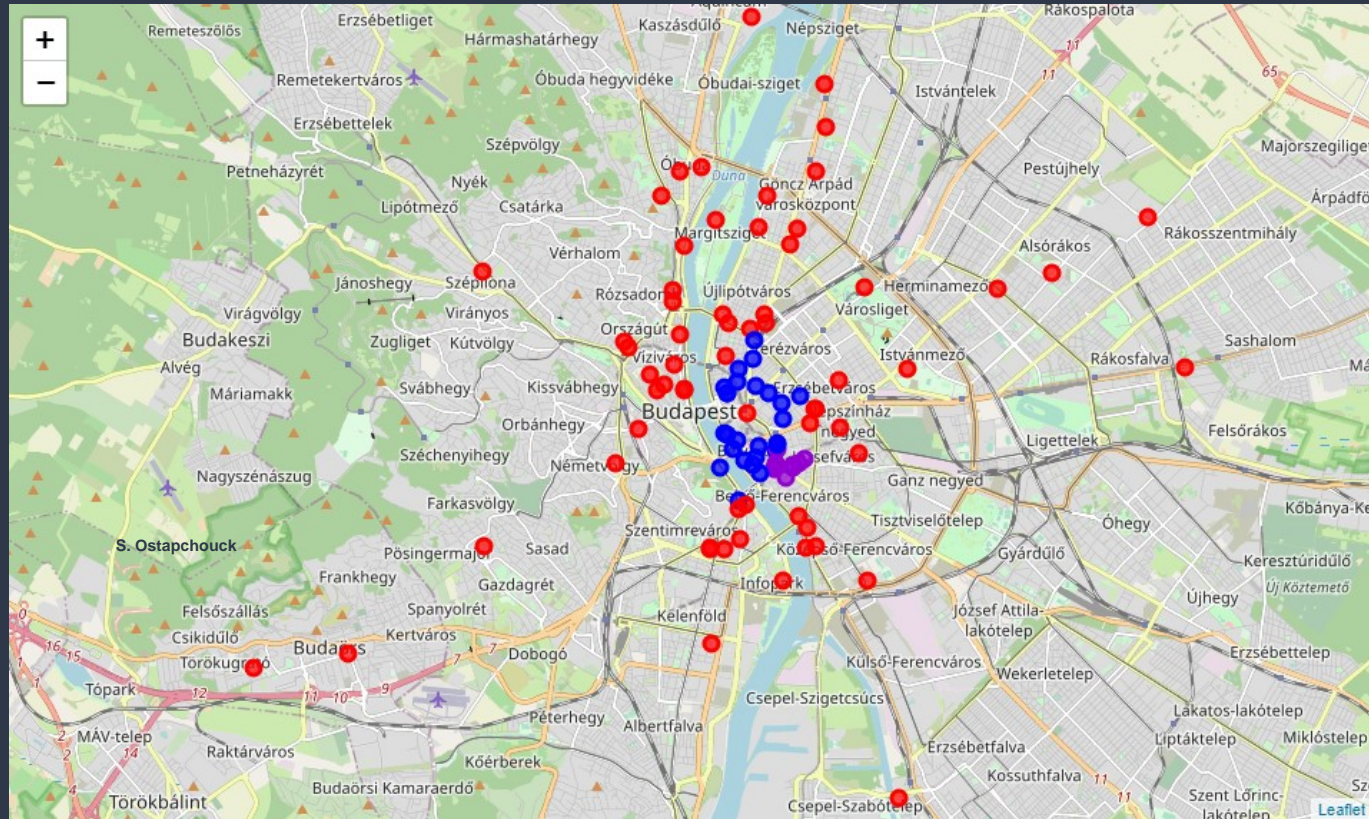Conference rooms
Libraries

the best place for the headquarter is very likely to be in the city center

Cluster analysis

Two clusters in downtown Budapest:
- cluster 1 (purple points) is spread close to Kálvin tér
- cluster 0 (blue points) is spread on Belváros, Lipótváros and the surrounding of the Opera

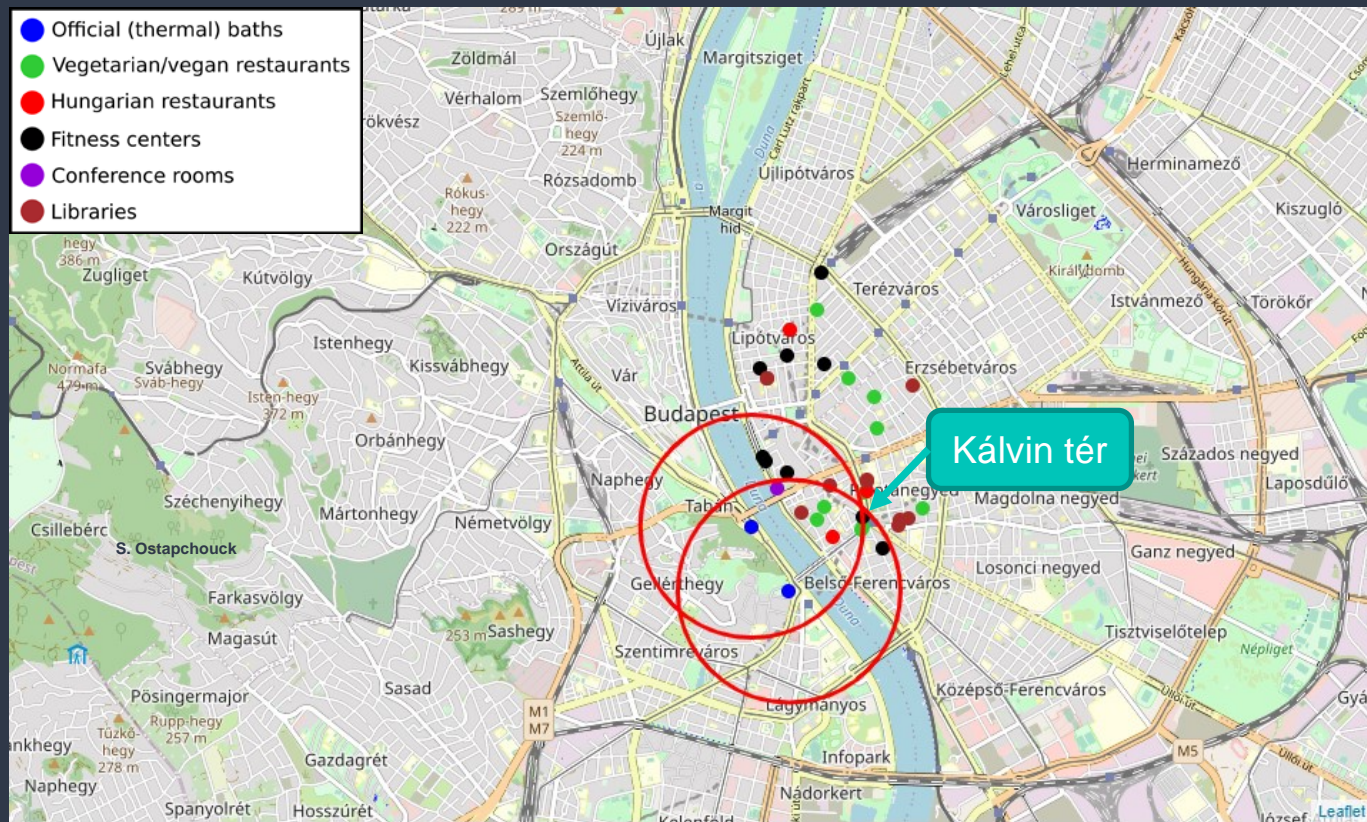Many outliers (red points) = venues not associated with a cluster

Cluster analysis

After removing outliers, **35 venues** remaining.

Both **Gellért and Rudas baths** have all required facilities in a radius of 1km

Kálvin tér at 1 km of both Gellért and Rudas and in one of the clusters of venues.
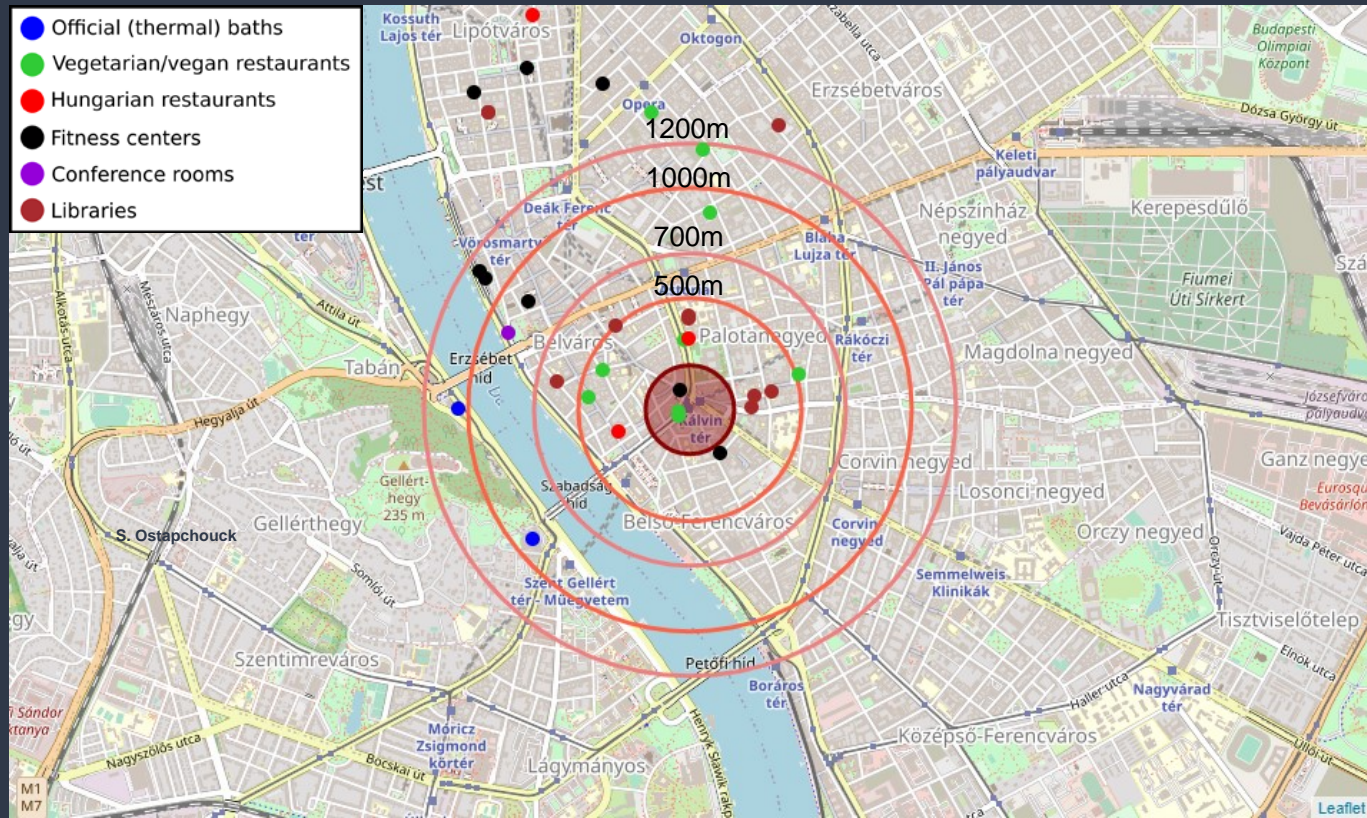
Legend:
- Official (thermal) baths
- Vegetarian/vegan restaurants
- Hungarian restaurants
- Fitness centers
- Conference rooms
- Libraries

Kálvin tér

MAP

Visualization of Kálvin tér area

Kálvin tér:
- 20km from the airport
- less than 23 minutes to reach the airport by car.

- Gellért bath
- Quince conference room
- 7 libraries
- 5 vegetarian or vegan restaurants
- 2 Hungarian restaurants
- 2 fitness centers

Legend:
- Official (thermal) baths
- Vegetarian/vegan restaurants
- Hungarian restaurants
- Fitness centers
- Conference rooms
- Libraries

5.
Discussion

5. Discussion

12 official (thermal) baths in Budapest

      BUT very far from the airport and/or isolated

            ➡ **this criterion reduced drastically the HQ candidate areas**

Kálvin tér = best candidate area to host the new HQ

Mark Ahsmann; https://fr.m.wikivoyage.org/

- Straight connection with the Gellért bath

- Meet all the criteria and even overpass them

- We suggest to search for real estate in an area of 200m radius around Kálvin tér, preferentially on the west of it in order to stay close enough to a bath and strictly respect the criteria.

6.
Conclusion

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Foursquare + Mapquest API = obtain necessary data

Mapping and description as well as **clustering of geospatial and itinerary data =** propose the best area in Budapest which meet all the criteria of the startup founders

In continuation...

⇒ **suggestion to optimize the organization of the time of the collaborators**

⇒ **search for the best venue of each category considering the duration to reach each of them from the HQ by walking and by public transportation.**