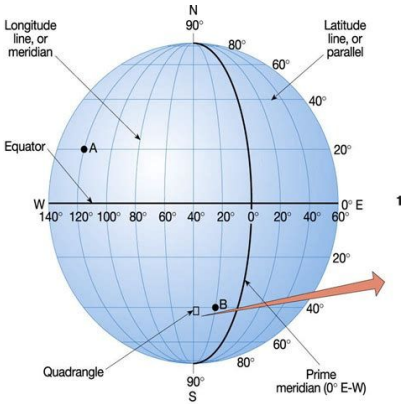
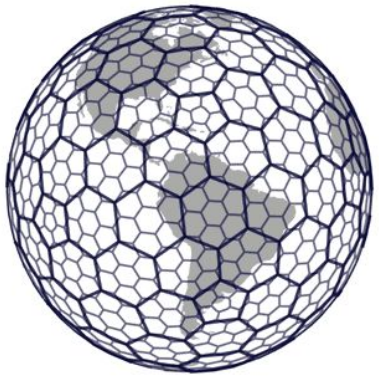
Geospatial Problem

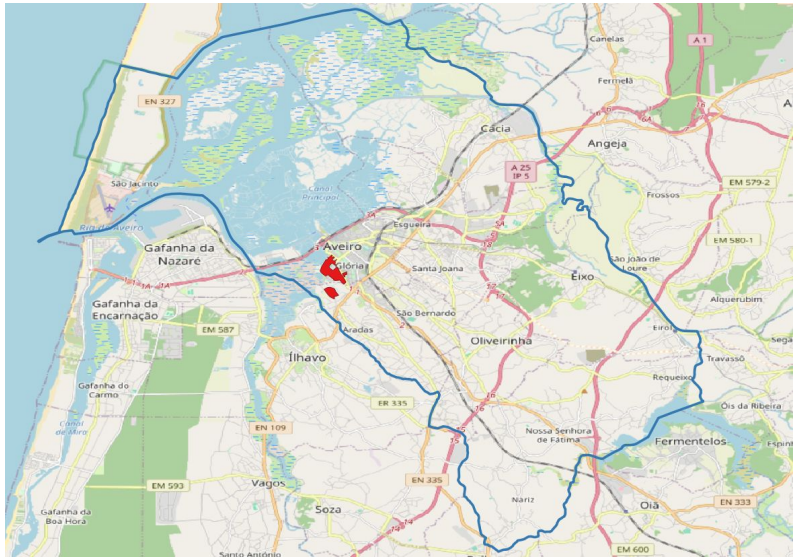
efficient indexation





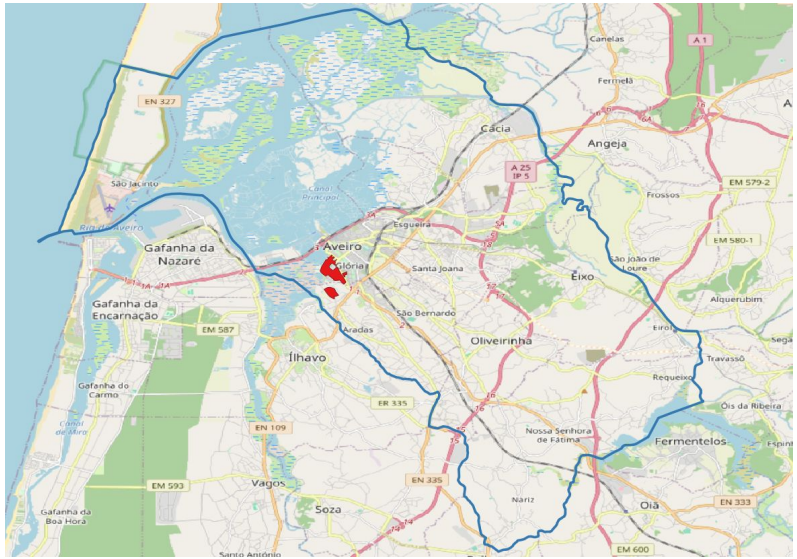
Problem Definition

- Hierarchical Information



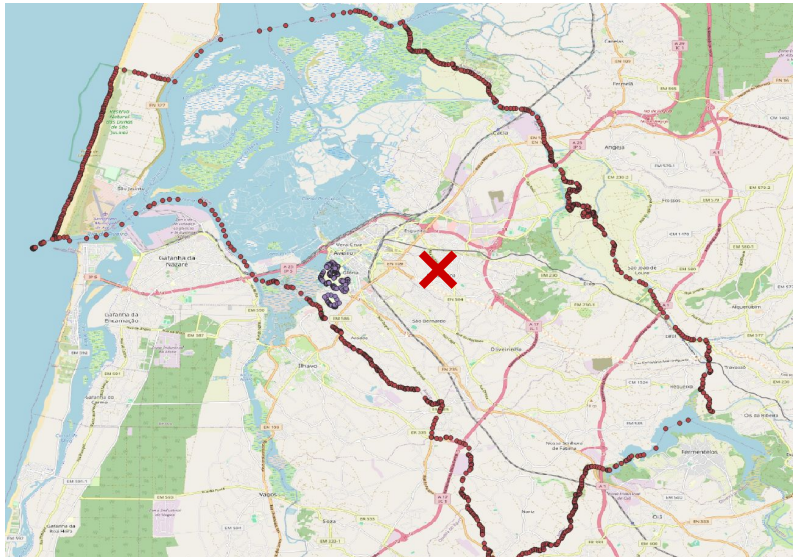
Problem Definition

- Hierarchical Information



Problem Definition

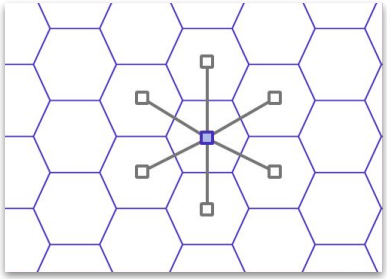
- Region indexation

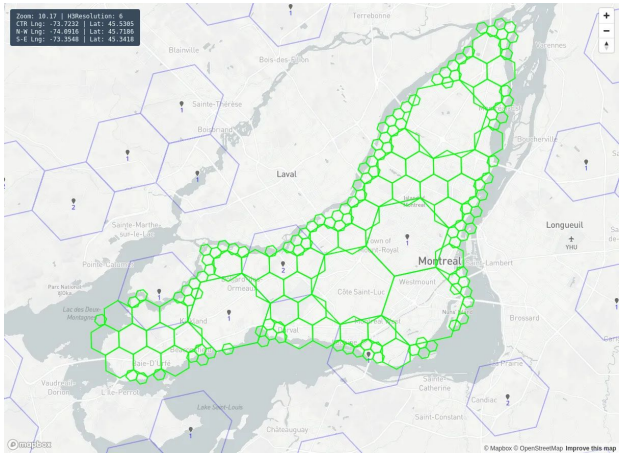


Aveiro: **939 points**
Universidade de Aveiro: **169 points**

(40.630451, -8.6551867) is inside which organization?

H3 Index





(lat, lon) –> H3 cell

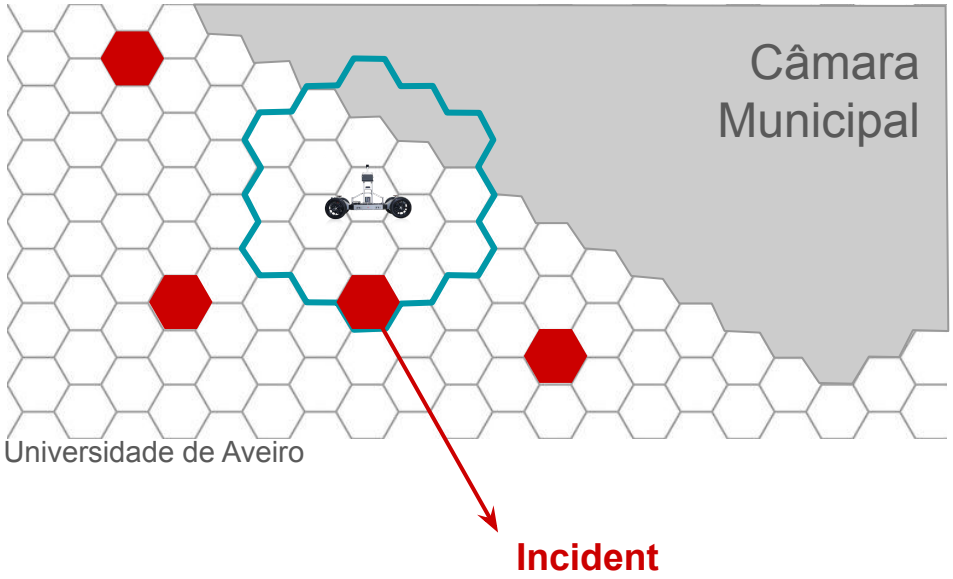
Average area in m^2

Here are the same areas, but in m^2.

Res	Average Hexagon Area (m^2)	Pentagon Area* (m^2)
0	4,357,449,416,078.392	2,562,182,162,955.496
1	609,788,441,794.134	328,434,586,246.469
2	86,801,780,398.997	44,930,898,497.879
3	12,393,434,655.088	6,315,472,267.516
4	1,770,347,654.491	896,582,383.141
5	252,903,858.182	127,785,583.023
6	36,129,062.164	18,238,749.548
7	5,161,293.360	2,604,669.397
8	737,327.598	372,048.038
9	105,332.513	53,147.195
10	15,047.502	7,592.318

Uber

H3 Index Solution



Solution:

key: h-index
value: (organization, incident_id)

Problem Definition

User:
- user_id
- name
- email
- hash_password
- email_notification_flag

Operator:
- operator_id
- email
- hash_password
- organization_id

Organization:
- organization_id
- language
- **region???**

Incident:
- incident_id
- category
- main_description
- first_occurence_date
- centroid_location
- **location???**
- num_ocurrences
- severity
- status

Occurrence:
- occurrence_id
- photo_id
- **photo_location???**
- description
- date
- user_id
- incident_id

Architecture