Name of project	Cityzoom
Mentor & collaborators	Ilídio Oliveira (ico@ua.pt) and Susana Sargento (susana@ua.pt)
Team	Cityzoom team G05
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Percentage of final system	100%

The project

CityZoom is a platform that allows users to have access to the environmental aspects of a city. Information such as a city's temperature, humidity, CO2 levels, UV radiation and more are available to the user who can also compare these aspects between different cities.
Its main focus is the analysis of the data provided by the different sensors, not in the sensors themselves.

Minimum Viable product

Description

Development of tools to aid the management of a city, integrating environmental sensors, to create a dashboard and environmental monitoring in Aveiro, with static and moving (installed in vehicles) sensor units.

Features

The system should be able to provide the following features:

1. Basic visualization of environmental data regarding a city.
2. Visualization of data through graphics, allowing to see information from different periods of time.
3. Visualization of data through heatmaps.
4. Comparison of data from different locations.
5. Set alarms to notify the user if something happens.

Scenario(s)

S1: Checking the city status - Every day Filipe gets to the office in the morning, turns his computer and opens up CityZoom dashboard and his emails. Since there are no warnings in the app he assumes that everything is ok. But just to make sure, he checks up the overall values in the overall view of the city and confirms that there is no problem.
S2: Verifying environmental laws compliance - To test if some factories in Aveiro comply to EU regulatmentations on environment. In order to complete this task with ease he sets alarms for all sensors that are near factories. To his displease some alarms immediately trigger filling his notifications area. Fortunately these alarms were all in the same area and around only one company so he knows there can be only one factory to blame.
S3: Checking the city environmental data - After a few weeks of conversations Joana finally was given permission to have full access to Aveiro's sensors. Now after the end of a day of citizen data gathering she just goes home and opens up CityZoom dashboard to view how the state of the city throughout the day and saves the data. She's happy because besides raw data gathering, CityZoom also displays how accurate the data is in the sensors and a basic modulation of the data.
S4: Viewing and comparing previous data snapshots - Joana had a rough week and with all her tiredness she forgot to download the data from the previous days. To her content CityZoom stores the previous days worth of data and can easily compare snapshots of some days. With this she just compared the behaviour of some citizens and then just opened the comparative view of moments in the CityZoom app and chose a few moments of those days.
S5: Mobile sensors - Filipe has reached a conclusion: all the data coming from the sensors is great and helps a lot, but some areas usually have their sensors broken. In order to do this he asks to install mobile sensors in the trash cars and taxis of the city. With this he'll get data from every place that the vehicles pass. With the application being run on generic requests and not specific interfaces for just a few sensors, Filipe can buy many sensors at a small price and the installation costs will also be low. With this, Filipe will get an even smarter city at a smaller cost, making his image as Aveiro's Secretary for the Environment become even greater.

Rationale

Feature 1, 3 and 4 will be demonstrated by scenario S3, where the user can check the environmental data of a city, through the usage of heatmaps and will also be able to compare the data from different locations.
Feature 2 will be demonstrated by scenario S4, where the user will be able to compare the city data from different points in time.
Feature 5 will be demonstrated by scenario S2, where users are alerted when, for example, some values of environmental aspects go above/below stipulated values.

Possible evolutions

- Utilizing data analysis methods based on streaming; Machine learning techniques;
- Utilizing protocols, data modules and open/normalized arquitectures to implement smart cities platforms;
- Allow users to integrate their own sensors and access those sensors information;