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1. Introduction

1.1 Purpose

When it comes to Cityzoom, it is important to be familiar with smart-cities. In smart-cities, in order to have access to information about a city, sensors are needed. With these sensors collecting data periodically, we have access to a lot of information. In this context, it is possible to access environmental monitoring sensors, such as air quality, radiation and noise. Our system is build upon this premise, making this information available to any person to see in real-time. With this we are able to provide a strong tool for city governance.

Furthermore, CityZoom is expected to acquire data on the traffic intensity, making available to anyone concentration of pollutants. In short, CityZoom provides a dashboard and the possibility of comparing, visually and quantitatively, different moments in time,in order to evidence possible differences and problems.

1.2 Scope

The scope of our application covers:

- The communication between sensors and the broker.
- Fetching data from the broker and storing, as well as transporting information from the service layer to the gateway layer.
- Alerts, that notify the user when a sensor is reading values that meet a certain condition.
- Presenting the data read from the sensors to the user.

1.3 System Organization

The system is divided in 4 layers: gateway layer, data layer, service layer, visual layer.

Gateway Layer: This layer is composed by all the sensors that will provide all the data and sending it to the gateway.

Data Layer: In this layer all the data provided by the gateway manager will be stored and transferred to the service layer.

Service Layer: The service layer is responsible for providing services over the information provided by the data layer.

Visual Layer: In the visualization layer we have the dashboards, both web and mobile application, that allow the user to interact with the system, check all relevant data and get notifications.

2. System Description

2.1 Main Features

The system will focus in providing the following features:

- Data regarding environmental aspects, such temperature, concentration levels of O_3(Ozone) and CO_2(Carbon Dioxide), general air quality;
- Data collected in real time and data previously gathered;
- Comparative views of data from different spans of time, or different cities;
- Indications of progress or regression based on the data evolution over time;
- Heatmaps regarding different types of data;