

# Case Study



## IoT Environmental Monitoring System



### Situation

With a population of almost 4 million people and a population density of 10,351 residents living per square kilometer Medellín, Colombia had reached a crisis situation with the levels of contaminants in the air. While the government had pollution reduction programs in place, they didn't have an accurate way of knowing if they were working. A decision was made to develop a system that would constantly and accurately measure contamination levels throughout the city. IoT connected sensors were the ideal solution as they were economical, inconspicuous and operated 24/7.



### Objectives

- > Increase Particulate Measurement PM1, PM2.5 and PM10 Accuracy
- > Provide an Accurate Measurement of Ozone Concentration
- > Increase the Measurement Accuracy of Atmospheric Variables
- > Improve Pollution Data Logging
- > Improve Weather Forecasting
- > Improve the Government's Weather Information Sharing Programs with the Community



### Plan

- Step 1:**  
Determine the Key Locations for the IoT Sensors
- Step 2:**  
Determine the Ideal Sensors to Achieve Stated Objectives
- Step 3:**  
Install the IoT Sensor Network
- Step 4:**  
Integrate Sensor Data with the Government System Backen



### Results

- > Increase in Air Pollutant Measurement Accuracy from 20% to 85%
- > Increased Particulate Matter Measurement Confidence Level by 56%
- > Identification of Pollution HotSpot Locations & Times of Day
- > Informed Pollution Mitigation Planning
- > Improved Community Awareness

