OpenEnviromentData

A Project by: ISG

Table of Contents

Project Purpose:

The **India Open Environment Data Project** is focused on assessing the air-quality index of different parts of Delhi and showcasing the information in an open, standardized and visualized format to promote community action within the society. For which **India Open Data** needed help in showcasing the readings in a very simple and understandable format on their website http://indiaopendata.com/ , so that anybody accessing the site should be able to understand the Air Quality for a specific area.

Procedure:

India Open Data had developed a small and cost effective device to measure the Air Quality and send the captured data to their server.
ISG's role was to receive data from the server and display it on the site for easy accessibility and easy to understand.
India Open Data provided the data in json format to ISG, which ISG has shown in the web page.
ISG was provided with the following three Json:
1. Position – This Json will pass the data related to devices planted in which area.
2. Current Reading – This Json was passing the data related to current readings for all the predefined parameters.
3. Days Reading – This Json was passing the data related to hourly data for last 15 days for all the predefined parameters.

As a UI development team we have to make sure that all these Json data need to show in a proper format which can be understandable by any person seeking the information.
The entire development process was divided into three phases:
1. UI Development - UI was developed.
2. UI/UX with test data – Use the test data to showcase the test data.
3. Go live – Replaced the test data with the live data.

Development

When we started the UI development, we first took the position Json and used the google map to showcase the location pointers using the longitude and latitude passing in the Json. Also shown in the figure 1.1
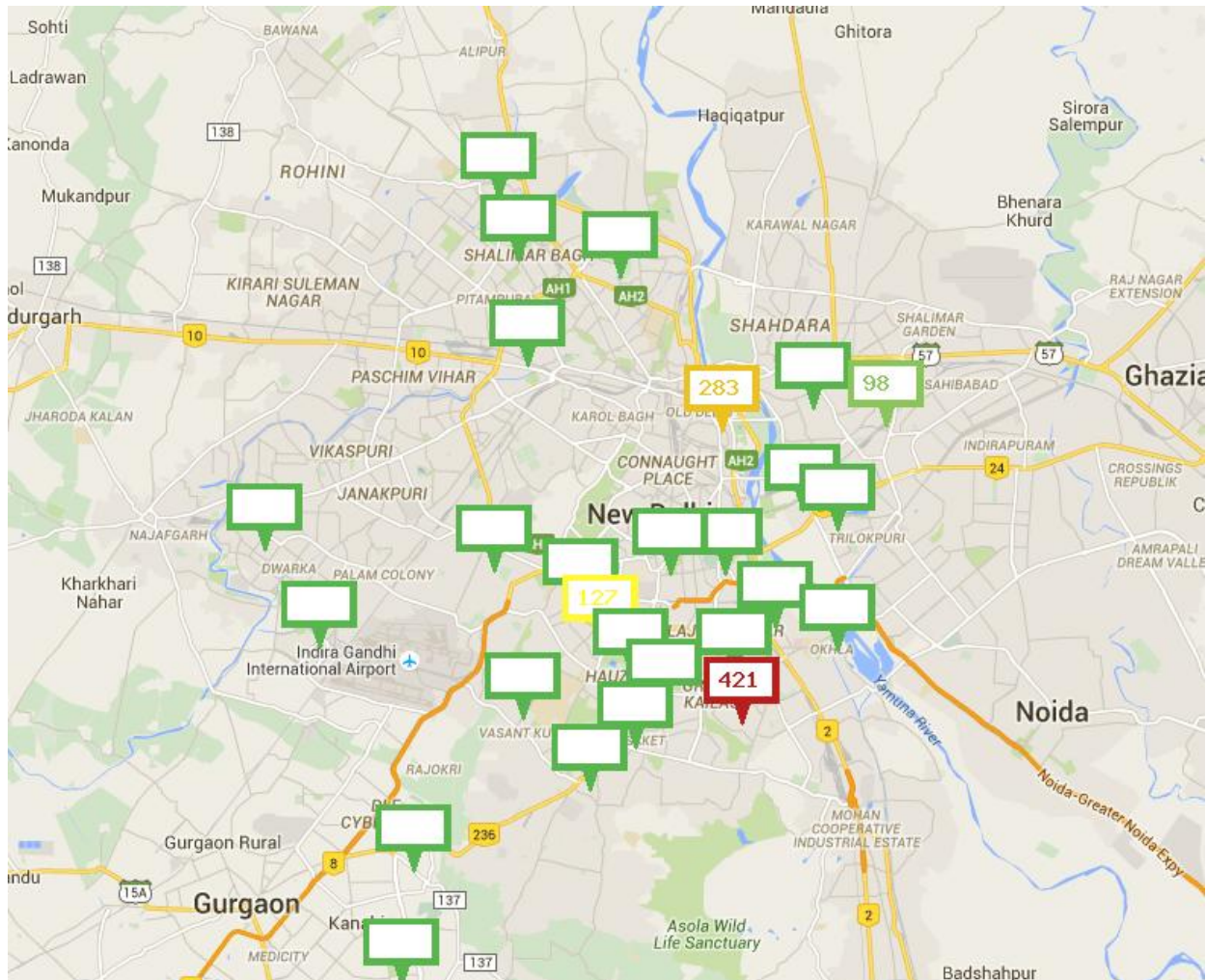
Figure 1.1 Location Pins

So the logic was to read the Json and capture the longitude and latitude for each location and create a location pointer. We have created the manual pins so that we can control the pin colour and number showing inside the pin.   The colour in the pins are required, the significance of the pin colour is explained later in the document.

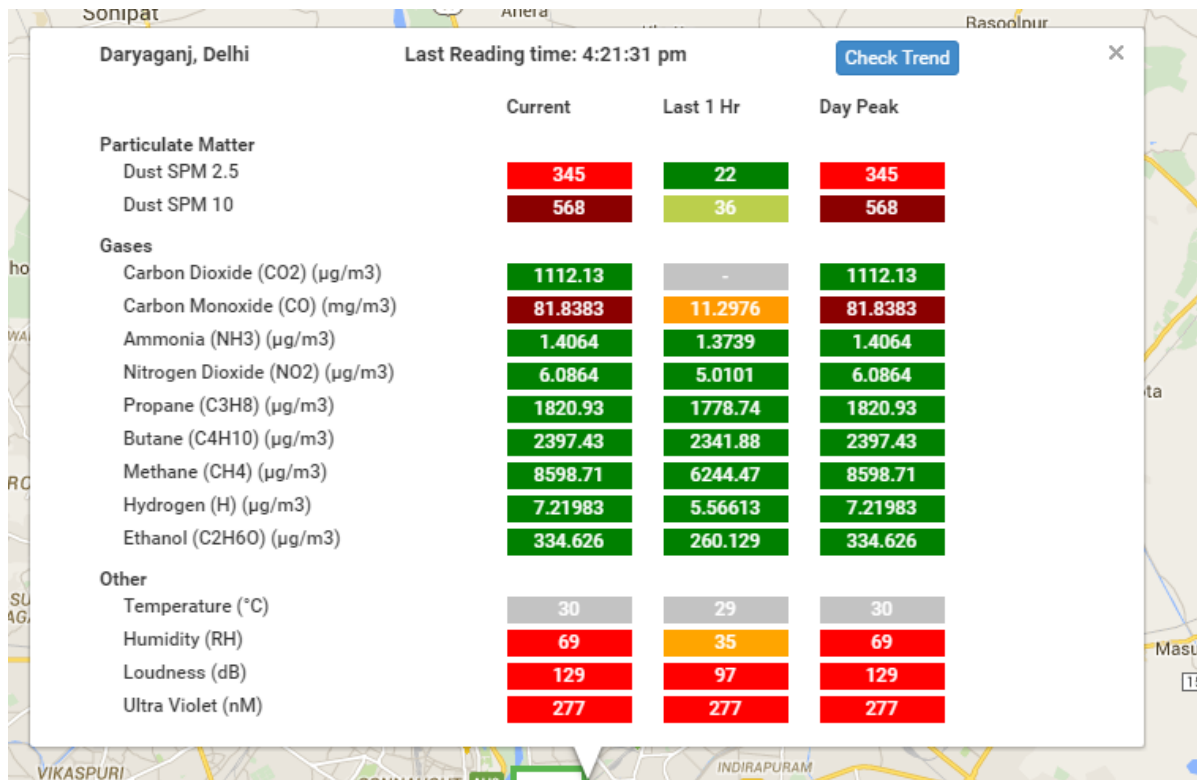When clicked on the any of the location pointer you will see the screen as showing in figure 1.2

Figure 1.2 Readings

We have used the Json which is passing the current reading for all the parameter for that location to showcase the reading for each parameter for current, last hr. and Days' Peak. The logic and colour combination shown on each entry based on Air Quality Index (AQI). AQI for each parameter is shown in the image 1.3

AQI Category (Range)	PM₁₀ (24hr)	PM₂.₅ (24hr)	NO₂ (24hr)	O₃ (8hr)	CO (8hr)	SO₂ (24hr)	NH₃ (24hr)	Pb (24hr)
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5-1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1-10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430+	250+	400+	748+	34+	1600+	1800+	3.5+

AQI	Associated Health Impacts
Good (0-50)	Minimal impact
Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people.
Moderately polluted (101–200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure, and discomfort to people with heart disease.
Very poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases.
Severe (401-500)	May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity.

Figure 1.3 AQI Index

AQI, defined the colour represented for the range of reading for each parameter. We have used these colours to represent the reading for each parameter. Also, when you click on "Check Trend" you can see the readings for each parameter for last 15 days and per hour. See the figure 1.4 (a)
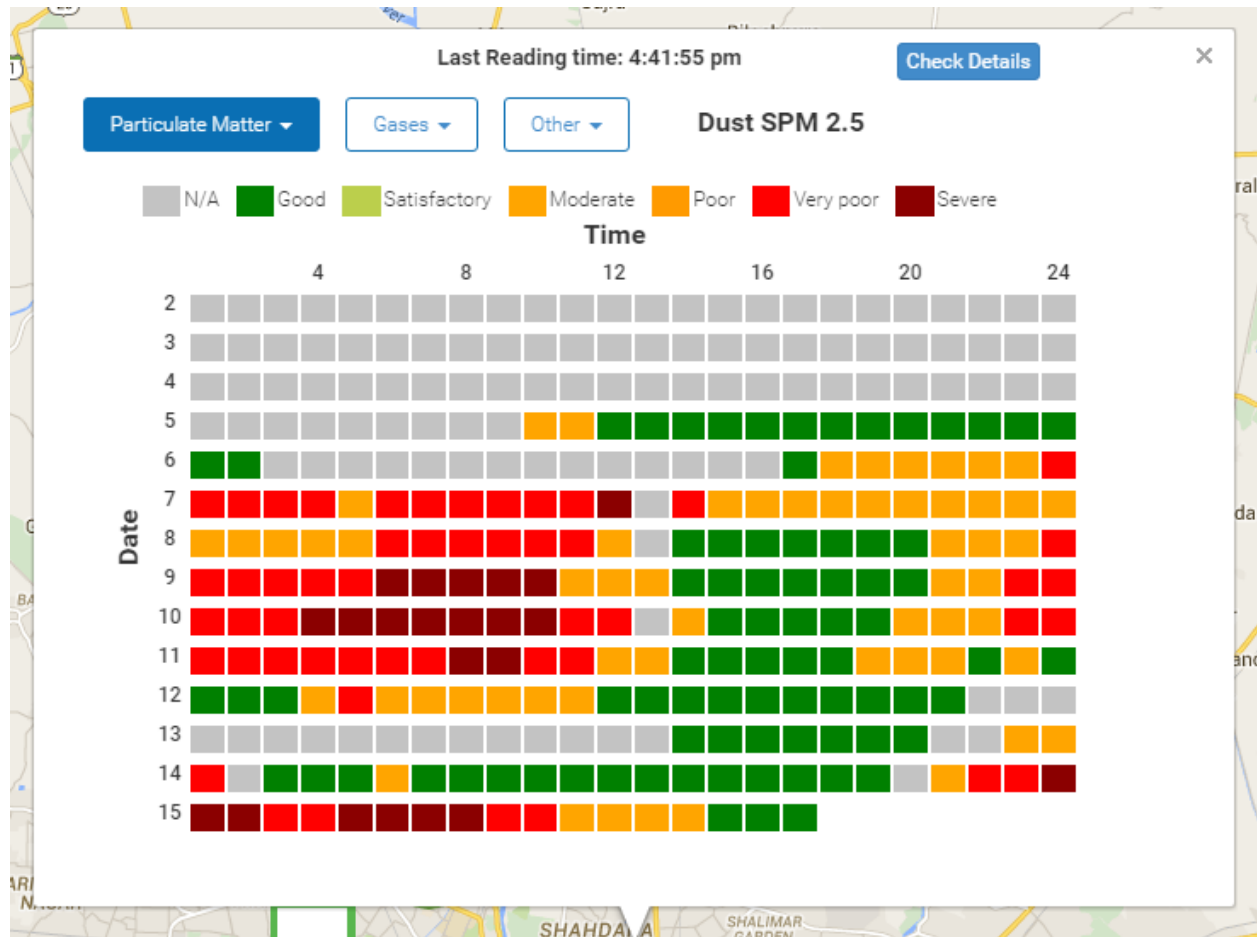

Figure 1.4 (a) Hourly Data

You can see the dropdown at the top left with the all the parameters, once you select any of the parameter it will show the reading for that parameter, see figure 1.4 (b) showing Ammonia (NH3), selected for the Gases dropdown.
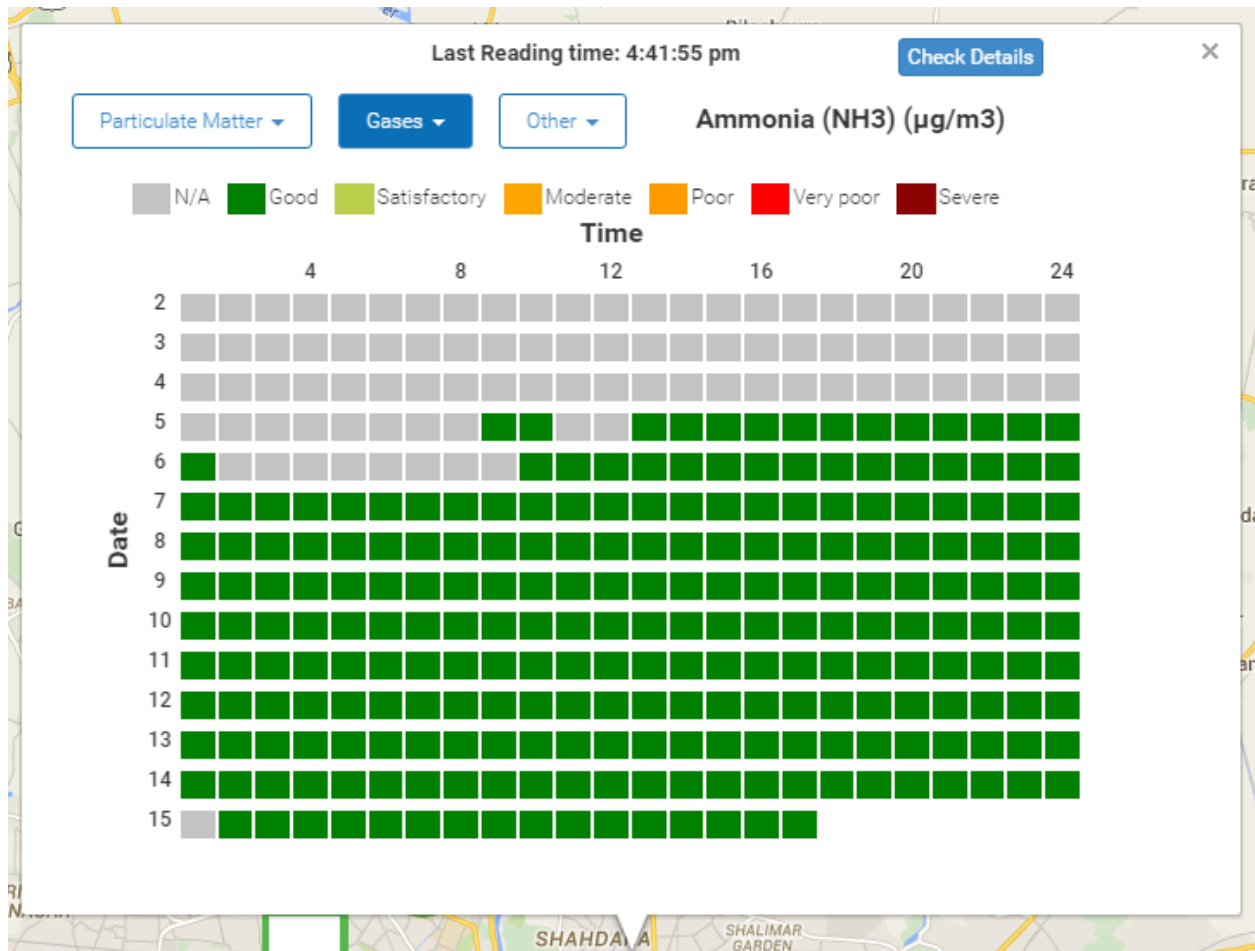
Figure 1.4 (b) Hourly Data for Ammonia

Wherever, you are able to see grey box for any entry, which means that there is no data available from the server / device. You see the attached code files for coding analysis.

Result

We are able to successfully complete the project with the help of India Open Data as they provided the right Json format which helped showcase results in the desire format.
The live data URL is: http://indiaopendata.com/india-open-environment-data-project/delhi