Phase 1: Problem Definition and Design Thinking

The scope of this document is to identify the problems in the conventional air quality monitoring methods to ideate and design a better monitoring system with advanced features such as data sharing and weather prediction.

Problem Definition:

Air is quite indispensable for human life and well-being, serving as a source of oxygen, a medium for communication, a key factor in health and comfort and a critical component in various industrial processes and environment systems. With a sudden rise in population and rapid industrialization, along with the surplus growth in the technology, maintaining the air quality in the ambient level has become one of the major concerns of the organisations world wide. The problems with the present day air quality monitoring systems are as follows.

- Expensive installation.
- Needs regular monitoring.
- Might give inaccurate readings.
- Limited spatial coverage.
- Can't monitor all the pollutants.
- They fail to include factors such as rain, sunshine, wind, temperature etc,.

Design Thinking:

The quality of the air is determined based on eight basic parameters (PM10,PM2.5,NO2,SO2,CO,O3,NH3 and Pb). And there are several other geographical factors that could affect the level of pollution as well. Having known this and the problems with the conventional monitoring systems, we would be able to now, design an iot based system that is lot more efficient and advanced.

- Sensors will be used to track the amount of the 8 fore-mentioned parameters in the air to remotely monitor the level of pollution in all areas irrespective of them being rural or urban.
- Data from the indian satellites will also be used to know about and include other geographical factors that coil affect the quality of the air. (sunshine, rain, temperature stc,.)
- The collected data will be send to the web application by the iot devices from where the public can access the data as per their requirements.
- The related health issues will also be highlighted in the application to induce awareness among people.
- Details such as the major source and major pollutants will be enlisted as well.
- Alerts will be made to warn the public beforehand on occurrence of any event such as smog, snowfall etc,.

- The public will also have an option of selecting a less polluted route to reach their destination on the employment of gps modules.