

# Data Analytics with Cognos – Group2

## Problem Definition:

**Problem Statement:** Air pollution in Tamil Nadu is a pressing issue that affects public health, the environment, and quality of life. The challenge is to develop a comprehensive air quality analysis system that leverages IBM technologies to monitor, predict, and mitigate air pollution in the region.

## Key Challenges:

1. **Data Collection:** Gathering real-time air quality data from multiple sources across Tamil Nadu.
2. **Data Integration:** Integrating data from various sources (sensors, satellites, weather stations) into a unified platform.
3. **Analysis:** Developing algorithms to analyze air quality data and identify trends, patterns, and potential sources of pollution.
4. **Prediction:** Creating predictive models to forecast air quality conditions and alert residents.
5. **Mitigation:** Recommending actionable strategies to reduce pollution levels.
6. **User Engagement:** Designing an interface that is user-friendly and informative for residents, policymakers, and researchers.

## Design Thinking Approach:

Design thinking is a user-centric problem-solving approach. Here's how you can apply it to this project:

### 1. Empathize:

- Understand the needs and concerns of various stakeholders, including residents, environmental agencies, and researchers. Conduct interviews, surveys, and focus groups to gather insights.
- Create user personas to represent different segments of the population affected by air pollution.

### 2. Define:

- Refine the problem statement based on the insights gained from empathizing with stakeholders.
- Identify specific pain points and opportunities for improvement in current air quality monitoring and management.

### **3. Ideate:**

- Brainstorm innovative solutions and technologies that can address the identified challenges.
- Explore IBM technologies like IoT devices, cloud computing, AI, and data analytics to collect, process, and analyze air quality data.

### **4. Prototype:**

- Develop a prototype of the air quality analysis system using IBM tools and technologies.
- Create a user interface for visualizing air quality data and insights.

### **5. Test:**

- Pilot the prototype in a specific area of Tamil Nadu to gather feedback from users and stakeholders.
- Assess the system's performance in terms of data accuracy, prediction accuracy, and user satisfaction.

### **6. Iterate:**

- Based on feedback and testing results, refine the system and address any identified issues.
- Continue to improve the system's accuracy and usability.

### **7. Implement:**

- Roll out the fully developed air quality analysis system across Tamil Nadu.
- Collaborate with relevant government agencies and organizations for data sharing and implementation.

### **8. Evaluate:**

- Continuously monitor and evaluate the system's performance.
- Gather feedback from users and stakeholders to make ongoing improvements.