INTRODUCTION / MOTIVATION

- Air pollution is a serious issue in urban cities
- Deteriorating air quality index in cities is a major concern
- Statistical data about the concentration of air pollutants in different parts of the city can assist in the following ways:
    - Help to locate the source of emissions
    - Data driven decisions can be taken by policy makers.
    - Create awareness among citizens

Problem Statement

Develop Wireless sensor node that has the following features :

- Air quality sensors on board
- Low power operation
- Small footprint/ rugged
- On board communication
- Provision for adding extra sensors through stacks
- A web based visualization tool to interpret sensor data and air quality index
- A desktop tool for debugging sensor node

Requirements:

Hardware

Microcontroller: MSP430, CC2530
Wireless : ESP8266/Zigbee
Air quality sensors: CO, CO_2, particulate matter,
Server: Raspberry Pi
Power Option: Battery and Solar Panel (0.5 Watt, 6 Volts)

Software

IDE: Code Composer Studio/IAR
Web application: PHP/Python MVC,
Desktop application: PyQT
Database: MySQL

Deliverables:

- Develop Wireless sensor network with sensor nodes for air quality measurement
- Stackable sensor node with provision to add more sensors.
- A web based visualization tool to interpret sensor data, air quality index.
- Visualization of sensor node parameters on google map
- A desktop application for configuring and debugging the node