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Air quality ENSEIRB project proposal

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Project Presentation

- **Context:**

- Pandemic situation prompts us to change the way we are living in daily situations, and particularly when people are concentrated into the same room. It is recommended to open the windows to renew the air regularly every 15min. Is it enough?

- **Goal of the project:**

- Based on existing POC object already developed and based on LoRa technology to transmit the data into Cloud sever. The object measures the quality of the air by CO2 sensor connected to STM32, alerts people in the room to open the windows when the quality of the air is poor.
- The final target is to implement 5 objects in different classrooms of your school in order to prove the robustness, the functionality and to improve the power performances.

- **Object Description**

- Nucleo STM32WL
- Embedded C code hosted on Github,
- Display 1602 LCD display(Grove),
- SCD30 SENSIRION CO2 sensor(Grove)
- TTN LoRa network



Project development

1. Features development

1. To develop a local alert based on CO2 measurement (LCD blinking...)
2. To configure the object through serial port for interval of measurement, type of connected sensors/display, CO2 alert threshold.
3. To consider the calibration of the connected sensor in the setup of object
4. To extend the connection to other sensors and displays on the market (example with SGP30, OLED...)
5. To study the power performance of the object. To propose a solution to use the object on battery or solar sensor (STM32 power mode, connected sensor, display brightness...)

2. Dashboard development

1. To develop a dashboard with 5 connected object allowing to follow simultaneous the measurements of the connected objects, to identify them, to alert the people of any air quality issue (node-red, ...)

3. Object Integration

1. To propose a fun box to integrate the object in classroom



- Extension

- Add of new sensor to go further on air analysis (HM330X particules sensor...)
- Add of sensors to include the application on a real home automation system (for example an IKS board to detect if the box is on the ground or if it's not in place).
- Alert on mobile phone...



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