Urban AirQ / Making Sensor

**Technical Report Sensor Kit**

Within the execution of Urban AirQ / Making Sensor project we developed a sensor kit that could answer to the citizen request during the air quality pilot study.

This document will be structure in the following sections:

* Background
* Technical Requests and Specs of the kit
  + Sensors
  + Boards
* Code
* Production Line
* Issues
* First tests

**Background**

Many of the technical choices we made for the development of the kit are based on the ASCL experience: <http://www.hindawi.com/journals/js/2016/5656245/>.

For that project we developed a kit with a NO2 sensors. Some of the technical aspects that we wanted to improve are:

* 9V battery supply for portable application and 5V USB power for stationary application.
* SD card data logger shield
* transparent acrylic case

Starting from that, we decided to use similar electronic parts but also to improve and integrate more functions with new hardware.

From ASCL project we kept:

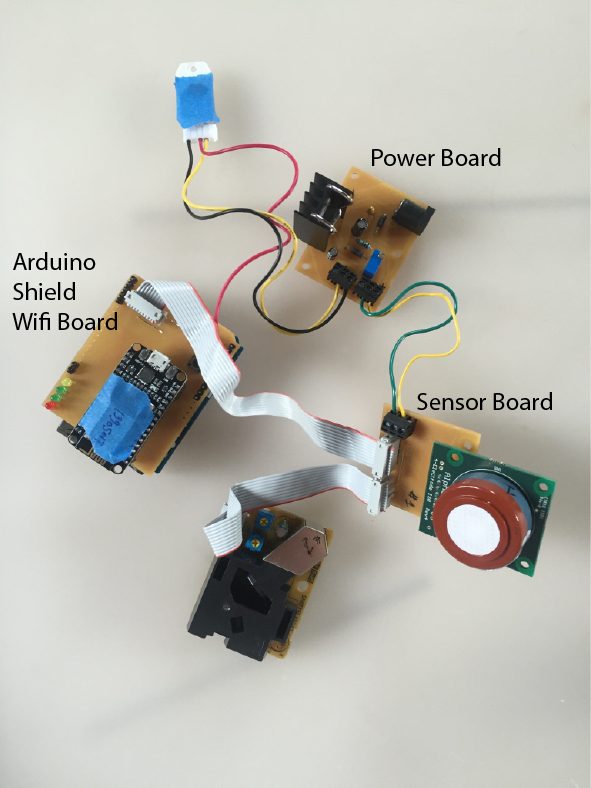
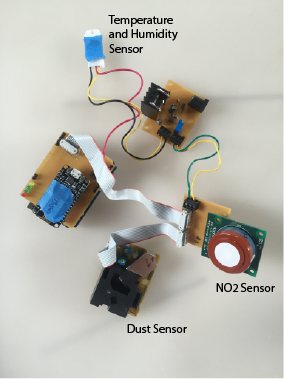
* The main board, Arduino Uno. It’s open-hardware board for fast-prototyping applications. Nowadays it represents the simplest approach to electronic and programming on the market. We opted for Arduino Uno with the idea that anyone should be capable to reproduce and adapt our kit for his own application.
* The NO2 sensor

**Technical Requests and Specs**

General requests:

* Modular solution: a kit that is assembled by smaller parts (boards). These parts should be easily plugged, swapped and modified.
* Wireless data collection: the idea is to be free from physical support or memory limitation while the kit is running.
* Power supply: stable and fast power management.

The Kit is so composed by five boards and four sensors.

**Sensors**

- NO2 🡪 NO2-B42F and NO2-B43F, Alphasense

- Particulate Matter 🡪 PPD42NS, Shinyei

- Temperature and Humidity 🡪 DHT22, Aosong Electronics Co.

**NO2 Sensor**

Text is missing

**NO2 Sensor Dust Sensor**

Particulate Matter - Text is missing

**Temperature and Humidity**

Text is missing

**Boards**

- Main board 🡪 Arduino Uno

- Wifi Module 🡪 ESP8266

- Shield -> designed and produced in Fablab Amsterdam

- Sensor Board -> designed and produced in Fablab Amsterdam

- Power Board -> designed and produce in Fablab Amsterdam

**Main board**

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**Wifi module**

Text is missing

**Shield**

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**Sensor Board**

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**Power Board**

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