AirQuality SenseBox

**sensor platform**

The sensor node contains low-cost gas sensors for NO₂ and CO and observes temperature and relative humidity. The sensor interface was developed by the citizen science initiative AirQualityEgg. Sensors are read with an Arduino compatible microcontroller. Readings are transmitted as raw data and enhanced with a unique identifier and the current location, which is retrieved by a GPS chipset. Solar panels can charge the batteries which are powering the sensor platform.

**convert**

After a transmission is received, it is split into its components. At the same time, raw data is converted into data with significance, by using the specifications of the sensor manufacturer.

**identify**

Each time a transmission is received, the gateway uses the transmitted identifier to find information on that node on an inserted SD card. This information can contain the URL to the logging platform which should be used, an API key to access the logging platform, and an ID which identifies the instance of the transmitting node on the logging platform. To be more generic, templates can be used to format the data.

**publish**

When the transmission is identified successfully, measurements can be published to a logging platform. To do so, API key, URL and ID are inserted into a message defined by a template. The gateway opens a connection to the logging platform's URL and sends the message. If necessary, data can also be stored on the gateway's SD card.

**logging platform**

A logging platform receives the message from the gateway. Popular logging platforms are cosm.com and thingspeak.com, but more standardized services such as the OGC compliant SOS are also possible and should be preferred. To authenticate the gateway and identify the node, API key and ID are required in most cases. The logging platform processes the received message and stores the submitted data. From now on, data can be accessed via the platform's interfaces.

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