

"There is no power for change greater than a community discovering what it cares about."

Margaret J. Wheatle

Cities around the world are suffering from the negative effects of poor air quality. The world's urban population has grown rapidly, with urban pollutants from motor vehicles, construction, and industrial facilities being major causes of climate change and many of the health problems we experience today.

We would like to **gamify air pollution monitoring**. Our aim is to empower people with data about their personal exposure to air pollution. We strive to enable behavioural change. Raising awareness about personal exposure motivates communities to

- a. take action to mitigate its impact on their health,
- b. reduce individual greenhouse gas emissions.

We propose developing a gamified Android/iOS app which connects to a wearable BLE enabled air pollution sensor. We would like to pair this gamified approach with an educational platform, to help promote one's personal connection to climate change. This will help increase the awareness to the air pollution problem we face today, and in turn help adapt local infrastructures around the world reduce their impact on climate change with the methodology open-seneca has developed.

To achieve the above, we need a strong and diverse team with a wide range of skillsets. We truly believe this initiative can change the way people think about the air they breathe.

Main work packages

- I. Development of an Android/iOS app with BLE support
 - a. Interface, control, and log BLE data from air quality sensor
 - b. Geotag sensor data using phone's GPS
 - c. Sync logged data to secure cloud, in realtime
 - d. Visualise data in realtime, as well as previously logged data within app
 - e. Implement gamification elements from work package IV.
- II. Sensor integrated electronics
 - a. Design integrated electronics to communicate with air quality sensor, and transmit over BLE
 - b. Implement power saving methods, such as using interrupts from accelerometer to detect sensor use, optimising sampling speeds, sleep timers, etc.
- III. Sensor housing
 - a. Design a stylish, minimalistic sensor housing, which can be worn and/or placed easily on bikes and other modes of transport
 - b. Make as weatherproof as possible. Sensor inlet must be unaffected by wind.
- IV. Gamification elements and educational platform
 - a. Design gamification elements which can be implemented in the designed app, and online.
 - b. Pair gamification with educational resources
 - c. Promote engagement through a revamped online forum
- V. Front/Back end + data science
 - a. Enable users to visualise collected data on website, similar to the envisaged app interface
 - b. Move to OpenStreetMap for visualisation
 - c. Feed city level data to OpenAQ

We would love to hear from you if you think you can contribute towards these goals in any way. The deadline for submissions is **16th March 2020 12pm**.

Please use our website form to submit a CV along with a brief motivation (max. 300 words) on why you would like to join the project. Feel free to email info@open-seneca.org with any questions.