



SMART CITIZEN EDUCATION
FOR A GREEN FUTURE

Understanding air quality

24th February 2023 - 1.00 - 2.30 PM CET





Cleanair@School

Anna Ripoll – 4sfera Innova



Augmented Reality App

Diana Urquiza – Barcelona Supercomputing Center

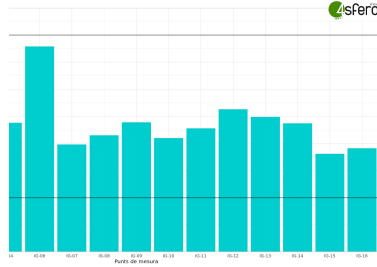
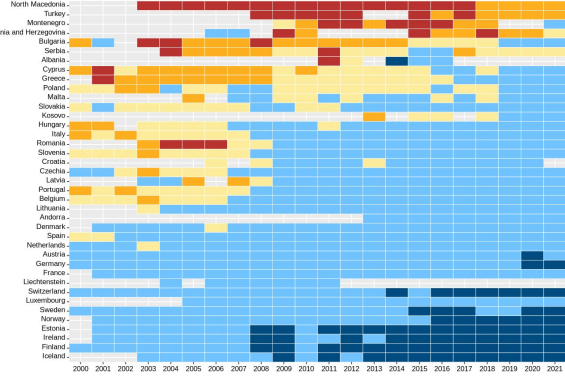


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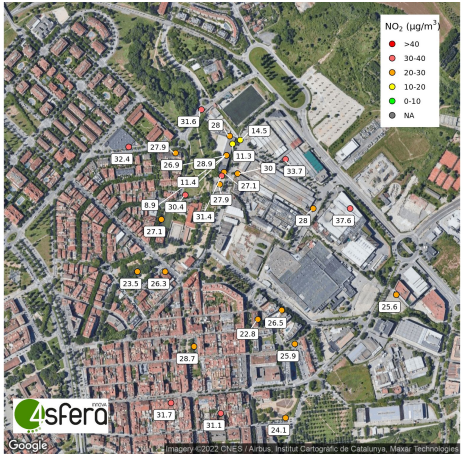
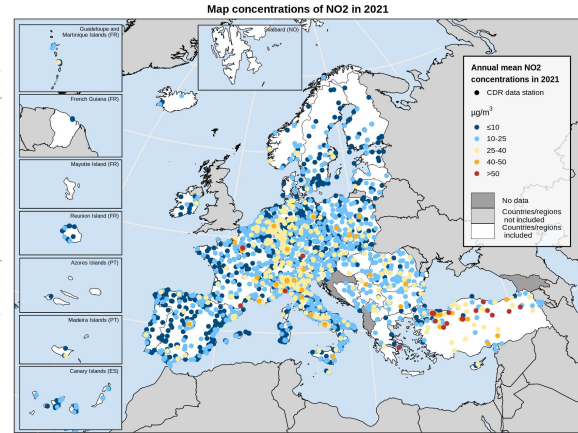


Introduction of 4sfera Innova

Country mean of PM10 concentrations
(Annual concentrations of PM10) between 2000 and 2021



Passive Sampler



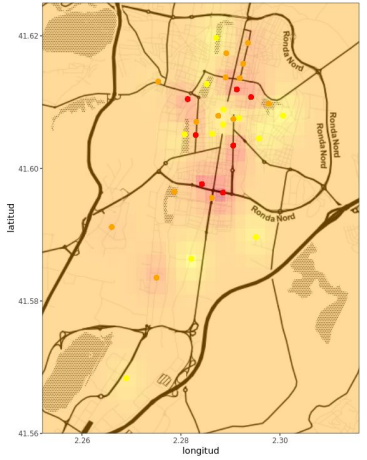
Passive sampler is an application to facilitate air quality monitoring. The application has been developed for a wide variety of projects aiming to simplify the execution of monitoring campaigns with passive samplers/sensors.

The application has been designed for variety of projects covering:

- Experts users
- Collective users
- Citizen science
- Epidemiological studies
- Personal exposure

Key aspects of the application are:

- User-friendly screens to deploy and collect samplers/sensors
- Save site location by phone's GPS
- Upload pictures of the monitoring site

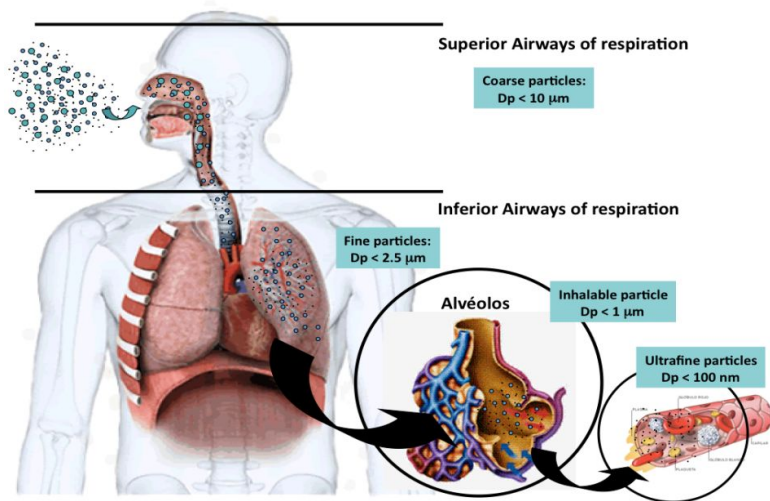


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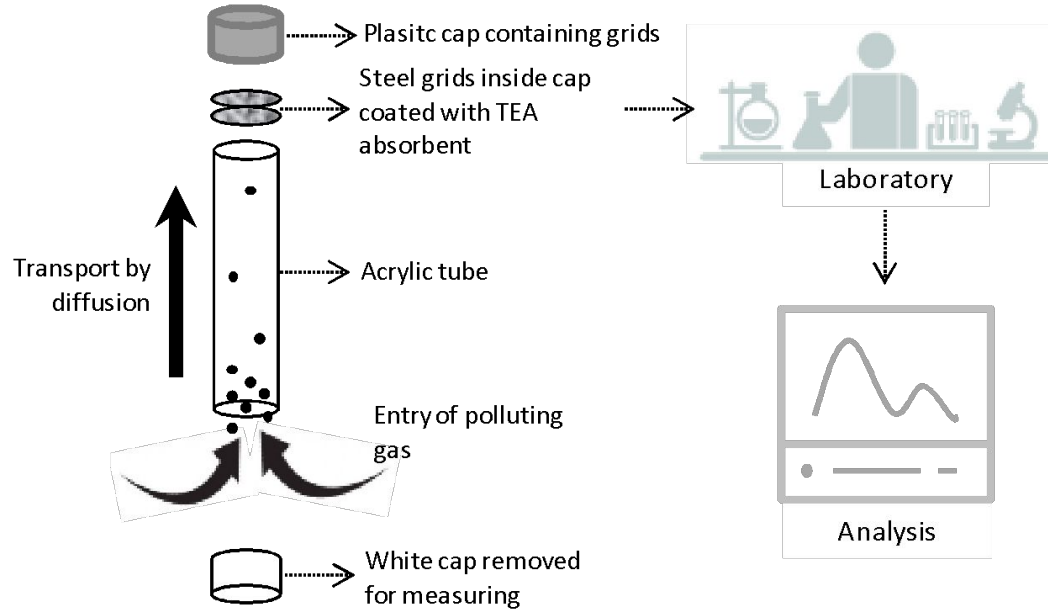
Understanding air quality



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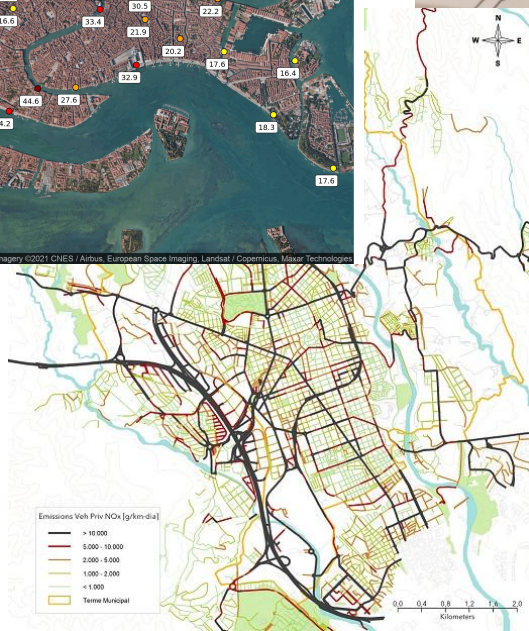
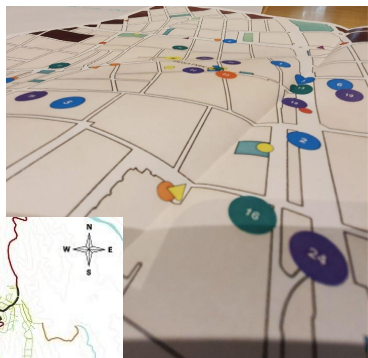
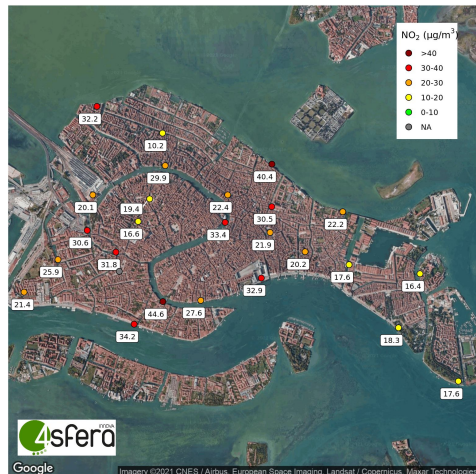


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Concentrations of NO₂





Augmented Reality App



Barcelona Supercomputing Center



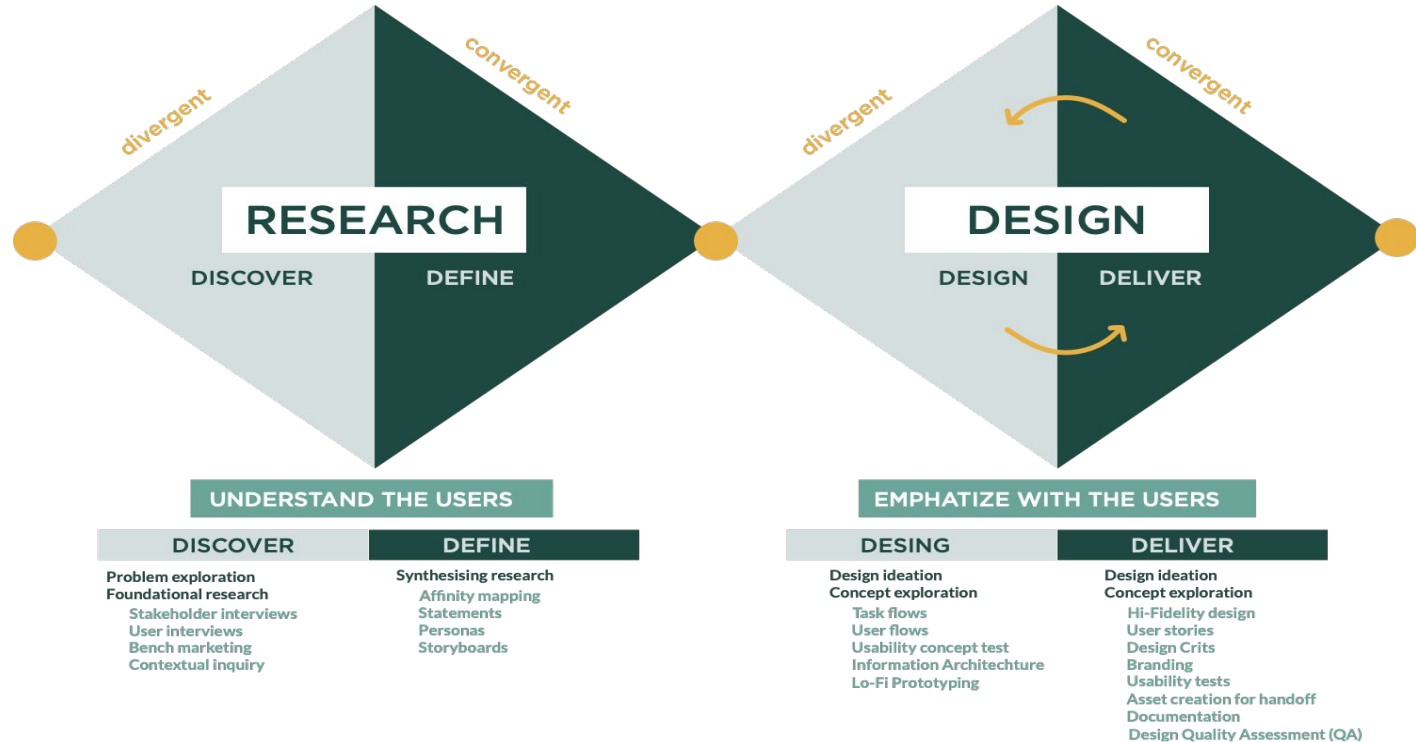


**Barcelona
Supercomputing
Center**
Centro Nacional de Supercomputación

Earth System Services

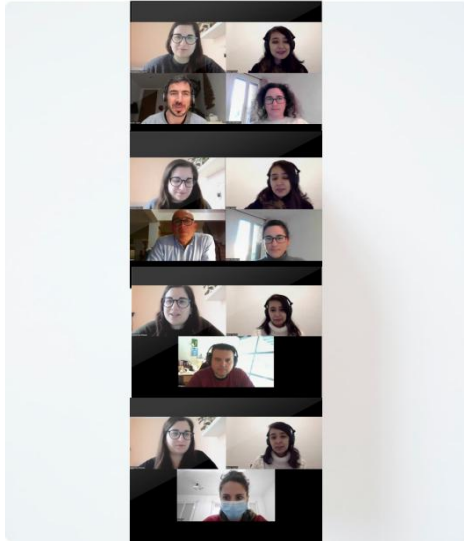
Climate
Air Quality
Health Resilience

Human Centered Design

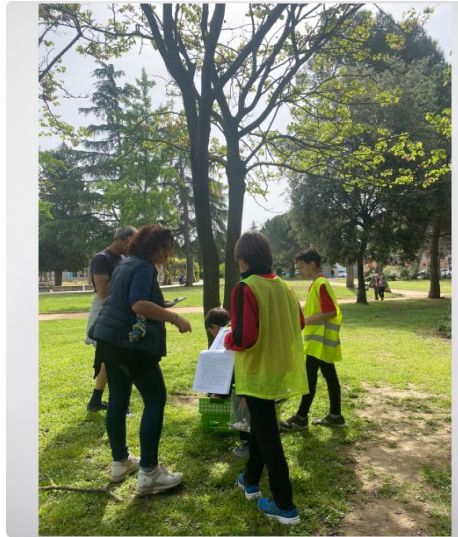


User Experience Research

Interviews



Guerrilla interviews




Co-creation workshops



Key findings

- 1. The Air Quality information needs to be explained really well to differentiate concepts.**
- 2. The Air Quality Index map gets users attention and is not difficult to explore.**
- 3. Air Quality is not part of the official curriculum, so it can be implemented at any point of the year in the environmental sciences (or related) classes.**
- 4. The principal challenge is to make the invisible visible.**
- 5. The teacher engagement is key for the correct implementation of the use of the App and the learning of Air Quality topics.**
- 6. Students tend to relate cars with bad air quality and health problems related to lungs.**
- 7. Storytelling can be a great way of making the information friendly and relatable.**

By defining the motivations, needs, challenges and pain points of our users we can then design with all the user goals in mind



About

Dimitra is a secondary school teacher. She teaches environmental science, geography and technology. Before, she studied Industrial Engineering and she was working for a well-known renewable energy company, until she realised that her real passion is teaching. She loves outdoor activities and the contact with nature.

Goals

- Enhance her teaching with new innovative tools and gamification methods.
- Find ways to visualise the concepts taught, to increase students' understanding.
- Find detailed teacher guides and well-explained activities/handouts, ready to be used by students.

Challenges

- The ratio teacher/students makes it hard to guide all students' projects simultaneously.
- Some parts of the curriculum include too much theory that is hard to teach and the students find it boring.
- She has a hard time explaining to the students concepts that can not be seen.

Personality

Introvert Extrovert
Analytical Creative
Judging Perceiving

Brands

AUTODESK AUTOCAD Kahoot! ArcGIS
pluma tabs WhatsApp Google Classroom

Hobbies

Climbing Skiing Concerts

Dimitra

Age: 34
Profession: Teacher
Family status: Relationship
Location: Athens, Greece



Motivation

Data visualization
Educational activities/ training kit
Learning new things
Gamification

Personality

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Analytical Creative
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AUTODESK AUTOCAD Kahoot! ArcGIS
pluma tabs WhatsApp Google Classroom

About

Yannis is a primary school teacher working in a public school for 25 years. He teaches all subjects, but he likes more Science and Geography. He uses his own educational material/activities in the classroom to teach the curriculum and he is not interested in incorporating innovative methods. On the weekends, he likes cycling with his family, reading literature and going on excursions in the nature.

Goals

- Follow the official school curriculum and prepare his students for secondary school.
- Provide the lesson in a way that is related to the daily life and experiences of the students.
- Talk about air quality in class, as his students live in an area that is often affected by dust intrusions.

Challenges

- Even after years of experiences, he struggles to connect the official curriculum with the student's interests.
- Digital tools for education are usually complicated and not easy to use.
- Educational games distract students from learning.

Personality

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Brands

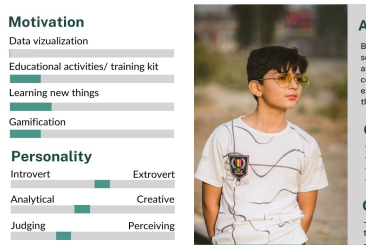
Office meteoblue weather & clock for free
WhatsApp Gmail Calendar

Hobbies

Cycling Reading Traditional dances

Yannis

Age: 49
Profession: Teacher
Family status: Married, 3 kids
Location: Lemesos, Cyprus



Motivation

Data visualization
Educational activities/ training kit
Learning new things
Gamification

Personality

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About

Bogdan is a 12-year-old student, in the last year of primary school. He lives with his parents and siblings in Novi Sad and goes to school by bike. At school, he likes maths and computer classes. He likes it when his school participates in external projects, because he can skip class and sometimes the projects are interesting.

Goals

- Have fun playing games.
- Learn new things in a more dynamic way.
- Explore new interesting topics than feed his curiosity.
- Feel that he is an active member of society.

Challenges

- Sometimes he is not able to understand the real value of the activities proposed by the school.
- He gets bored at school, when the teacher explains theoretical concepts.
- The values taught at school and the proposed behaviour are different from what he sees at home by his parents/older siblings.

Personality

Introvert Extrovert
Analytical Creative
Judging Perceiving

Brands

FIFA MINECRAFT
dribbble Kahoot!

Hobbies

Football Videogames Swimming

Bogdan

Age: 12
Profession: Student
Family status: Child
Location: Novi Sad, Serbia

Main objective:

Let students explore basic concepts of Air Quality, using Augmented Reality as a tool to engage and explore AQ information in a more interactive way.

Knowledge

Learn what is Air Quality, why bad air quality is bad for our health, which are the main air pollutants

Skills

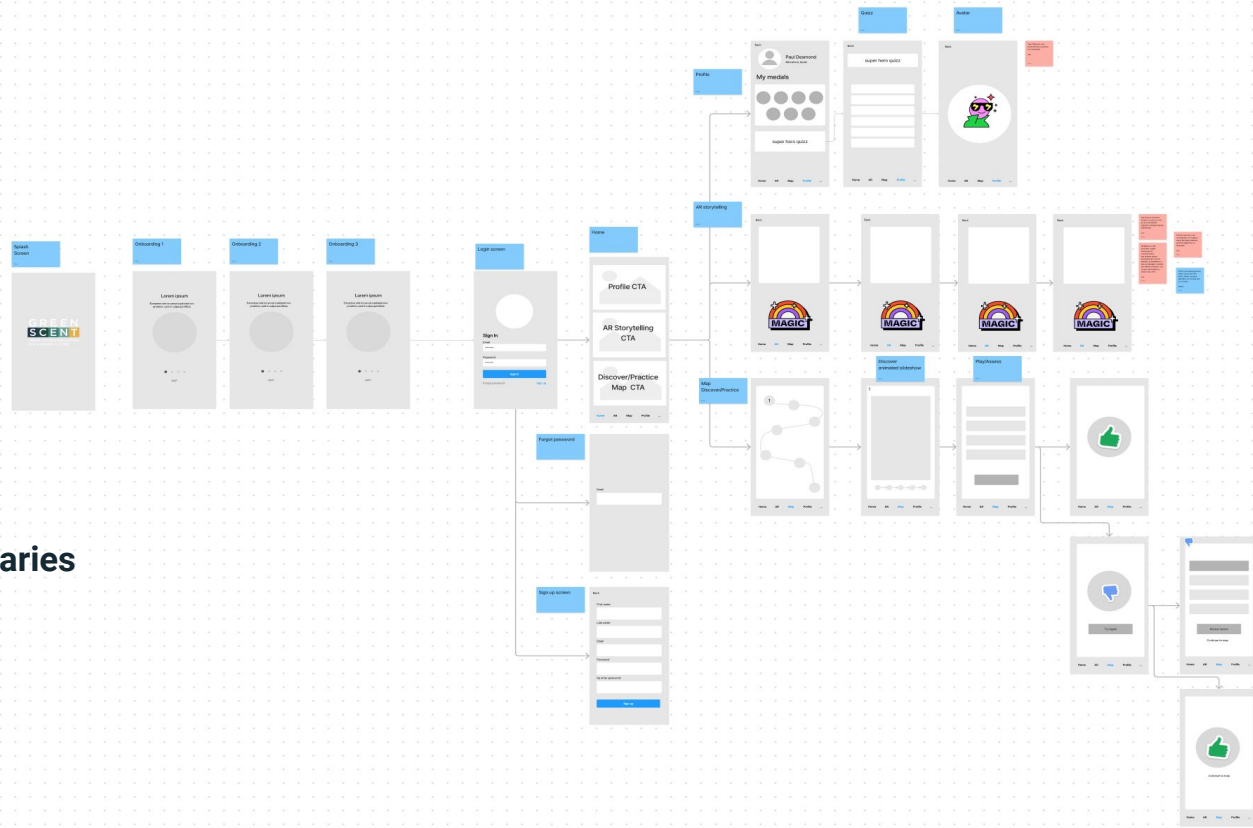
Learn to read an Air Quality Index map

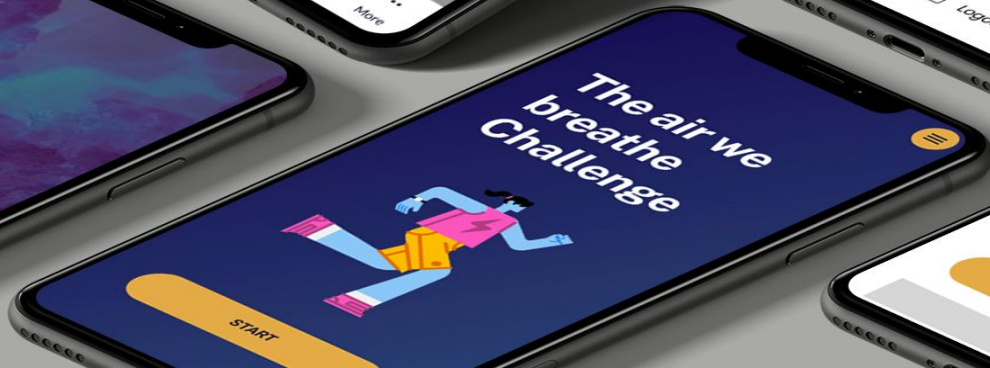
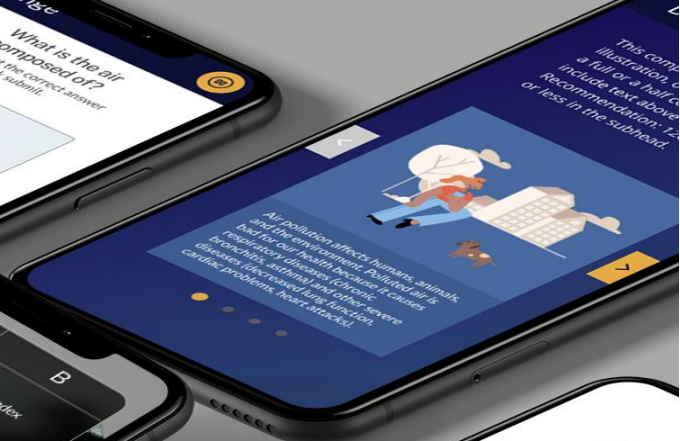
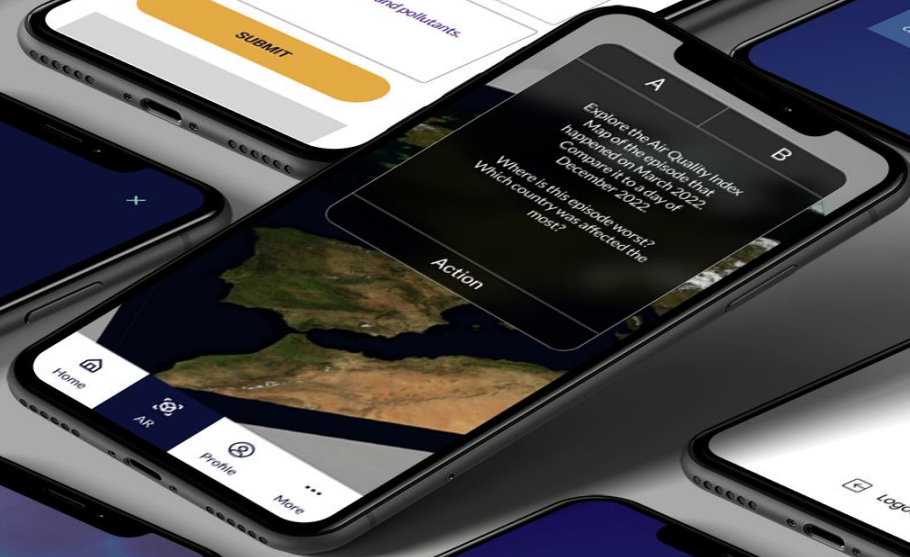
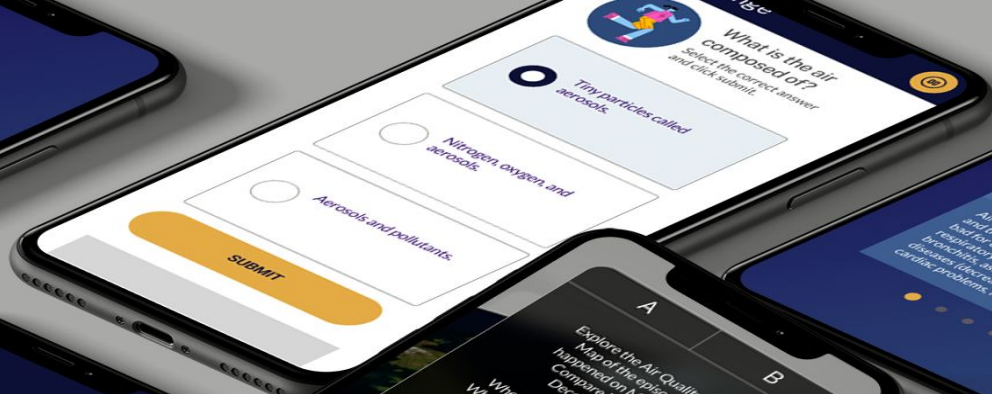
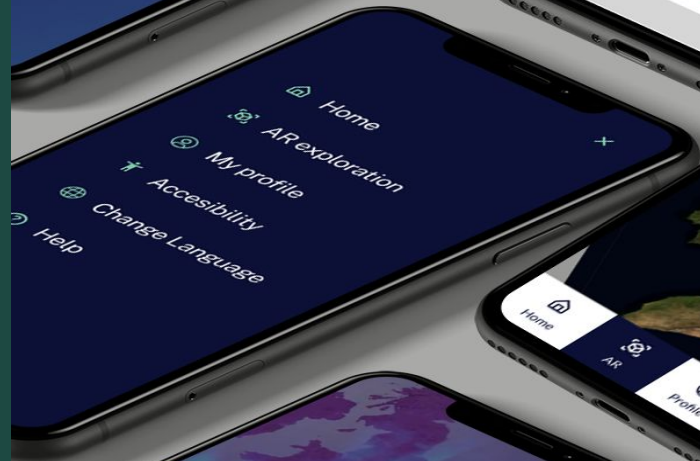
Attitudes

Learn the habits and actions that can help to have a better air quality

Lessons

- The Air we breathe
- A matter of Habits
- Common Air Pollutants
- Air Pollution has no boundaries
- Air Quality Index
- A risk to our health
- Protect you and those around you





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Thank you for your attention!

