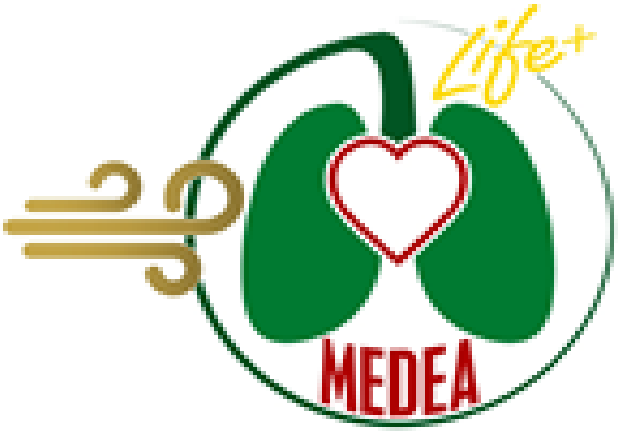


Action C.3.1

Deliverable: Stable version of Information Service Platform.

Beneficiary responsible for implementation: E.n.A

Date: 01/02/2018

This project is co-financed by the European Union within the framework of the LIFE Program under the Grant Agreement LIFE16CCA/CY/000041

Action C.3.1 Deliverable: Stable version of Information Service Platform

The main objective of this action was the development of a bidirectional, patient-centered information platform and sentinel network for providing in time dissemination information of air quality to population groups in the community and evidence-based guidelines for protection of vulnerable groups, via the collection of timely forecasting data on air quality.

MEDena® Health-Hub

We have developed the MEDena® Health-Hub, a bidirectional, patient-centered web-based platform and the MEDEApp® smart mobile application for:

a. collection of early forecasting data from meteorology modelers;

b. early dissemination of warnings and audiovisual recommendations for exposure reduction to alert patients about upcoming DDS events;

c. acquisition of accurate spatiotemporal activity and health data from patients via wearable sensors and online questionnaires, and;

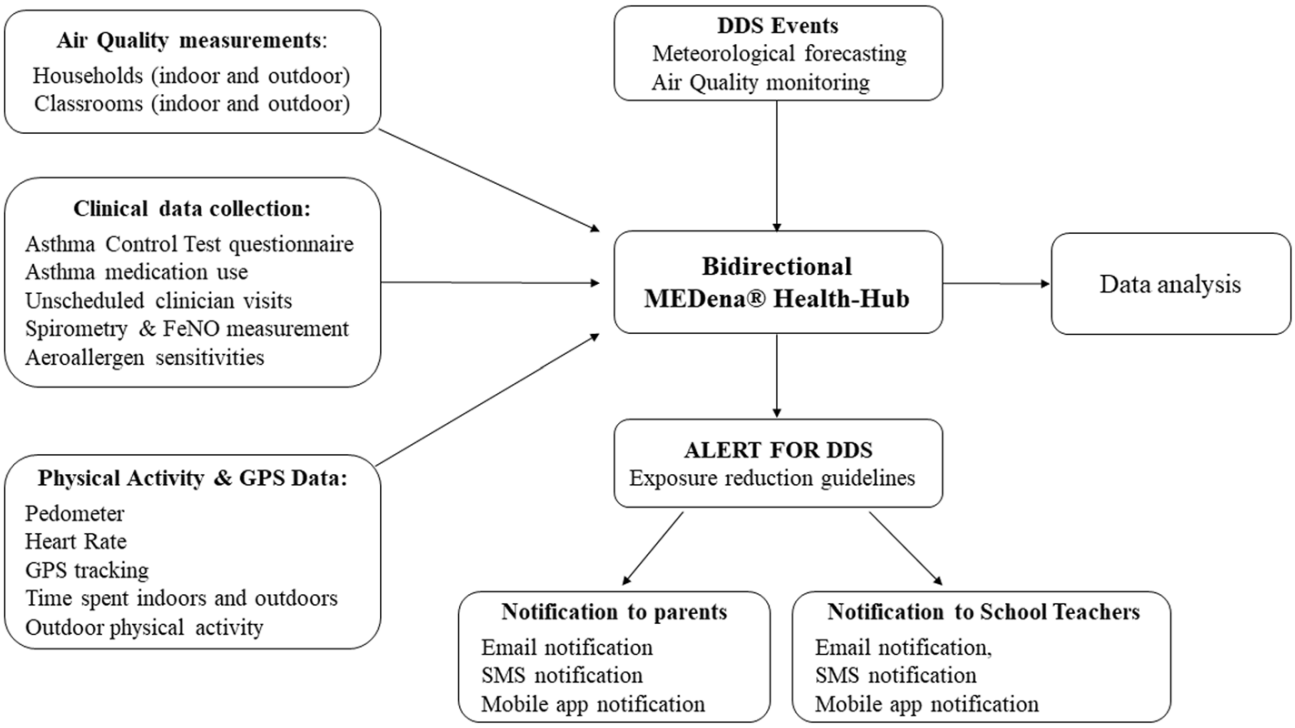
d. storage and management of personal exposure and health data with cloud technologies.

On recruitment, participants are assigned an ID number and their personal, demographic, house and classroom location (coordinates) information are entered through the web to the MEDena® Health-Hub. Each patient wears a wristwatch and through the MEDEApp® mobile app installed in the Android smartphone of the parent the MEDena® Health-Hub tracks which patient ID is equipped with each device. The children, their parents and schoolteachers are trained in the tools and procedures to be followed and are given a leaflet with instructions on the use of the wristband and smartphone. Participants are asked to wear the smart wristbands 7 days a week, but not during sleep, bathing or swimming.

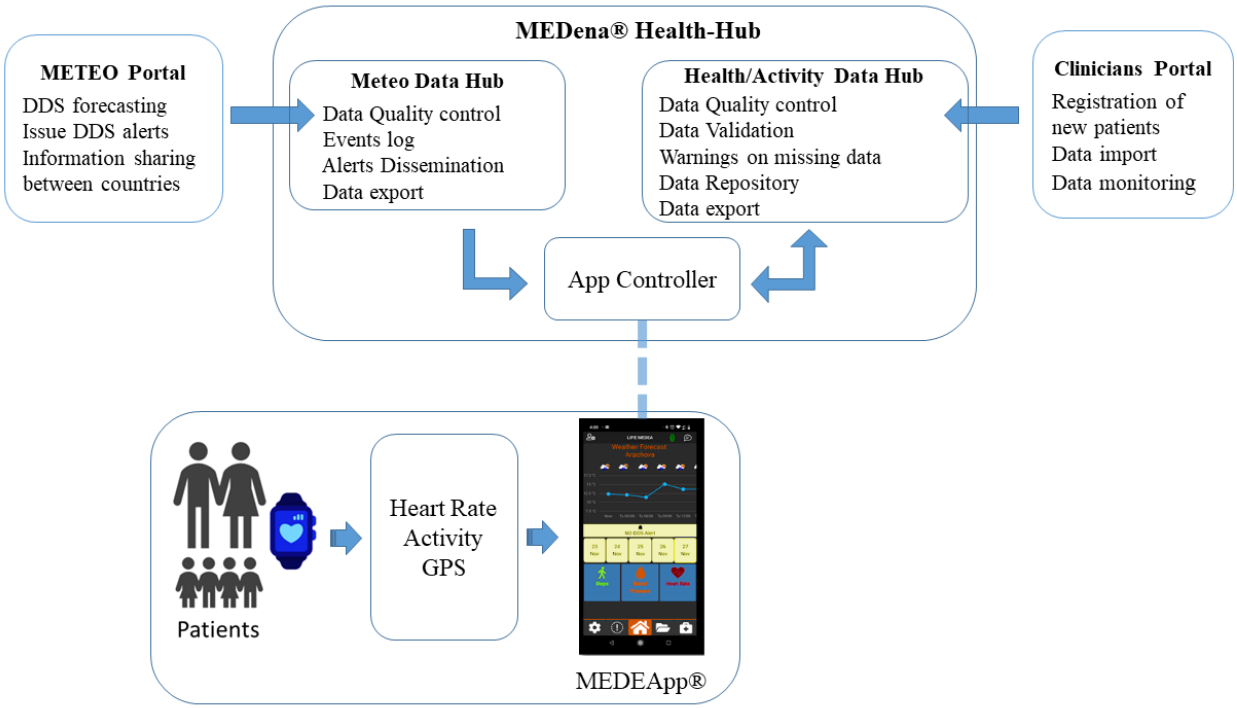
Following the eligibility assessment at the baseline visit, patients are assigned to the three parallel intervention groups at a 1:1:1 ratio. Assignment to the three parallel intervention groups is based on the randomization of their school to the three legs and interventions are implemented in the asthmatic child's classroom and household settings.

The bidirectional MEDena® Health-Hub is updated with meteorological forecasting and air-quality information regarding DDS events and sends alerts and exposure reduction guidelines to parents and teachers of asthmatic children participating in the study. At the same time, the MEDena® Health-Hub is automatically collecting the physical activity and GPS data from the wristbands worn by the children. Researchers also manually upload children clinical data and air qu ality measurements. DDS: Desert Dust Storm, FeNO: Fractional exhaled Nitric Oxide, GPS: Global Positioning System, SMS: Short

Messaging Service text message. The figure below illustrates the schematic diagram of MEDEA studies:



MEDEA online platform design -MEDena® Health-Hub design.

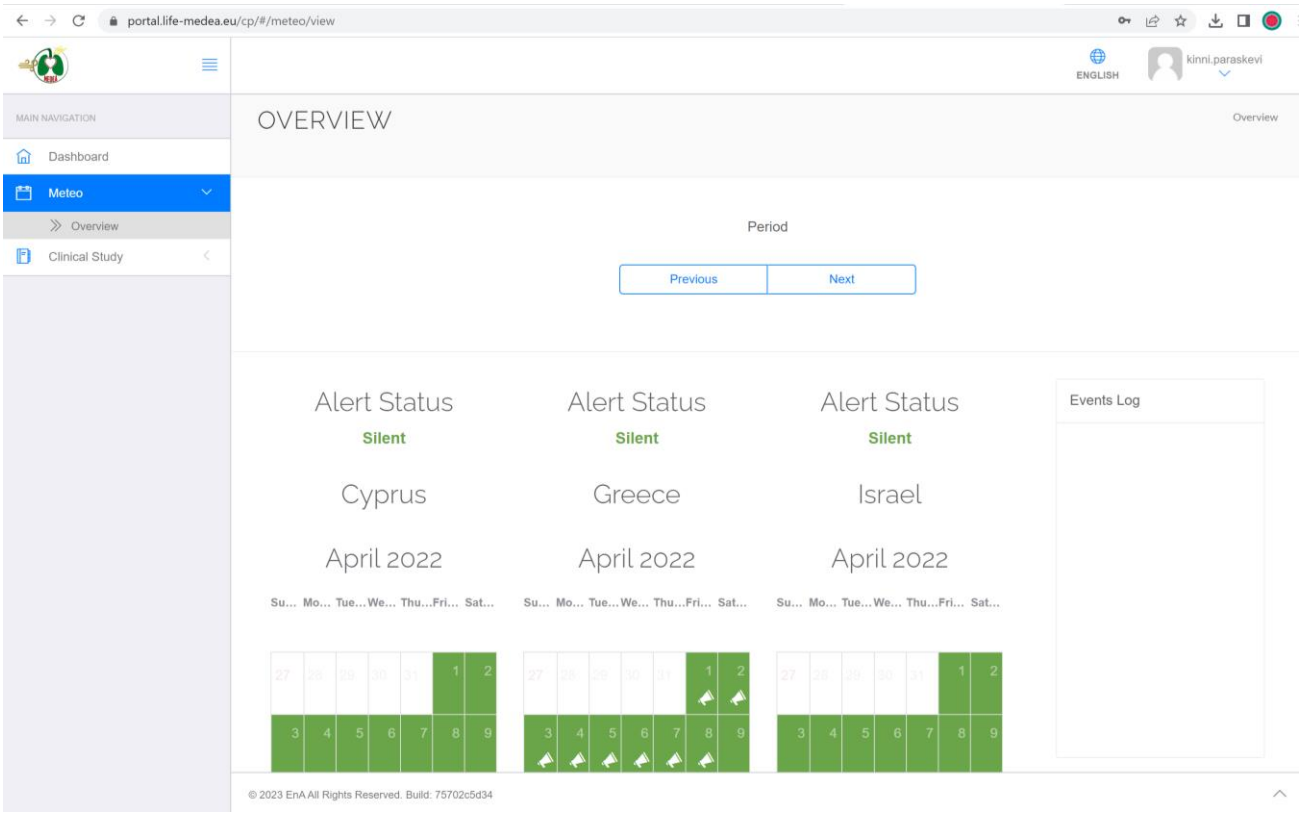


The bidirectional MEDena® Health-Hub is accessible via the METEO and Clinicians portal. The Clinicians portal allow health professionals to register newly recruited patients and assign them to a particular intervention leg, study side and study period. Furthermore, it allows for the entry of questionnaire data as well as monitoring of accumulated data per participant. The METEO portal allows meteorologists and air quality experts to provide forecasting and issue alerts on DDS events that are disseminated to participants according to their respective intervention leg. The app controller allows for the real time communication between the MEDena® Health-Hub and the MEDEApp® mobile app and the synchronization of all collected activity data by the MEDEApp® mobile app with the Health/Activity Data Hub. Activity data are collected by the wristband and transferred via bluetooth to the MEDEApp® mobile app and automatically synchronised with the Health/Activity Data Hub through WiFi connection. A notable feature of the MEDena® Health-Hub is the ability to communicate warnings on missing data to both participants and researchers in the case that the participant has not synchronised his devise with the MEDena® Health-Hub for 24 hours. All communications between the MEDena® Health-Hub are carried out via SMS, email and app notifications.

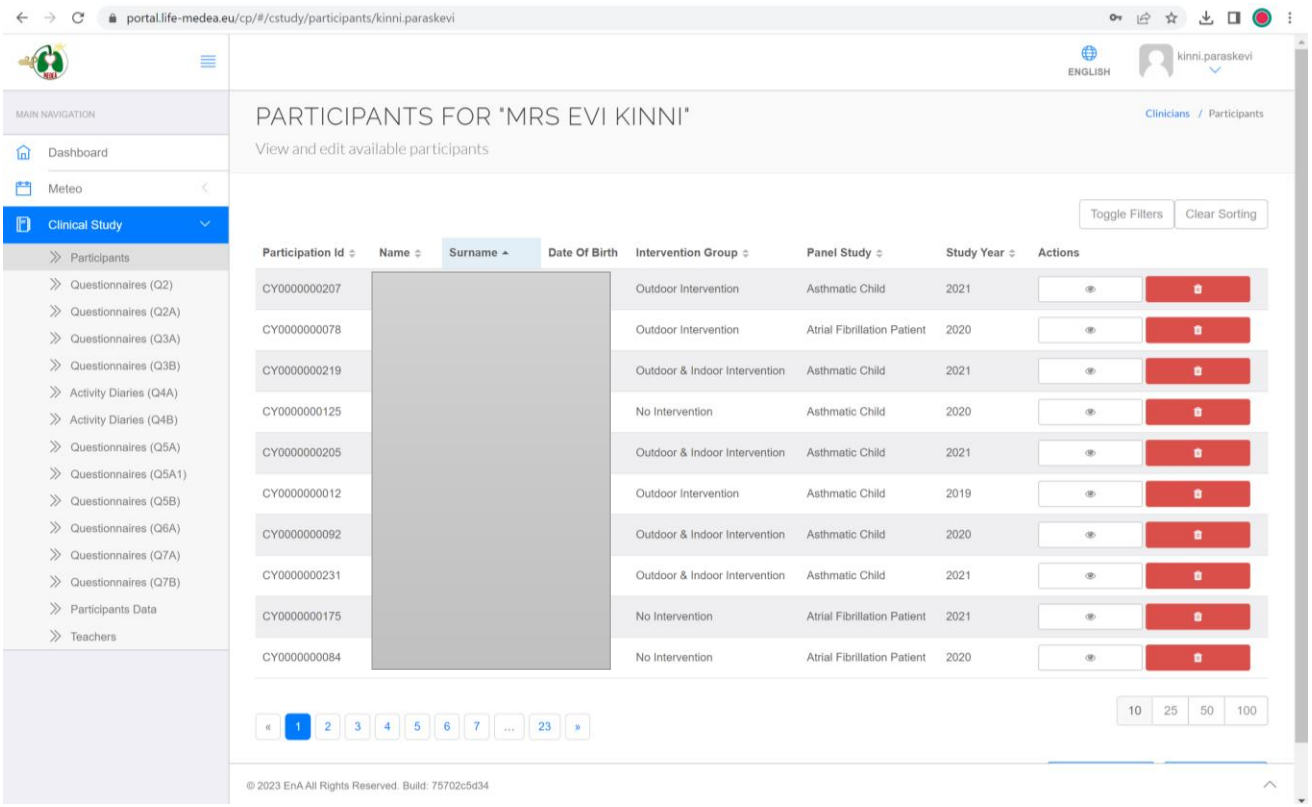
During the course of the LIFE MEDEA project, the MEDena® Health-Hub was accessible under the following URL: https://portal.life-medea.eu.

An overview of the information platform and its different components is displayed below:

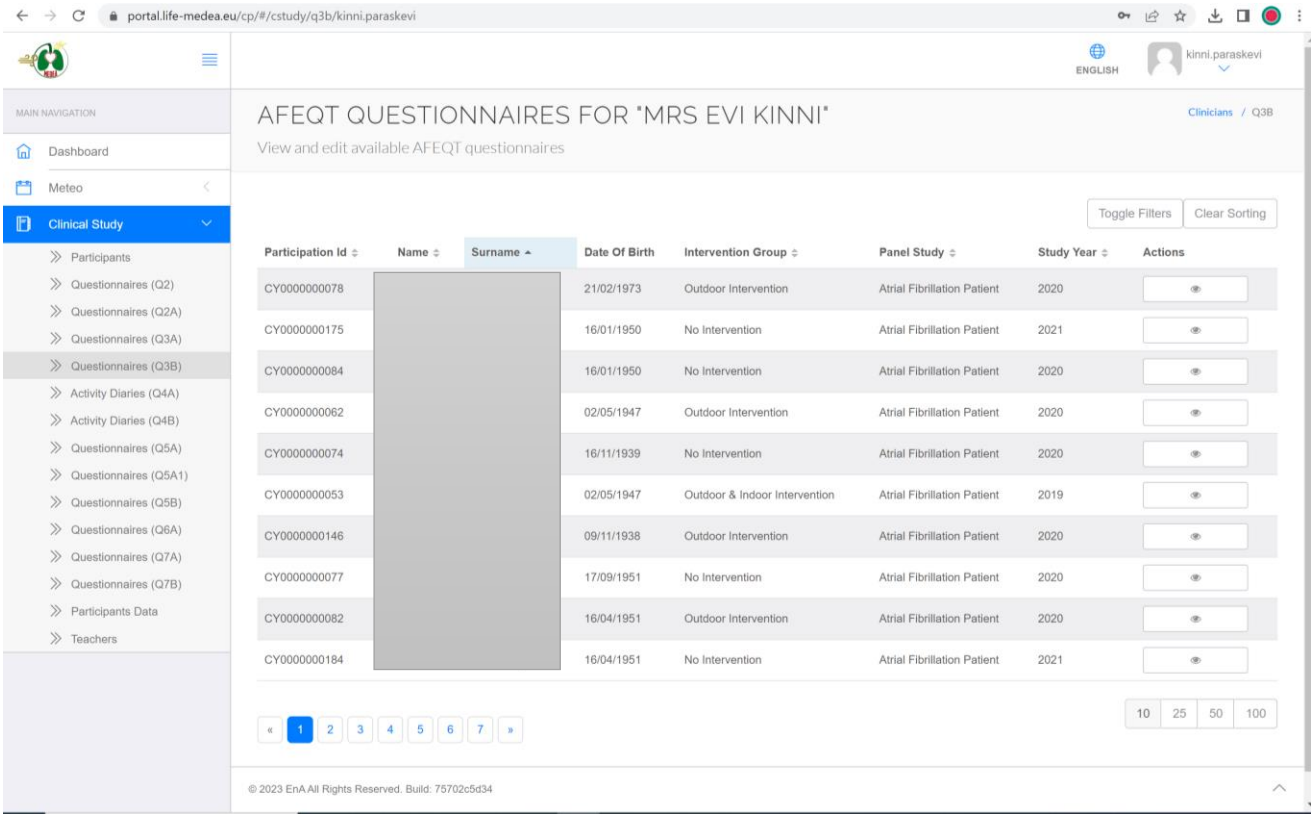
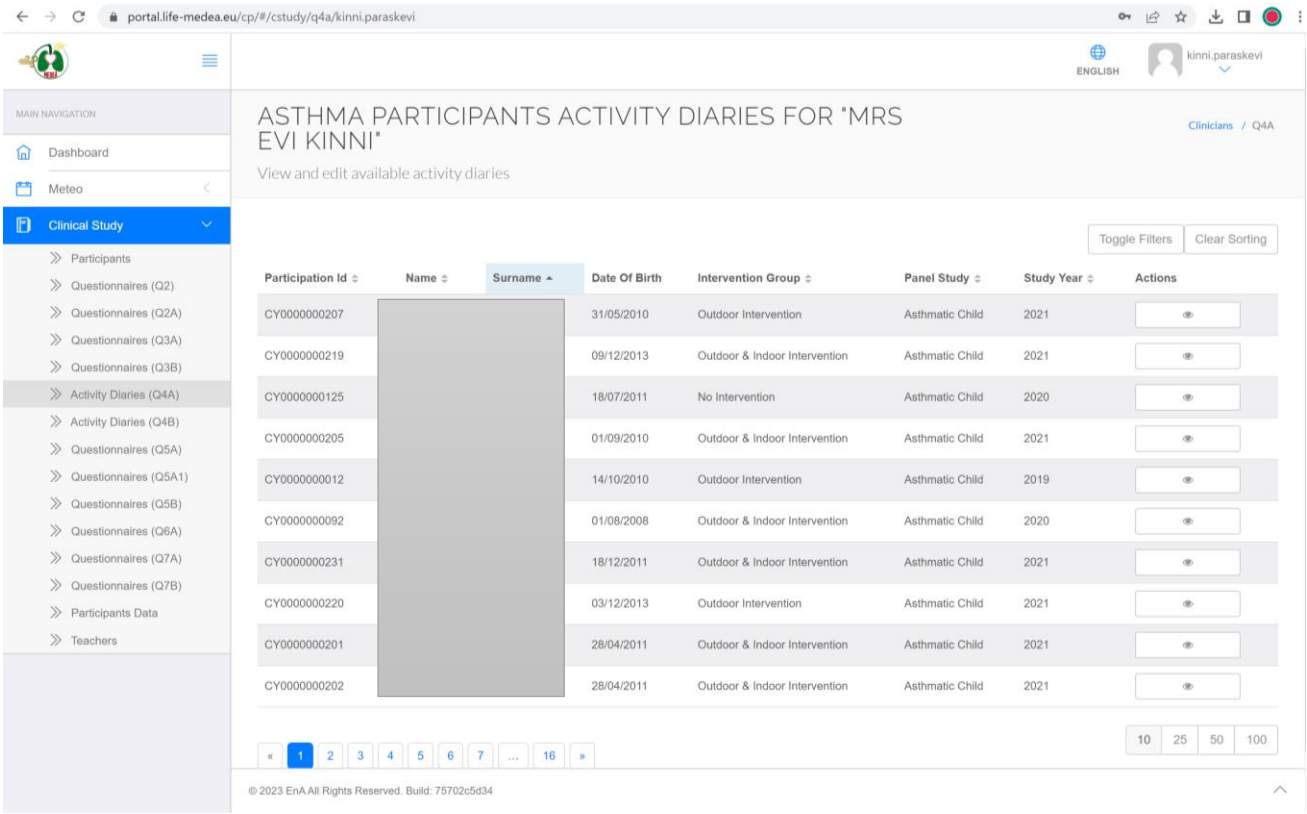
- METEO portal



- Clinical portal (overview of participants - names are not shown for anonymity reasons):



- Clinical portal (overview of AFEQT questionnaires- names are not shown for anonymity reasons):



- Clinical portal (overview of AFEQT questionnaires- names are not shown for anonymity reasons):