

## **Mini-Project** **E-Asthma Controller**

**E-Asthma Controller** is an information system designed for patients with asthma which allows them to manage their illness and prevent attacks. Asthma is a chronic disease manifesting as an irritation of the aerial ways. It can be triggered by environmental factors such as coldness, dampness, pollution or by allergens such as pollen or dust. Also having a cold or flu increases your chances of having an asthma attack.

Asthma can be managed by medication and lifestyle choices. The medication is either preventive, taken regularly to prevent attacks or with immediate effect, once an attack has started to clear the air ways.

E-Asthma Controller allows patients to record when they have an attack by using a smartphone application. The event is enriched with context information such as time, location and sent to a central server where it is anonymized ( all personal data are erased). When all recordings are aggregated what results is a risk map for asthma attacks, showing the time and places where such attacks occur frequently. The patient can either consult this map or receive notifications when entering an area with increased risk so that he can take preventive medicine.

The system also receives data from the stations which measure the quality of the air and their data is also introduced in the risk map.

By creating an optional personal profile, the patient can choose what types of environmental stress he is most susceptible to so that he can receive a personalized risk map.

The system is designed to be expanded, allowing different sensors plugged in in the future, other than air quality sensors.

### **Work Packages:**

#### **A. WP1-Systems Engineering Methodology:**

- A1 Partition the current system according the processing and the processor views in a System Modeling Template
- A.2 Draw the Architecture Flow Context Diagram for the system

#### **B. WP2-Structured Methodology:**

- B.1. Define the environmental and behavioral model for the information system
- B.2. Starting from the level 3 DFD, propose a design model based on transformational and/or transactional flows.

#### **C. WP3-Enterprise Wide Methodology:**

- C.1. Draw the activity diagrams for the main business process
- C.2. Map the enterprise organigram and specify the business functions of each division.

#### **D. WP4-Object-Oriented Methodology:**

- D.1. Draw the domain model for the business.
- D.2. Draw the Business Use Case Diagram
- D.3. Interaction diagrams for the main business scenarios
- D.4. For the software use case of **TBD** write the use case description, system sequence diagram and describe an operation using an operation contract.
- D.5. Propose a software architecture for the system, arguing for the design decisions you have made.
- D.6 Draw the statechart for a **TBD** object lifecycle.

**TBD = to be decided: The task will be assigned by your tutor based on your project so far.**