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# SOFTWARE REQUIREMENTS SPECIFICATION

for

## ALLERGY TRACKING APP

Version 1.5

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**GitHub repository**

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<b>Version</b>	<b>Date</b>	<b>Corrections</b>
<i>1.1</i>	19/05/2023	Added more detailed description of non-functional requirements Added propositions on app design decisions; Added versions table; Reformatted requirements section with a table and IDs;
<i>1.2</i>	26/05/2023	Added Sequence diagram, Use-case diagram, Actions diagram;
<i>1.3</i>	28/05/2023	Added database section with database descriptions
<i>1.4</i>	30/05/2023	Added full Use Case section with extended description and correct diagram; Corrected formatting; Split Sequence Diagram into separated Use Cases;
<i>1.5</i>	13/06/2023	Finished subsections in section 2 (2.4, 2.5); inserted the class diagrams;

# 1 Introduction

## 1.1 Purpose

The "Breath easy" is an Android and IOS app that will help people with allergies to keep track of allergens in the nearby area. The app will contain a map where users will see alerts from other people and will be aware of specific allergens.

This will be especially relevant for people with severe allergies to prepare for the possible allergens before symptoms will hit them.

## 1.2 Intended Audience and Reading Suggestions

"Breath easy" is for people with allergies, mainly air allergies such as pollen, dust, ticks, mites, and chemicals.

## 1.3 Project Scope

"Breath easy" will function as a network of people with similar allergies.

- Sign-in/sign-up options. The users will be able to sign up using different social networks and log in later to the created account. Once the user is registered, we will provide a quick-entry questionnaire on types of allergies to personalize the interface.
- There will be 3 main sections in the App: the main page with some highlighted information, a map section with a monitoring stations layer, and with users' pin-point; and the tips and articles section with some tips from experts.
- Users will be able to view all sections, fill in everyday questionnaires and submit alerts.
- We also employ Health-tracking devices and app support that will be an additional source of health parameters and will be used for making alert suggestions.

## 1.4 Acronyms

1. UI - User Interface
2. GDPR - General Data Protection Regulation

3. API - Application Programming Interface
4. OS - Operating System
5. HTA - Health Tracking Apps
6. App - a smartphone application "Breathe Easy"

## 2 General Description

### 2.1 Product Perspective

"Breathe easy" is a more dynamic way of monitoring coming waves of allergens in densely populated areas. Previously, the only source of information was very poorly organized websites of the local monitoring stations, but with our app, all information will be derived automatically and will be presented in the user-friendly format on the map. We also introduce a brand-new feature with user-to-user information sharing by submitting alerts.

The App we will use information obtained from the local databases of monitoring stations in addition to the user alerts. This data will be requested using a custom API and will be stored in the main database. The App will also use health data obtained from external apps and devices such as Apple Health or Samsung Watch. This data will be retrieved from the local apps databases respecting the user permissions.

### 2.2 Product Functions

The App's UI will have multiple functionalities allowing users to submit alerts, complete quizzes, and check out the map with information from nearby users as well as from the stations. We have also added the articles section to keep users' attention during low allergen periods. The related functionality will include submitting articles from experts, external reviews, and correction of articles. From the user side, he/she will be able to search, filter and read articles. For the full list of functionalities, consult the Requirements section.

### 2.3 User Classes and Characteristics

Overall, "Breathe Easy" has three types of users:

- Allergic user - user that has viewer permissions as well as alert-submitting permission

- Expert - have all allergic user permissions and options, plus can submit an expert article
- Developer, database coordinator, support team - their role is to maintain the functionalities of the app, provide quick responses to user inquiries, and maintain the database integrity of the map interface

We created the class diagram reflecting the main classes we propose for our application. The UI layer will communicate with the backend layer by means of some API that you can find on the diagram. Generally, the UI and backend will utilize the same classes, but perform different operations and use the inheritance concept to create more specified classes according to functionality needs. The full use case diagram is shown in [Figure 2.1](#)).

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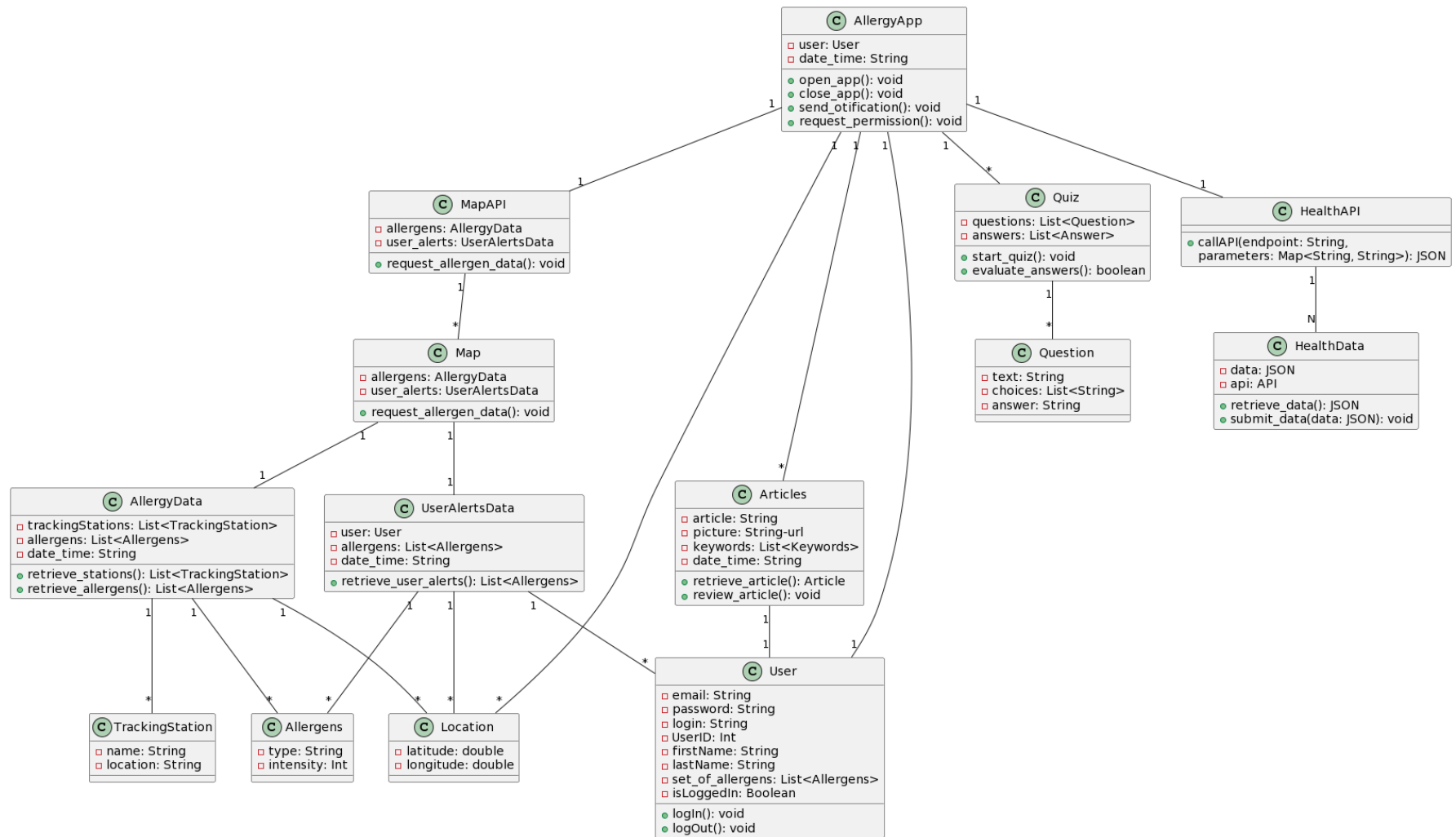


Figure 2.1: User Interface class diagram for "Breathe Easy."

## 2.4 General Restrictions

General Restrictions for the "Breathe Easy" app will include the following points:

### **1. Security:**

The system should implement appropriate security measures to protect user data, including personal information and allergy-related data, from unauthorized access or misuse.

### **2. Compliance:**

The system should comply with relevant data protection and privacy regulations, such as GDPR (General Data Protection Regulation) or any applicable local laws.

### **3. Accuracy of Information:**

The system should strive to provide accurate and up-to-date information from monitoring stations and alerts submitted by other users. However, it is important to note that the system cannot guarantee the accuracy or reliability of the information provided by external sources or users.

### **4. Reliance on External Sources:**

The system relies on monitoring stations and alerts submitted by other users for gathering allergen-related information. Therefore, the availability and accuracy of such information may be subject to external factors beyond the system's control. Users should be aware of this limitation and use the information provided by the system as a supplemental resource rather than the sole basis for making health-related decisions.

### **5. User Responsibility:**

Users are responsible for ensuring the accuracy and completeness of their allergy-related data, including updating their allergen preferences and any changes to their health condition. The system provides tools and features to facilitate this, but ultimately, the accuracy of the user's data relies on their active participation and cooperation.

### **6. Limitations of Medical Advice:**

The system should not be considered a substitute for professional medical advice or diagnosis. The information and alerts provided by the system should be used for informational purposes only and should not replace consultation with a qualified healthcare professional.

### **7. Device Compatibility:**

The system should clearly specify the supported platforms, operating systems, and device requirements to ensure that users can access and use the app effectively. The SRS document should outline the necessary hardware and software prerequisites for running the system.

### **8. Network Connectivity:**

The system requires a reliable internet connection to access monitoring stations, receive alerts, and sync data. Users should be informed about the system's reliance on network connectivity and potential limitations when operating in areas with poor or no internet access.

### **9. Third-Party Integration:**

If the system integrates with external services or APIs for retrieving monitoring data or receiving alerts, the SRS document should outline the necessary agreements, permissions,



or licenses required for such integrations.

#### **10. System Performance:**

The system should strive to provide a responsive and efficient user experience. Performance benchmarks and requirements, such as acceptable response times for data retrieval and processing, should be specified in the SRS document.

These general restrictions help set the boundaries and expectations for the development and operation of the allergy tracking app, ensuring that users understand the limitations and responsibilities associated with its usage.

## **2.5 Assumptions and Dependencies**

Our Allergy Tracking App "Breathe Easy" has the following assumptions and corresponding dependencies:

#### **1. Data Availability:**

The app assumes that there are publicly available monitoring stations or APIs that provide reliable and up-to-date allergen information. The app depends on the availability and accessibility of these data sources to gather allergen-related information.

#### **2. User Input Accuracy:**

The app assumes that users will provide accurate and truthful information regarding their allergens, health conditions, and preferences. The effectiveness of the app in providing relevant alerts and personalized information depends on the accuracy of user input.

#### **3. User Cooperation:**

The app assumes that users will actively engage with the app by regularly updating their allergen preferences, health conditions, and other relevant information. The app's ability to provide accurate and timely alerts depends on the user's cooperation and active participation.

#### **4. Network Connectivity:**

The app assumes that users will have access to a stable internet connection to retrieve data from monitoring stations, receive alerts, and synchronize data with the server. The app's functionality and real-time updates are dependent on the availability and reliability of network connectivity.

#### **5. External Services and APIs:**

The app may depend on integrating with external services or APIs to retrieve monitoring data or receive alerts from other users. The availability, reliability, and compatibility of these external services or APIs are essential for the app's functionality.

#### **6. Privacy and Data Sharing:**

The app assumes that users will agree to share their anonymized allergen data with other users for the purpose of generating alerts and contributing to the collective knowledge of allergen patterns. The app's effectiveness in providing relevant alerts from other users depends on user consent and willingness to share data.

#### **7. Platform Compatibility:**

The app assumes that it will be developed and compatible with specific platforms or

operating systems, such as iOS or Android. The app's functionality and user experience may vary depending on the chosen platform and the compatibility with different device models.

#### **8. Compliance with Regulations:**

The app assumes compliance with relevant data protection and privacy regulations, such as GDPR (General Data Protection Regulation) or any applicable local laws. The app's handling of user data, consent management, and privacy measures are dependent on adhering to these regulations.

#### **9. User Device Capabilities:**

The app assumes that users' devices, such as smartphones or tablets, meet the necessary hardware and software requirements to run the app. The app's functionality and performance may vary depending on the capabilities and limitations of the user's device.

#### **10. User Engagement:**

The app assumes that users will actively engage with the app and regularly interact with features such as updating preferences, reviewing alerts, and providing feedback. The app's effectiveness and continuous improvement depend on user engagement and feedback.

These assumptions and dependencies help define the context and prerequisites for the development, deployment, and use of the "Breathe Easy" app. They provide a foundation for understanding the underlying factors that influence the app's functionality, data availability, and user experience.

## **2.6 Use cases**

In the App, we will have many different Use cases. First of all, the actors in the scheme will be 1) normal Users 2) Experts that load articles, and 3) External Providers. Users will interact with the system by submitting quizzes, viewing different sections, and submitting and receiving alerts. External providers will include Monitoring Stations (via **Stations\_data**, see Databases [2.7](#) section), Health Accessories, and Health Tracking Apps. The system will send requests to the External Providers to get the needed information.

You can find a list of all Use Cases as well as a Use Case diagram (see [Figure 2.2](#)) below.

Use Cases			
ID	Name	Actors	Description
UC-1	Receive a User Alert	User App (Notifications Receiver)	User receives an Alert submitted by another user. User gets Alerts only related to his/her allergens listed in the User Profile.
UC-2	Receive a Station Alert	User App (Notifications Receiver)	User receives an Alert from the Monitoring Station if the signal is higher than X, where X is a predefined intensity threshold. User gets Alerts only related to his/her allergens listed in the User Profile.
UC-3	Receive a Quiz suggestion based on Health Metrics	User App (Notifications Receiver)	User receives a suggestion to fill in the Quiz and submit an Alert if Health Metrix shows abnormal values.
UC-4	Receive a daily notification to fill in the Daily Quiz	User App (Notifications Receiver)	Every day User receives a notification suggesting to complete the Daily Quiz. User can turn this option off in the Settings-Profile section.
UC-5	View the Profile page	User App (Static Viewer)	User should be able to view his/her profile page with User information.
UC-6	View the Map	User App (Static Viewer)	User should be able to view the Map section, containing the physical map and two layers of alerts: from stations and from users. User should be able to zoom in/out the Map and move along the map. User should be able to view more detailed alert information by clicking on the corresponding Alert symbol.
UC-7	View the Articles section	User App (Static Viewer)	User should be able to view the Articles section: scroll-down list with nested articles pages.
UC-8	View the Main page	User App (Static Viewer)	Once logged in, User should be able to see the Main page with information of weather conditions and Allergens status based on the nearby station.
UC-9	Registration	User App (Submitting)	If the User does not have an existing account, he should be able to create new account via registering with email, Google Account, or Facebook account.
UC-10	Log in using email	User App (Submitting)	User should be able to login using email into the existing account.
UC-11	Restore the password	User App (Submitting)	If User has forgotten the password it can be restored by sending an email with instructions to the User's email.
UC-12	Log in using Facebook profile	User App (Submitting)	Alternatively, if the user has an account linked to social media, he/she can log in faster via a social network (Facebook) account.
UC-13	Fill Daily Quiz "How are you feeling?"	User App (Submitting)	User should be able to fill in the Daily Quiz in the app. The data should be stored in the corresponding Database. Based on this Quiz user might be suggested to submit an Alert.
UC-14	Fill Welcome Quiz	User App (Submitting)	Right after successful registration, user should be able to fill in Welcome test that find out more details on the User's allergic reactions and allergens.

<i>UC-15</i>	Search articles	User App (Submitting)	User should be able to: sort articles based on the date, search by title and select articles by keywords.
<i>UC-16</i>	Accept entry permissions	User App (Submitting)	Once the App is installed, App will ask for permissions to use location, notifications, and health metrics data from the User's smartphone.
<i>UC-17</i>	Pay for non-advertisement version	User App (Submitting)	User should be able to switch to the non-Ad version of the app by clicking on the button in the Profile section. It should redirect him/her to the Payment form to submit.
<i>UC-18</i>	Submit an article	Expert App (Submitting)	Experts should be able to add submit their articles to the corresponding form for further edition and verification.
<i>UC-19</i>	Request data from Monitoring Stations	External Providers App (Submitting)	App will ask for data to view on the Map page. The Data for Monitoring Stations shall be derived from the corresponding database and be personalized based on the User allergies.
<i>UC-20</i>	Request data from User Alerts	External Providers App (Submitting)	App will ask for data to view on the Map page. The Data for User Alerts shall be derived from the corresponding database and be personalized based on the User allergies.
<i>UC-21</i>	Request health metrics	External Providers App (Submitting)	App will ask HTAs and health accessories to provide health metrics on a daily basis. The data will be stored in the corresponding database.



Since our application will use different sources of data, apart from user-app interactions we will implement the interactions with External Providers. External Providers will include monitoring stations, health tracking apps and health-related devices.

For each use case you can find the sequence and activity diagram in our [GitHub repository](#), section "diagrams".

## 2.7 Database

"Breathe Easy" will have big amount of data stored in the databases, that will be used to retrieve the relevant pieces of information according to the user profile and to perform analysis of health data and/or allergens data.

Overall, we will have the following tables stored in the external database:

### 1. User tables.

User tables will store all the information about users according to the Personal Data Terms.

The main **User\_table** will have the following attributes for each user: login\_parameter, user\_name, first\_name, last\_name, user\_id, email, set\_of\_allergens, social\_network\_profile (if applicable, if not - None). The user\_id will be a primary key.

Upon completing daily quizzes and health data monitoring one more table with user\_id as a foreign key will be filled in. The **Daily\_statistics** table will have columns such as body\_temperature, time\_stamp (of measurement or quiz submission), blood\_pressure, heart\_rate, and others.

Thus each user will have a unique entry in the User\_table and multiple records in the Daily\_statistics table.

### 2. Data from the Monitoring Stations.

Data from the Monitoring Stations will be stored in the **Stations\_data** table. It will contain the following columns: record\_id, time\_stamp, station\_id, latitude, longitude, intensity\_today, intensity\_tomorrow, and the allergen. The record\_id will be the primary key. From each monitoring station, we will have many entries, at least one per day. Different stations can have different sets of allergens tracked, thus in the table we will have columns specifying allergens and the intensity of the signal for each of the allergens tracked in the current station.

### 3. User-provided alerts.

This table, **User\_alerts** will be organized in a similar way as the previous table and will have record\_id (primary key), time\_stamp, latitude, longitude, allergen, user\_id (foreign key), and user\_comment. Here, each user can have multiple alerts posted for different allergies or with "unspecified" in the "allergen" field.

## 2.8 Operating Environment

The App is designed to operate in the following environment:

- **Supported Platforms:** Android and iOS.
- **Device Requirements:** Compatible smartphones or tablets running Android OS version X or later, and iOS devices running iOS version X or later.
- **Network Connectivity:** Requires a stable internet connection, either through cellular data or Wi-Fi, for accessing monitoring stations, retrieving allergen information, and receiving alerts.
- **GPS Functionality:** Relies on the GPS functionality available on the user's device to determine their location accurately.
- **Data Storage:** Requires sufficient storage space on the user's device to store locally cached data, such as allergen information and user preferences.
- **Software Dependencies:** May utilize third-party libraries, frameworks, or software components for specific functionalities, such as map integration or data visualization.
- **System Updates:** Assumes users regularly update their device's operating system and the app itself for compatibility, security, and access to the latest features.
- **Language and Localization:** Supports multiple languages and provides localization features based on the user's device language preferences.
- **Accessibility:** Adheres to accessibility guidelines, supporting assistive technologies and incorporating features for users with disabilities.
- **Security Considerations:** Developed with security measures, including encryption of sensitive data, secure communication protocols, and adherence to secure coding practices.

The Allergy Tracking App operates on Android and iOS platforms, leveraging their respective features and capabilities to provide users with a seamless and secure experience for tracking allergens and receiving alerts.

## 3 Requirements Specification

"Breathe Easy" is a smartphone app with an external database and regular updates from allergen monitoring stations. The main functionality consists of user interaction with the map, view of other sections, and interactive recommendation and notification systems that altogether form a user-friendly app interface.

There are several requirements related to the external interfaces such as hardware and software. The app will interact with several external databases to infer the set of map points, predictions, and alerts from the user. There are also some health-related apps we want "Breathe Easy" to interact with. Apart from software, we want our app to interact with SmartWatch (Apple Watch, Samsung Watch, etc.).

### 3.1 Business Requirements

The business requirements for the "Breathe Easy" app are as follows:

- Provide a user-friendly interface for users to track their allergens.
- Retrieve up-to-date allergen information from monitoring stations.
- Enable users to receive alerts about allergen levels from other app users.
- Allow users to specify their allergens and set notification preferences.
- Store user profiles securely, including allergen preferences and health information.
- Implement privacy measures to protect user data and comply with relevant regulations.
- Facilitate seamless synchronization of user data across multiple devices.
- Offer personalized recommendations and suggestions based on user allergen profiles.
- Support user engagement through interactive features and feedback mechanisms.
- Integrate with health tracking apps or devices to record and display health metrics.
- Provide access to educational resources and information about allergens.
- Offer localization and language options to cater to a diverse user base.



- Implement robust security measures to protect user accounts and prevent unauthorized access.
- Continuously improve the app based on user feedback and emerging technologies.
- Collaborate with monitoring stations and health organizations to enhance data accuracy.

## **3.2 System Requirements**

Table of contents for the System Requirements:

Non-functional requirements		Functional requirements		
ID	Name	ID	Type	Name
<i>FR-1</i>	Health metrics alert	<i>NFR-1</i>	Performance	Memory size
<i>FR-2</i>	Forecast alert	<i>NFR-2</i>	Performance	Server (processor) capacity
<i>FR-2</i>	User alert	<i>NFR-3</i>	Performance	Database update frequency
<i>FR-3</i>	Registration	<i>NFR-4</i>	Design [constrains]	Platforms
<i>FR-4</i>	Welcome quiz	<i>NFR-5</i>	Design [objectives]	Maintenance
<i>FR-5</i>	Daily quiz	<i>NFR-6</i>	Design [decisions]	OS-specific
<i>FR-6</i>	Show login page	<i>NFR-7</i>	Design [decisions]	Databases
<i>FR-7</i>	Show main page	<i>NFR-8</i>	Design [decisions]	API
<i>FR-8</i>	Show map	<i>NFR-9</i>	Design [decisions]	Cryptography
<i>FR-9</i>	Show articles	<i>NFR-10</i>	Security	Security, access
<i>FR-10</i>	Upload articles	<i>NFR-11</i>	External Interface	Hardware, accessories
<i>FR-11</i>	Sort articles	<i>NFR-12</i>	External Interface	Hardware, databases
<i>FR-12</i>	Request allergens data	<i>NFR-13</i>	External Interface	Software, authentication
<i>FR-13</i>	User permissions	<i>NFR-14</i>	External Interface	Software, paying services
<i>FR-14</i>	Show FAQ	<i>NFR-15</i>	External Interface	Software, HTA
<i>FR-15</i>	Contacts	<i>NFR-16</i>	External Interface	Software, databases access
		<i>NFR-17</i>	External Interface	Software, permissions

Functional requirements		
ID	Name	Description
<i>FR-1</i>	Health metrics-based alert	If the system recognizes abnormal metrics values received from the connected apps accessories, the user receives a notification suggesting to submit an alert.
<i>FR-2</i>	Forecast alert	If nearby stations show high levels of allergens identified in the user profile for tomorrow, a user gets a notification warning to be ready for the possible allergic reaction.
<i>FR-2</i>	User alert	<p>User should be able to create an alert by clicking on the corresponding button on the main page. To view the next steps user has to press the "next" arrow, on the final step he should press "Submit an alert" button.</p> <p>1) Once the button is pressed, user should be redirected to the page with a zoomable map with a pin with the current location. User can change the location of the pin by holding it and dragging it to the new location.</p> <p>2) On the next page he/she will be suggested to choose allergens of select "Not sure" if he/she does not know exactly which to allergen he/she got the reaction.</p> <p>3) Next page will contain symptoms that user can select from and a text box for user comments (&lt;50 characters).</p> <p>User can then finish the procedure by clicking the "Submit an alert" button and should be redirected to the Map section with zoom on the created alert.</p>
<i>FR-3</i>	Registration of the new user	<p>Once user logged in using either email or social network, he/she should be redirected to the user profile page, where he has to specify the following details:</p> <p>1) username that will be shown to other users: alphanumeric string from 4 to 8 characters</p> <p>2) password to login using an email: alphanumeric string from 4 to 10 characters</p> <p>3) date of birth</p> <p>4) email should be automatically added if a person logged in using an email, if not it should be retrieved from the social network details</p> <p>5) profile picture: user can choose a profile picture from some suggested options</p>
<i>FR-4</i>	Welcome quiz	Once a new account has been registered, a user should fill in the Welcome quiz with questions on his allergens, general condition, and how often he/she has severe allergic reactions and other questions.
<i>FR-5</i>	Daily quiz	If a user enters the app first time for the day, he/she gets a pop-up window with daily "How are you feeling?" test. If he/she chooses that he/she feels bad, the system suggests creating an alert.

<i>FR-6</i>	Show login page	<p>Once a user opens the app, the login page should appear. It should look like the orange background with a logo and write text boxes. In the middle, there will be a box for the nickname/email/buttons of Google and Facebook. Lower, there should be a box for password. Below these boxes, there should be links "Forgot the password", "Sign up as a new user".</p> <ol style="list-style-type: none"> <li>1. If person writes correct information in both fields or logs in using social network (into already existing account), he/she should enter the main page. If either of fields fail, system erases info from text boxes and shows warning.</li> <li>2. If person fails to enter correct credentials for 3 times, new warning should appear suggesting to click "Forgot the password".</li> <li>3. If person clicks "Forgot the password", he should be redirected to the page with only text box for email. <ol style="list-style-type: none"> <li>3.1 If entered email exist, system should send the link for updating password to the entered email/</li> <li>3.2 If the email does not exist, system gives a warning with suggestion to register as a new user.</li> </ol> </li> <li>4. If user clicks on "Sign up as a new user", system redirects he/she to the register page, where he has to input information as indicated in FR-3.</li> </ol>
<i>FR-7</i>	Show main page	<p>On the main page user shall see the following information:</p> <ol style="list-style-type: none"> <li>1) today's and tomorrow's weather (temperature, humidity, wind, rain/no rain) - shall be retrieved from the Google Weather</li> <li>2) intensity of the allergens, specified in his/her profile, for today and tomorrow from the closest station to user location</li> <li>3) featured article of the day</li> <li>4) Button to submit a user alert (FR-2)</li> <li>5) link to the profile section</li> <li>6) link to FAQ</li> </ol>
<i>FR-8</i>	Show map	<p>User should be able to view the map section which will contain the interactive map with two layers, that can be activated or deactivated.</p> <ol style="list-style-type: none"> <li>1. The first layer, stations, shall contain the information from the allergy stations about yesterday, today, and tomorrow's prognosis. Information from stations will look like a pinpoint on the map with a color corresponding to the intensity of the signal from the station (from green to red). User can click on the pinpoint to view full information of the alert containing: <ol style="list-style-type: none"> <li>a) intensity of allergens on the 10-scale for each allergen specified in his profile for yesterday, today, and the prognosis for tomorrow</li> <li>b) special comments from the station if applicable</li> </ol> </li> <li>2. The second layer should contain the other users' alerts for the allergens specified in the user profile. They will look like exclamation marks on the map and will contain the following information: <ol style="list-style-type: none"> <li>a) name of allergen/allergens</li> <li>b) date and time of the alert</li> <li>c) nickname of the user who submitted it</li> <li>d) user's comments on symptoms</li> </ol> </li> </ol> <p>The map should be centered according to the user's location.</p>
<i>FR-9</i>	Show articles	<p>Users should be able to view the articles section, will all corresponding materials and pictures. The articles section will contain the Name of the article, Keywords, and a one-sentence description. The section should be organized as a list to scroll, containing hyperlinks to articles' pages. Once a user opens the article page, the return button should appear at the top.</p>

<i>FR-10</i>	Upload articles	Experts should be able to upload their articles via the special form, so it will be sent to the redactors
<i>FR-11</i>	Sort articles	User should be able to sort articles according to the date published, topic or keyword
<i>FR-12</i>	Request allergens data	App should request new data from the database and update the table with user and station alerts on the daily basis
<i>FR-13</i>	User permissions	After first log in to the app user shall receive the notification with suggestion to give the app permission to: 1) access the smartphone location services 2) connect to installed health-tracking apps 3) get notifications from the app
<i>FR-14</i>	Show FAQ	User should be able to view the Frequently Asked Questions section of the main menu with the toggle list of main questions on data sources, app functionality and user policy
<i>FR-15</i>	Contacts	User should be able to contact developers with suggestions, corrections and comments on the app interface and content

Non-functional requirements		
ID	Type Name	Description
<i>NFR-1</i>	<b>Performance</b> Memory size	The server should have 200Gb memory to stop intermediate tables derived from databases and all interface-supporting elements.
<i>NFR-2</i>	<b>Performance</b> Server (processor) capacity	The server should work with 100000 simultaneous users and provide a response in less than two seconds.
<i>NFR-3</i>	<b>Performance</b> Loading speed	When the submit button of any quiz in the app is pressed the workspace should load within two seconds. When redirection to another page is required, after clicking the link, the server should take less than a second to switch to the next one.
<i>NFR-4</i>	<b>Performance</b> Database update frequency	Databases have to be updated each midnight with data from monitoring stations and each hour with user-alerts data.
<i>NFR-5</i>	<b>Design constrains</b> Platforms	The app will be only supported for the Android and IOS platforms, thus all auxiliary elements should be prepared and run properly on these two platforms.
<i>NFR-6</i>	<b>Design objectives</b> Maintenance	The app should be supported and be under maintenance for at least 5 years, having new versions following the software updates and new sources of information.
<i>NFR-7</i>	<b>Design decisions</b> OS-specific	We will have two versions of our app for two platforms: Android, written in Kotlin and/or Java; and IOS, written in Swift.
<i>NFR-8</i>	<b>Design decisions</b> Databases	We will have all our databases stored in the Oracle system, accessible via SQL calls with provided entry requisites (login, password).
<i>NFR-9</i>	Design decisions API	We will use API from National Allergy Bureau (AAAAI) to retrieve the data for the regions of North and South America, and EAN provided resources to retrieve the data for the European region. We will store this data in the Oracle database, for more detailed information on the database structure, please, refer to the Databases section. We will retrieve information from the Database, Alerts, and Stations tables on a daily basis to display in the App interface. We will also update information from the Alerts table each hour, so users will be updated.
<i>NFR-10</i>	Design decisions Cryptography	Encryption is the process of encoding all user data on a device using symmetric encryption keys. Once a device is encrypted, all user-created data is automatically encrypted before committing it to disk and all reads automatically decrypt data before returning it to the calling process.
<i>NFR-11</i>	Security Security, access	In order to access the app and perform all possible actions users have to be registered in the app. We will also use an API to access the public or private databases. First, we will maintain the Oracle database with data from monitoring stations which will have two modes of access, both only for users-developers with special login and password data. The first group of users will be developers-editors, who will be allowed to edit the database (by some software), and developer-retriever with only view-retrieve permissions. All users' data will be stored in the database which only developers can access.

<i>NFR-12</i>	External Interface Hardware, accessories	External providers will contain: 1) Health Apps (Samsung Health, Apple Health, Google Fit, or any other app identified by OS as health tracking) 2) Health and Sports Accessories (Apple Watch, Samsung Watch, Garmin, Suunto, and watch/pulsometers of other brands). the App should be synchronizable with these apps via internal or external interconnections. Data from these Apps should be stored in the OS-identified storage.
<i>NFR-13</i>	External Interface Hardware, databases	The App should be able to get the data from databases. The Databases should be stored in the Oracle Server and have default parameters along with the following specified: - processes = 150 - compatible = '12.0.0' - open_cursors=300 Access to the Database will be provided by the My SQL tools.
<i>NFR-14</i>	External Interface Software, authentication	The App should be able to perform authentication using Google services.
<i>NFR-15</i>	External Interface Software, paying services	The App should be able to connect to paid services, such as Google Pay or Apple Pay.
<i>NFR-16</i>	External Interface Software, health tracking apps	The App should be able to connect to paid services, such as Google Pay or Apple Pay.
<i>NFR-17</i>	External Interface Software, database access	The App should be able to connect to paid services, such as Google Pay or Apple Pay, or have a bank-provided payment operation system.
<i>NFR-18</i>	External Interface Software, permissions	Once the App is installed it should ask for the following permissions: - to send notifications - to access system-linked Health Tracking Apps - to access the location After the permissions are granted the user has access to the full functionality of the App.  @ If notifications permission is rejected: warn the user that he can miss some relevant information. @ If access to HTA is not granted: warn that the user might miss an opportunity to get personalized prognosis and recommendations. @ If location access is not granted: warn the user that he can access only the limited functionality of the App.

## 4 Software Quality Attributes

In the development phase also testing and conferences of users is been continued. So that the quality of the software is been maintained and all the requirements are been fulfilled.

Database, logical, and also UI test is required.