TrackMe

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**1. Introduction**

**1.1 Purpose**

This document represents the Requirement Analysis and Specification Document (RASD).

Goals of this documents are to completely describe the system in terms of functional and non-functional requirements, analyse the real needs of the customer in order to model the system, show the constraints and the limit of the software and indicate the typical use cases that will occur after the release.

Furthermore, it provides a description of the two software-based services offered by TrackMe (Data4Help and AutomatedSOS).

This will be done by a detailed presentation of the proposed solution and its purpose, listing its goals, and the requirements and assumptions through which they will be achieved. In particular:

* **Data4Help** is designed as a software application used for allowing third parties to monitor the location and health status of some specific individuals or to access to anonymized data of large groups of individuals.  
  Moreover, individuals agree that TrackMe acquires their data (through smartwatches or similar devices) by registering to the service
* **AutomatedSOS** is a service based on Data4Help designed to monitor the health status of the subscribed customers and, when such parameters are below certain thresholds, to send to the location of the customer an ambulance, guaranteeing a reaction time of less than 5 seconds

This document is meant to be used by any person who might be interested in this project, both end users (private customers or third-parties) and developers who have to implement the requirements.

* + 1. **Goals**
* **[G1]**: Allow individuals to become registered users of Data4Help
* **[G2]**: Allow users to sign up for AutomatedSOS service
* **[G3]**: Provide the registration to third parties who want access to users’ data
* **[G4]**: Give third parties access to users’ data
  + **[G4.1.]**: Give third parties access to data of a specific user
  + **[G4.2]**: Give third parties access to anonymized data of group of users
* **[G5]**: Allow users to accept or refuse the requests from third-parties to access their own data and their location
* **[G6]**: Allow third parties to subscribe to new data and to receive them as soon they are produced
* **[G7]**: Allow customers to insert or update their own personal data and information about their body measurements (e.g. weight, height, etc.)
* **[G8]**: If some parameters of health status are below certain threshold, send an ambulance to the user location, with a reaction time less than 5 seconds
* **[G9]**: Allow users to keep track of their health status at any time
* **[G10]**: Allow users to withdraw the authorisation to third parties to access their data

**1.2 Scope**

The aim of this section is to analyse the services offered by TrackMe in more detail. As already described in the Purpose part, TrackMe is a software that offers 2 different services:

* **Data4Help:** the service is designed to monitor and store the location and health status of individuals, acquired by smartwatches or similar devices, and share these data with third parties who request them. These stored data can be accessed by third parties only if they are authorized. In particular
  + **Individual request:** Third parties who want to access data of some specific user know his/her individual SSN or Fiscal Code.  
    TrackMe passes the request to the specific individuals who can accept or refuse it.  
    Finally, the information required is given to the third party only if the individual has authorized them, accepting previously the request. Otherwise third party is notified about the denial of the request.
  + **Anonymous group data requests:** Third parties can also access to anonymized data of groups of individuals. These requests are handled directly by TrackMe that approves them if it is able to properly anonymize the requested data. TrackMe will accept any request for which the number of individuals whose data satisfy the request is higher than 1000.

Individuals can become registered users after providing credentials, personal data and accepting the terms of use of Data4Help.  
Furthermore, every individual can view the stored data at any time to keep track of their health status and can update his own personal data, like weight, eight, etc.  
Third parties will also be allowed to subscribe to certain data in order to receive them as soon as they are produced, but at any time users can withdraw the authorisation to third parties to access their data

* **AutomatedSOS:** is built on top of Data4Help. It monitors the health status of the subscribed users and, when such parameters are below certain thresholds, sends a notification, with all the necessary information, to an external Ambulance Service, guaranteeing a reaction time of less than 5 seconds from the time the parameters are below the threshold
  1. **Definitions, Acronyms, Abbreviations**

**1.3.1 Definitions**

* A: aaa
* Asac: ascnal

**1.3.2 Acronyms**

* Sacsc: asca

**1.3.3 Abbreviations**

* sacka

**1.3.4 Reference Documents**

* + 1. **Documents Structure**

1. **Overall Description**
   1. **Product Perspective**

sacbak

* 1. **Product Functions**

Ascajsc

* 1. **User Characteristics**

Saknclncsa

* 1. **Assumptions, Dependencies and Constraints**
     1. **Domain Assumptions**
* **[D1]**: Accurate individuals’ locations are known by GPS
* **[D2]**: Data gathered from devices are correctly measured
* **[D3]**: Data provided by the users (e.g. their weight, their height, etc.) are assumed to be correct
* **[D4]**: The users have their own device (a smartwatch or a similar device) that interacts with the health app installed on their mobile.
* **[D1]**: Only Data4Help users can have access to AutomatedSOS service
* **[D5]**: The ambulance service entirely [cover](http://context.reverso.net/traduzione/inglese-italiano/cover) the [area](http://context.reverso.net/traduzione/inglese-italiano/area) where there are AutomatedSOS users
* **[D6]**: Once the emergency notification is received by the Ambulance Service, it is its responsibility to assist the user that needs help.
  + 1. **Dependencies**

ashb

* + 1. **Constraints**

Askcnl

1. **Specific Requirements**
   1. **External Interface Requirements**
      1. **User Interfaces**

ascac

* + 1. **Hardware Interfaces**

ascsca

* + 1. **Software Interfaces**

sacfasf

* + 1. **Communication Interfaces**
  1. **Scenarios**
     1. **Scenario 1**

Enrico is an 18-years-old boy, he really likes sports and he is in the school athletic team. Due to the hard training sessions, his teammates tell him to download the Data4Help app to keep track of his health status.  
He decides to try this app, so he downloads it and he creates a new account.  
After that, he logs in on Data4Help app, inserting his credentials (email and password) and he sets his body measurements, i.e. his weight and his height.   
Enrico can now monitor his health status comparing his collected data with the threshold values in the personal page of the Data4Help app.

* + 1. **Scenario 2**

The private clinic “HealthMyPriority” decides to create a service to support his cardiopathic patients. The clinic wants to notify them when they need to take their meds. HealthMyPriority decides to use the data collected by Data4Help to ensure a good service to its customers. The HealthMyPriority administrator goes to the Data4Help website and fill out the registration form. Now he creates the data requests for the customers by inserting their SSN. Therefore, Data4Help send them a notification to ask them to answer to the request. When the clinic sees that their customers have accepted the requests, it subscribes to new data in order to receive new data as soon as they are produced and send the notification about the meds to take on their app.

* + 1. **Scenario 3**

The Milan city council decides to join Data4Help to keep track of the health status of the citizen and decide to divide them into 3 age groups:

* + Under 18
  + Between 19 and 59
  + Over 60

After a technician has register the city, he sends the 3 requests based on the age range. The Data4Help system accepts 2 of them and sends the related data. The third one (over 60) didn't match the constraint of the amount of people needed (the number of people over 60 registered to Data4Help is lower than 1000). Once the council receives the notifications, he decides to change the age limits and send 2 new requests:

* Between 19 and 40
* Over 41

Now the system approved the requests and send the related data to the city council.

* + 1. **Scenario 4**

Mr. Rossi is a 70 years old man and already has got 2 heart attack and other health problems.

Rosa, his daughter, decides to buy him a smartwatch and to register him to the Data4Help service to monitor his health status.

Once completed the registration, Rosa reads about the AutomatedSOS service and decides to subscribe her father on.

Two nights later the service monitored a health status under the threshold limits. Automatically AutomatedSOS sent the location and the health status data of Mr. Rossi to the Ambulance Service which arrived at his house only after 5 minutes and saved his life.

* + 1. **Scenario 5**

Giacomo has been a Data4Help user for a long time to share his data with his gym service “GymAtHome” that helped him to do gym sessions at home.

However, Giacomo started the courses to a bachelor’s degree in Exercise Science this year. He received a notification on his Data4Help app for a data request from his new university to monitor the health status of his students. He accepted the request and Data4Help can now send his data to the university. At the same time, he decides to withdraw the authorisation with the “GymAtHome” service because he prefers applying what he is learning at the university.   
For this reason, he opens the Data4Help app, goes on the authorisations page and revoke the authorisation to “GymAtHome” service.

* 1. **Functional Requirement**
* **[G1]: Allow individuals to become registered users of Data4Help**
  + [R1]: The user can create an account for the usage of Data4Help, by selecting a username and a password.
  + [R2]: The users have to agree that TrackMe acquires their data
  + [R3]: The usernames used in the system are unique to every user
* **[G2]: Allow users to sign up for AutomatedSOS service**
  + [R4]: The user can use AutomatedSOS service, accessing with the same account credential of Data4Help
  + [R5]: The system must check that every AutomatedSOS user is an user of Data4Help service
* **[G3]: Provide the registration to third parties who want access to users’ data**
  + [R5]: Third parties can create an account for monitoring data, by selecting an username and a password
* **[G4.1]: Give third parties access to data of a specific user**
  + [R6]: The system must check if the user has authorized the third party to get access to his data
  + [R7]: The system must notify third party if the user has accepted the request or not
* **[G4.2]: Give access to anonymized data of group**
  + [R8]: The system must check that the number of individuals whose data satisfy the request is higher than 1000
  + [R9]: The system must notify third party if the request has not been approved
* **[G5]: Allow users to accept or refuse the requests from third-parties to access their own data and their location**
  + [R10]: The system must send the request to a specific user from a third party that want access to his individual data
* **[G6]: Allow third parties to subscribe to new data and to receive them as soon they are produced**
  + [R11]: Every time new data are produced, the system must check if exist some third parties subscribed to them
  + [R12]: TrackMe system sends a request to third parties that have access rights to the required data to subscribe to new produced data
* **[G7]: Allow customers to insert personal data and information about their body measurements (e.g. weight, height, etc.)**
  + [R13]: The system must provide a form to the users for inserting or updating data and personal information
* **[G8]: If some specific parameters of health status are below certain threshold, send an ambulance to the user location, with a reaction time less than 5 seconds**
  + [R14]: When devices monitor data below certain threshold, AutomatedSOS system must send the user’s health status information to the ambulance service
  + [R15]: When devices monitor data below certain threshold, AutomatedSOS system must send the localization acquired through GPS to the ambulance service
* **[G9]: Allow users to keep track of their health status at any time**
  + [R16]: The system must provide a view where the users can see their own health status and the specific threshold values
* **[G10]: Allow users to withdraw the authorisation to third parties to access their data** 
  + [R17]: If a user decides to withdraw the authorisation to a third party to access his own data, the system must notify this third party
  + [R18]: The system must unsubscribe the access to new data by the third parties whose access rights are revoked
    1. **Use Case Diagram**
    2. **Use Cases**
    3. **Sequence Diagrams**
    4. **Mapping on Requirements**
  1. **Performance Requirements**
  2. **Design Constraints**
     1. **Standard Compliance**
     2. **Hardware Limitations**
  3. **Software System Attributes**
     1. **Reliability**
     2. **Availability**
     3. **Security**
     4. **Maintainability**
     5. **Portability**