

Data4Help



**POLITECNICO**  
MILANO 1863

# **Requirement Analysis and Specification Document**

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<b>Download page:</b>	<a href="https://github.com/lucaalexandrelli/AlessandrelliCaraffaBionda.git">https://github.com/lucaalexandrelli/AlessandrelliCaraffaBionda.git</a>
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# 1 Introduction

## 1.1 Purpose

The following Requirements Analysis and Specification Document examines a possible solution for a specific system-to-be provided by the TrackMe company. Therefore, this document contains the description of the scenarios, the use cases that described them, and the models describing requirements and specification for the system-to-be.

Data4Help is a location-based health information service-to-be that allows third parties to monitor the location and health status of individuals. The given problem is to design and develop this service and other two services, AutomatedSOS and Track4Run, which exploit the features offered by Data4Help.

AutomatedSOS is a service-to-be thought to help elderly people. Constantly monitoring the health status of the subscribed customers, this service sends to the user's location an ambulance as soon as the recorded values are anomalous, for example when some health parameters are below certain thresholds.

Finally, Track4Run is a service-to-be that tracks athletes participating in a run. The service, allows organizers to define the path for the run, participants to enroll to the run and spectators to see on a map the position of all the runners during the run.

## 1.2 Scope

### 1.2.1 Goals

- Data4Help

- G.1 Provide to third parties the user's position and health status.

- G.1.1 Provide data on-demand to non-subscribed third parties.

- G.1.2 Provide data in real-time to subscribed third parties.

- G.1.3 Provide data in an anonymous way.

- G.2 Allow third parties two different ways to get user's data.

- G.2.1 Allow third parties to get data of a single person.

- G.2.2 Allow third parties to get data of a group of people.

- AutomatedSOS

- G.3 Locate the user's position.

- G.4 Retrieve the user's health status.

- G.5 Sends an ambulance to the user's location.

- G.5.1 Monitor the user's health parameters.

- G.5.2 Send an ambulance request whenever certain parameters are below the threshold.

- Track4Run

- G.3 Locate the user's position.

- G.4 Retrieve the user's health status.

- G.6 Allow promoters to manage a run.

- G.6.1 Allow promoters to define a path for the run.

- G.6.2 Allow promoters to invite athletes to the run.

- G.7 Allow athletes to enroll on a specific run.

- G.8 Allow spectators to watch in real time the position of every athletes in a specific run.

### **1.2.2 World Phenomena**

... what are world phenomena???

## **1.3 Definitions, Acronyms, Abbreviations**

- **Definitions**

- (a) Individual request: request of data from a specific registered individual.
- (b) Group request: request of data from many individuals.
- (c) Real-time acquisition: third parties can access to data as soon they are ready, through service updates.
- (d) On demand acquisition: third parties can access to data when they request them.
- (e) Subscribers: third parties allowed to receive live acquisition about preselected user/group.
- (f) ?????User credentials: information that an individual has to provide to become a registered user: name, surname, date of birth, address, email, telephone number, job, marital status and fiscal code.
- (g) Third parties' credentials: information that a company has to provide to become a registered one: company name, p.iva.
- (h) Run information: all the information about the run: name, date, promoters, maximum number of participants and path.
- (i) Partner application: external application provided by companies in partnership with TrackMe in order to provide data (position and heath status) to Data4Help service. For example a fitness application developed by an external company can be a partner applications.

## **1.4 Revision History**

... Here you see a subsubsection

## **1.5 Reference Documents**

... Here you see a subsubsection

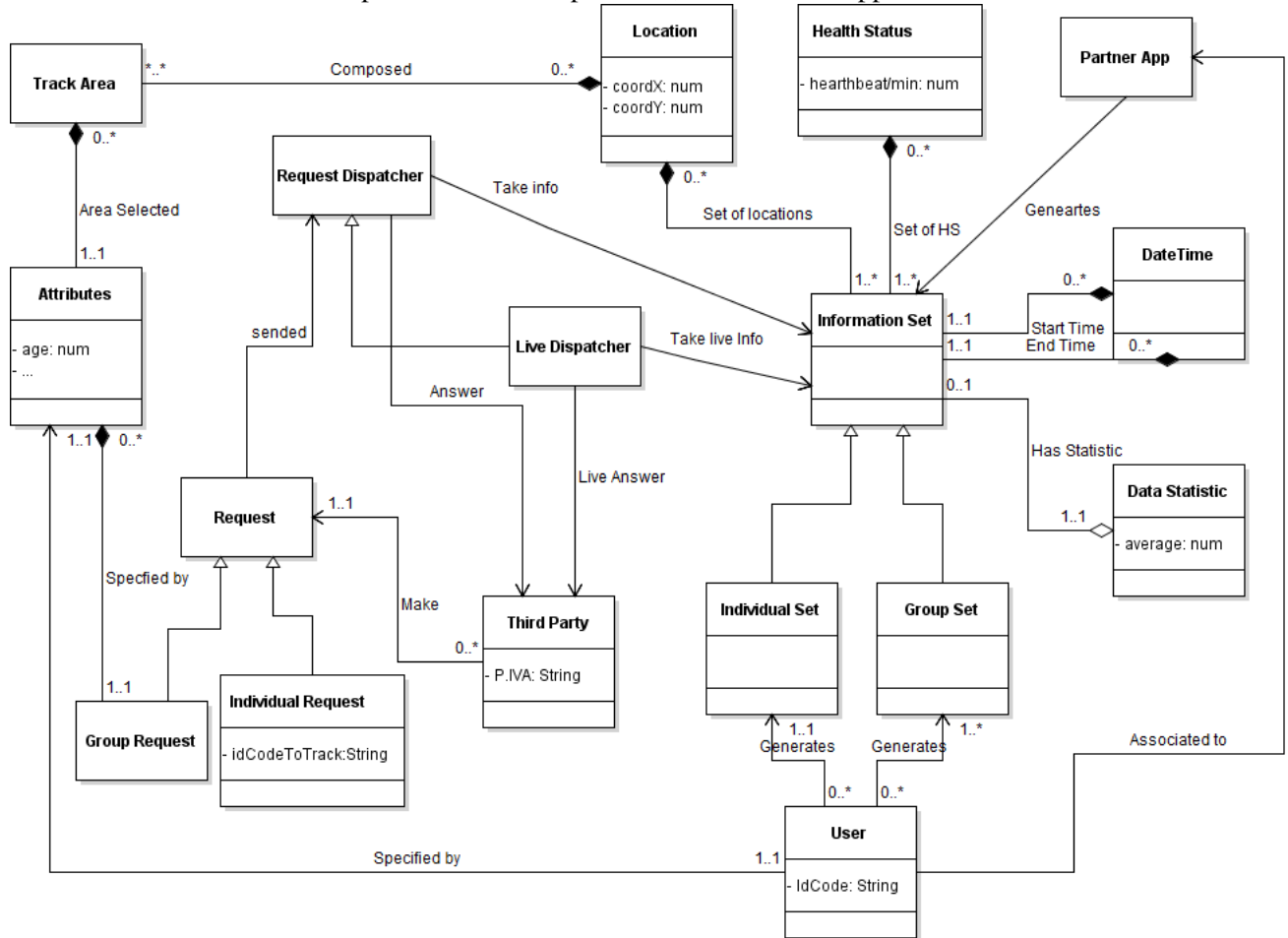
## **1.6 DocumentStructure**

... Here you see a subsubsection

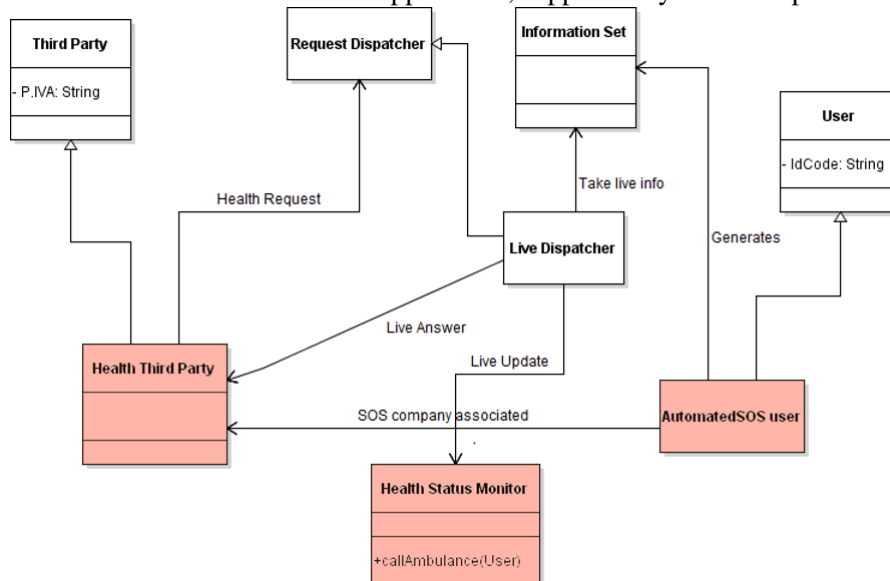
## 2 Overall Description

### 2.1 Product perspective

White class are dedicated to perform Data4Help service, the other two applications are listed below.

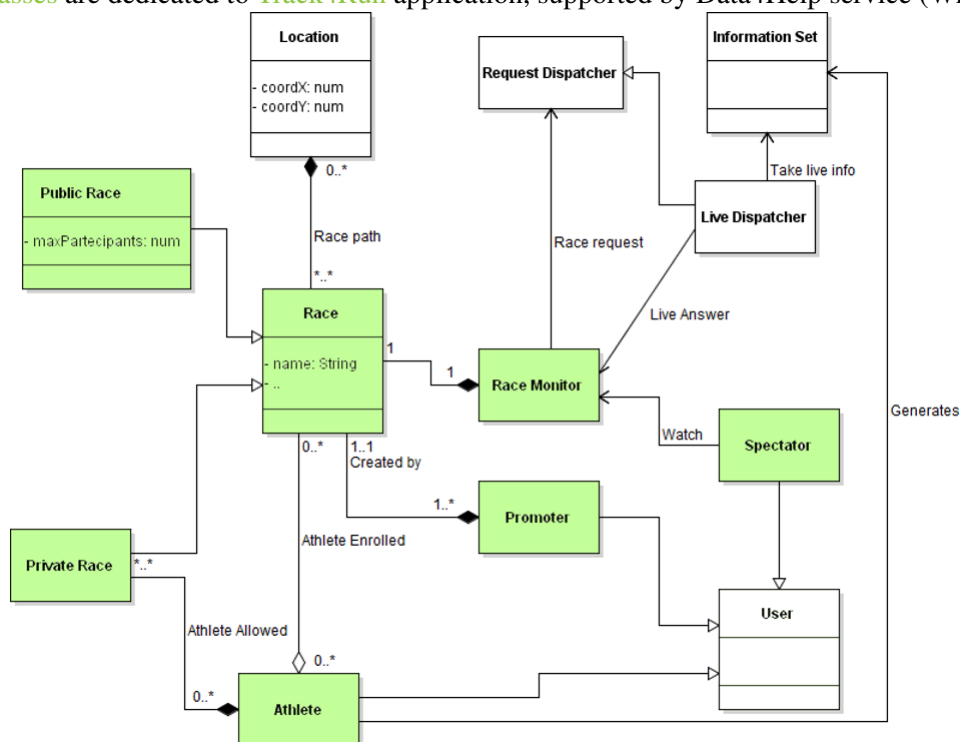


Red classes are dedicated to **AutomatedSOS** application, supported by Data4Help service (White ones).





Green classes are dedicated to **Track4Run** application, supported by Data4Help service (White ones).



## 2.2 Product functions

"Track4Run" The main function of Track4Run is to define the path for the run and

## 2.3 User characteristics

1. Third Party: Registered company interested in retrieve useful data from TrackMe's users. Usually this information can be useful for marketing strategy.
  - (a) Health Third Party: Non-Profit Company interested to monitor individuals in order to prevent critical diseases.
2. User: Individual that provides information about himself. His privacy must be protected by the system.
  - (a) Athlete: Track4Run's user that is enrolled in one or more race.
  - (b) Promoter: Track4Run's user that is the promoter of one or more race.
  - (c) Spectator: Track4Run's user that want follow athletes in one or more race.

## 2.4 Assumptions, dependencies and constraints

In the specification document certain parts were not specific and were ambiguous. So we decided to make the following assumptions.

### 2.4.1 Text Assumptions

- Data4Help

- (a) Users' information are collected from partner applications or from the other two TrackMe applications installed on users' devices.

- (b) Only third parties that are registered to Data4Help can request the monitoring service.
- (c) When the partner application is installed, the user is asked to accept or deny the treatment of retrieved data as information of an individual and not only as information of a group of individuals.
- (d) Individual monitoring requests are not accepted or denied one by one by the specific user. If the user agreed on the treatment of his data as information of an individual all Individual request by third parties are automatically accepted.
- (e) Groups are characterized by its member's attributes (age, gender, city, etc. ...).
- (f) Health status parameters that can be acquired are all the ones supported by a standard smart-watch as: Heart Rate, Blood Pressure, Pedometer, Calories Calculation.

#### • AutomatedSOS

- (a) AutomatedSOS exploit only smartwatches devices to retrieve all the information needed.
- (b) AutomatedSOS is an application that needs to be installed into the user's device.
- (c) All data retrieved by AutomatedSOS are sent to Data4Help.
- (d) In order to keep under systematic review the user's health status all the historical information about the user are received by Data4Help's Database.
- (e) This service can be used only by elderly people (70+) or by who really need it, in order to avoid useless waste of resources.
- (f) Users can see all his personal information that are sent to the Data4Help service.

#### • Track4Run

- (a) When the user register to the application he's asked to accept or deny the treatment of his data by the Data4Help service.
- (b) The application has three functions:
  - i. Promoter: allow the user to manage a run.
  - ii. Athlete: allow the user to participate to a run. In order to be an athlete the request of data treatment by the Data4Help service need to be accepted.
  - iii. Spectator: Allow the user to watch in real time the positions of all the athletes in a given run.
- (c) Any user can organize an event.
- (d) All the events can be spectated by users.
- (e) All users invited to a run can accept or discard the request.
- (f) Race path are always composed by citizen routes (never in private circuits or stadiums)

### 2.4.2 Domain Assumptions

#### • Data4Help

- D.1 ??Is this a domain assumption?? Users' information are collected from partner applications or from the other two TrackMe applications installed on users' devices.
- D.2 The identification (fiscal code, social security number) and the secondary data (attributes) given by the individual during the registration are correct.
- D.3 Devices used to monitor individuals always report correct values.
- D.4 Partner application always report correct values to Data4Help.

D.5 ??Is this a domain assumption?? In order to perform an individual request, third parties have to insert the user's fiscal code or security number.

D.6 Security number and fiscal code are not information given to third parties by Data4Help.

D.8 ??Is this a domain assumption?? In order to perform a group request, third parties have to select attributes that define a set of individuals.

- **AutomatedSOS**

D.3 Devices used to monitor individuals always report correct values.

D.9 The user always wears a smartwatch on which AutomatedSOS is installed.

D.10 The ambulance system is always up and ready to receive messages from AutomatedSOS.

D.11 The ambulance successfully reaches the location of the individual.

D.12 The ambulance always gets to the location in the minimum amount of time.

- **Track4Run**

D.3 Devices used to monitor individuals always report correct values.

D.13 During a run athletes always wear a smartwatch on which Track4Run is installed.

D.14 The path defined by the organizer actually exists.

D.16 If an athlete enrolls to a run then he also participates to the run.

D.17 All athletes have their tracking devices with them for the entire duration of the run.

D.18 Athletes never go out of the defined path.

### 3 Specific Requirements

Organize this section according to the rules defined in the project description.

#### 3.1 External Interface Requirements

##### 3.1.1 User Interfaces

##### 3.1.2 Hardware Interfaces

##### 3.1.3 Software Interfaces

##### 3.1.4 Communication Interfaces

#### 3.2 Functional Requirements

- Data4Help

G.1 Locate user's position on demand and in real time / G.2 Retrieve user's health status on demand and track it in live

D.1.1 Users' information collected are coming from installed app on users' smartphone/smartwatch, that are partner of TrackMe.

D.1.4 Devices used to monitor individuals always work and report the correct values.

D.1.6 Partner application always report correct values as well.

R.1.5 The system in order to collect information has to request and receive data from partner applications installed on users' device.

R.1.1 The system automatically has to collect and store data, for every tracked user, with a resolution of 10 minutes.

R.1.2 The system has to update statistic whenever a data is collected.

R.1.3 When a real time request is performed the system has to collect and store data, for the specific users, with a resolution of 1 minute.

R.1.6 The system has to manage data from different partner applications installed on users' device to optimize data interpolation.

D.1.3 Individuals must always dress a smartwatch (or a smartphone) that retrieve health parameters and user's positions.

G.3 Allow third parties registered to retrieve information about users with single and group requests.

D.1.7 In order to perform single mode acquisition, third parties has to insert fiscal code of tracked user (aka: nor security number neither fiscal code are visible on the application).

R.1.7 Allow third parties to request single mode acquisition providing the fiscal code of interested user.

D.1.8 In order to perform group mode acquisition, third parties have to select attributes of individuals in which they are inserted.

R.1.8 Allow third parties to request group mode acquisition providing the users' attributes which is interested in.

### **3.3 Performance Requirements**

### **3.4 Design Constraints**

#### **3.4.1 Standards compliance**

#### **3.4.2 Hardware limitations**

#### **3.4.3 Any other constraint**

### **3.5 Software System Attributes**

#### **3.5.1 Reliability**

#### **3.5.2 Availability**

#### **3.5.3 Security**

#### **3.5.4 Maintainability**

#### **3.5.5 Portability**

## **4 Formal Analysis Using Alloy**

Organize this section according to the rules defined in the project description.

## 5 Effort Spent

In this section are provided information about how much effort each group member spent in working at this document.

### 5.0.1 Luca Alessandrelli

Date	Task	Hours
18/10/18	Goals	1
19/10/18	Domain Assumptions	3
	<b>Total</b>	4

### 5.0.2 Andrea Caraffa

Date	Task	Hours
18/10/18		
19/10/18		
	<b>Total</b>	

### 5.0.3 Andrea Bionda

Date	Task	Hours
18/10/18		
19/10/18		
	<b>Total</b>	

## 6 References

asdasd