

Data4Help



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Requirement Analysis and Specification Document

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Contents

Table of Contents	3
List of Figures	5
List of Tables	5
1 Introduction	6
1.1 Purpose	6
1.2 Scope	6
1.2.1 Goals	6
1.2.2 World Phenomena	7
1.3 Definitions, Acronyms, Abbreviations	7
1.4 Revision History	7
1.5 Reference Documents	7
1.6 DocumentStructure	7
2 Overall Description	8
2.1 Product perspective	8
2.2 Product functions	9
2.3 User characteristics	9
2.4 Assumptions, dependencies and constraints	9
2.4.1 Text Assumptions	9
2.4.2 Domain Assumptions	10
3 Specific Requirements	12
3.1 External Interface Requirements	12
3.1.1 User Interfaces	12
3.1.2 Hardware Interfaces	12
3.1.3 Software Interfaces	12
3.1.4 Communication Interfaces	12
3.2 Functional Requirements	12
3.3 Performance Requirements	13
3.4 Design Constraints	13
3.4.1 Standards compliance	13
3.4.2 Hardware limitations	13
3.4.3 Any other constraint	13
3.5 Software System Attributes	13
3.5.1 Reliability	13
3.5.2 Availability	13
3.5.3 Security	13
3.5.4 Maintainability	13
3.5.5 Portability	13
4 Formal Analysis Using Alloy	14
5 Effort Spent	15
5.0.1 Luca Alessandrelli	15
5.0.2 Andrea Caraffa	15
5.0.3 Andrea Bionda	15

6	References	16
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List of Figures

List of Tables

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 Collect users' position and health status.
- G.2 Provide to Third Parties users' position and health status.
 - G.2.1 Provide data on-demand to non-subscribed third parties.
 - G.2.2 Provide data in real-time to subscribed third parties.
- G.3 Allow third parties two different ways to get users' data.
 - G.3.1 Allow third parties to get data of a single person.
 - G.3.2 Allow third parties to get data of a group of people.
- G.4 Provide data in an anonymous way, to protect users' privacy.

- AutomatedSOS

- G.5 Retrieve user's position and health status.
- G.6 Allow health-interested third parties the access to data detected by AutomatedSOS.
- G.7 Monitor user's health parameters.
- G.8 Send an ambulance to users' location whenever certain parameters are below the threshold.

- Track4Run

- G.5 Retrieve user's position and health status.
- G.9 Allow promoters to manage a run.
 - G.9.1 Allow promoters to define a path for the run.
 - G.9.2 Allow promoters to invite athletes to the run.
- G.10 Allow athletes to enroll on a specific run.
- G.11 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) Single request: request of data from a specific registered individual.
- (b) Group request: request of data from many individuals.
- (c) Live 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) Race information: all the information about the run: name, date, promoters, maximum number of participants and race path.
- (i) Partner Application: Application installed on users' device, not necessarily developed by TrackMe, that is in charge with retrieve location and health status.

1.4 Revision History

... Here you see a subsubsection

1.5 Reference Documents

... Here you see a subsubsection

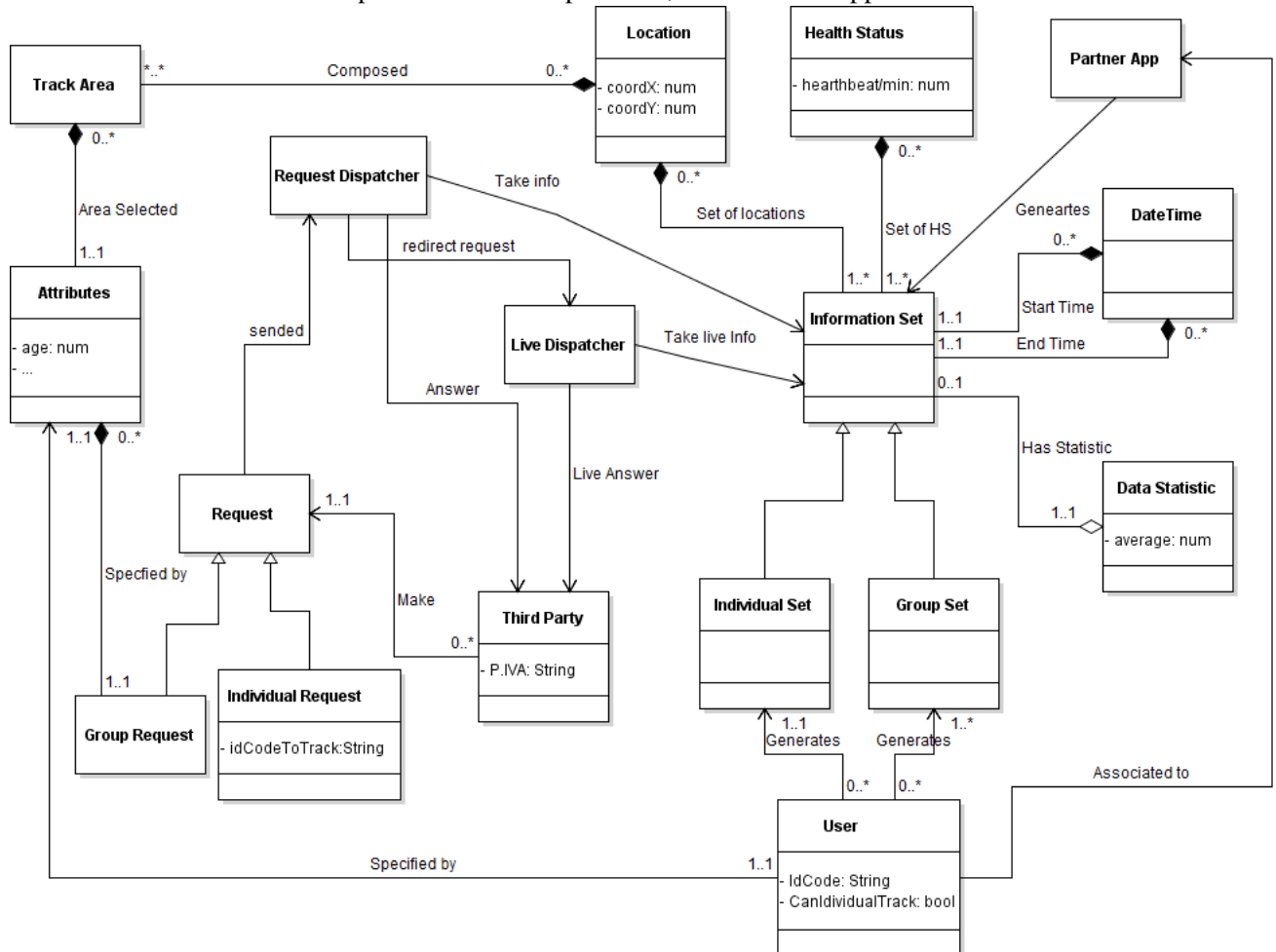
1.6 DocumentStructure

... Here you see a subsubsection

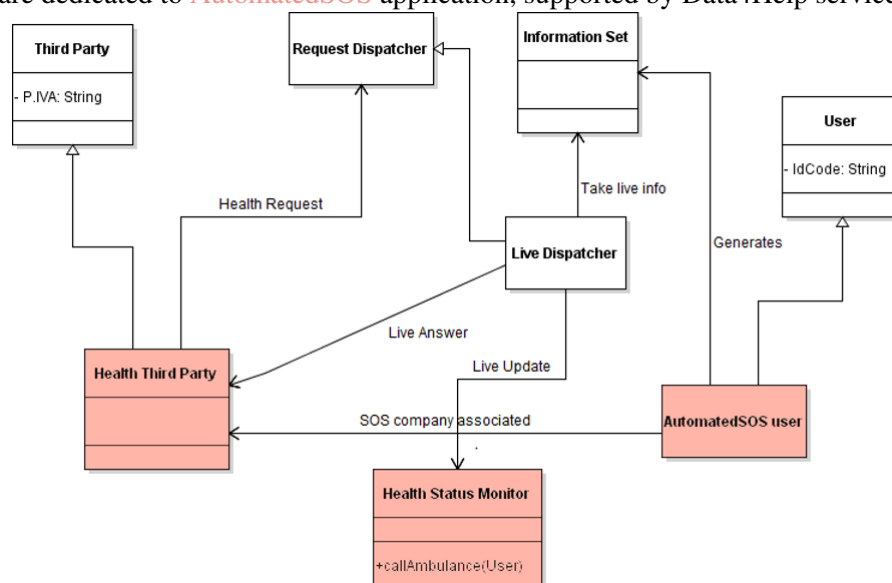
2 Overall Description

2.1 Product perspective

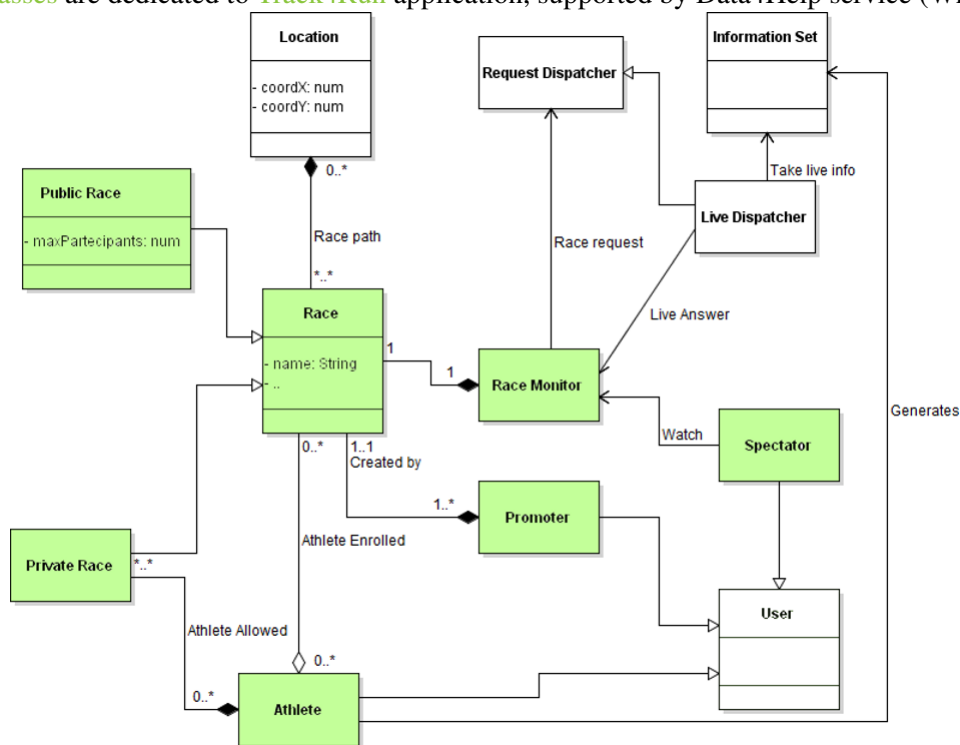
White class are dedicated to perform Data4Help service, the other two applications are listed below.



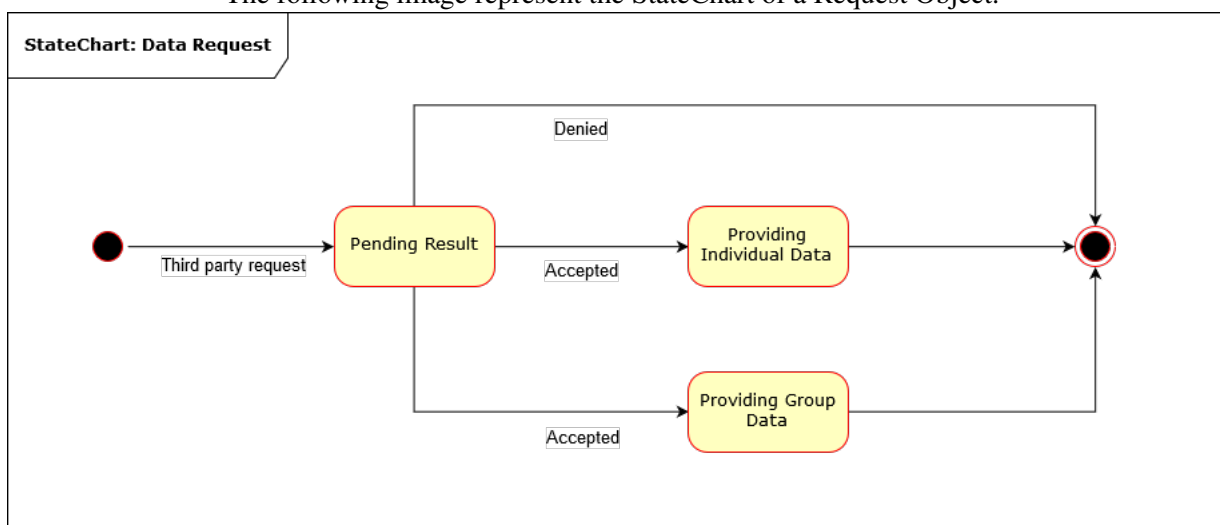
Red classes are dedicated to AutomatedSOS application, supported by Data4Help service (White ones).



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



The following image represent the StateChart of a Request Object.



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) All the partner applications require to submit user credentials.
- (c) When the partner application is installed and credentials are submitted the user is required to accept privacy policy, composed in two parts:
 - i. The first, mandatory, user accept to be tracked in group mode.
 - ii. The second, optional, user accept to be tracked in single mode.
- (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 (second part of privacy policy) all Individual request by third parties are automatically accepted.
- (e) Only third parties that are registered to Data4Help can request the monitoring service.
- (f) Groups are characterized by its member's attributes (age, gender, city, etc. ...).
- (g) 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 Users' information are collected from partner applications or from the other two TrackMe applications installed on users' devices.
- D.2 All the partner applications require to submit user credentials.
- D.3 The identification (fiscal code, social security number) and the secondary data (attributes) given by the individual during the registration are correct.
- D.4 Devices used to monitor individuals always report correct values.
- D.5 Partner application always report correct values to Data4Help.
- D.6 In order to perform an individual request, third parties has to know the user's fiscal code or security number.
- D.7 Security number and fiscal code are not information given to third parties by Data4Help.
- D.8 Live acquisition lasts 24 hours to reduce waste of resources.

- AutomatedSOS

- D.4 Devices used to monitor individuals always report correct values.
- D.9 The user always dresses 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 reach the location of the individual.
- D.12 The ambulance always get to the location in the minimum amount of time.

- Track4Run

- D.4 Devices used to monitor individuals always report correct values.
- D.13 During a run athletes always dress a smartwatch on which Track4Run is installed.
- D.14 The path defined by the organizer actually exist.
- D.16 If an athlete enroll 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 Collect users' position and health status.

- D.1 Users' information are collected from partner applications or from the other two TrackMe applications installed on users' devices.
- D.2 All the partner applications require to submit user credentials.
- D.3 The identification (fiscal code, social security number) and the secondary data (attributes) given by the individual during the registration are correct.
- R.1 Retrieve user credentials inserted into partner application as group attributes.
- R.2 Allow individuals to become registered users when policy is approved (first part). Registered users, now, can be tracked in group mode request.
- R.3 Allow individuals to specify, during registration, if they are also interested to be tracked in single mode request (second part).
- D.4 Devices used to monitor individuals always work and report the correct values.
- D.5 Partner application always report correct values to Data4Help.
- R.4 The system has to correctly receive data from partner applications installed on users' device.

G.2 Provide to Third Parties, the users' position and health status.

- R.5 Allow third parties registration to Data4Help service, where they have to specify all their credentials.

G.2.1 Provide data on-demand to non-subscribed third parties.

- R.6 For each user registered, the system has to automatically retrieve and store data from partner applications with a resolution of 10 minutes.
- R.7 The system has to collect inside his database all the useful information that match the request.
- R.8 The system has to send to applicant all the data already collected.

G.2.2 Provide data in real-time to subscribed third parties.

- D.8 Live acquisition lasts 24 hours to reduce waste of resources.
- R.9 Allow third parties subscription to interested group in order to receive live data.
- R.10 When a real time request is performed the system has to collect and store specific users' data with a resolution of 1 minute.
- R.11 Provide to subscribed third parties data as soon as they are available by the system.

G.3 Allow third parties two different ways to get users' data.

G.3.1 Allow third parties to get data of a single person.

D.6 In order to perform an individual request, third parties has to know the user's fiscal code or security number.

D.7 Security number and fiscal code are not information given to third parties by Data4Help.

R.12 Allow third parties to insert fiscal code of user that want to track.

R.13 Deny third parties to receive information about users that have not accepted second part of privacy policy.

R.14 Collect all the useful information retrieved by Data4Help that are produced by the interested user and send them to request applicant.

G.3.2 Allow third parties to get data of a group of people.

R.15 Allow third parties to insert attributes in which they are interested to restrict their field of search.

R.16 Deny third parties to receive information if the provided information can hurt users' privacy, for this purpose group request under 1000 users involved are rejected.

R.14 Collect all the useful information retrieved by Data4Help that are produced by the interested users and send them to request applicant.

G.4 Provide data in an anonymous way, to protect users' privacy.

R.13 Deny third parties to receive information about users that have not accepted second part of privacy policy.

R.16 Deny third parties to receive information if the provided information can hurt users' privacy, for this purpose group request under 1000 users involved are rejected.

- **Data4Help**

G.5 Retrieve user's position and health status.

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
	Total	4

5.0.2 Andrea Caraffa

Date	Task	Hours
18/10/18		
19/10/18		
	Total	

5.0.3 Andrea Bionda

Date	Task	Hours
18/10/18		
19/10/18		
	Total	

6 References

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