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RASD

RASD of Data4Help, AutomatedSOS and Track4Run

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# 1. Introduction

## 1.1 Purpose

This is a Requirement Analysis and Specification Document (RASD) which purpose is to describe the goals, requirements and domain assumptions of the system. It will contain the non-functional limitations and general use cases to better describe the client’s needs and the typical usage of the application. This document will be used by the developers of the software during the implementation phase but also during analysis, testing and contractual discussions.

Data4Help general purpose is to give access of health status information to third parties either about groups or single individuals. The application should ensure tracked client’s privacy and anonymity and also allow third parties to subscribe to certain request and receive new data as soon as they are updated. In general, third parties, such as big companies, could use this system to gain a better general knowledge of possible clients’ needs and habits to improve their business. On the other hand, it could be used by individuals that have the desire to monitor the status of an elderly parent or a child, given the permission of the latter individuals.

AutomatedSOS will use the same data acquired by Data4Help with the goal of helping elderly people in need of immediate medical aid. The system will work by analysing the data obtained and checking the health parameters continuously. This should provide help for people in need way faster than they would have received without this system.

Track4Run will, as well as AutomatedSOS, use the features offered by Data4Help. The purpose in this case is to be able to track participants during a run. The system should also allow organizers to choose a path for the run and let spectators follow the athletes position on a map during the race.

### 1.1.1 Goals

1. Third parties can request access to data of some specific individuals
2. Third parties are allowed to request access to anonymized data of groups of individuals
3. Third parties can access the data of specific individuals
4. Third parties are able to access anonymized data of groups of individuals
5. Subscribed users are given the choice to accept or refuse third parties’ requests to access their data
6. To subscribed users is guaranteed anonymity
7. Subscribed costumers receive immediate help when they are displaying serious medical conditions
8. Spectators are able to know the position of the athletes on the path of the run

## 1.2 Scope

### 1.2.1 Description of the given problem

Data4Help is a service that acquires data from subscribed individuals, after asking for their consent, using devices such as smartwatches or similar. Third parties can also benefit from this service. After registration, they can formulate two types of request. The first one is to access the data of a single individual: for this request the application gives the user the freedom to accept or refuse the request. The second request is to access the data of a group of individuals, in this case it’s the application that gives the access to the data and must deny it if the number of individuals is below 1000 (the anonymity could not be guaranteed in this scenario). The application also gives third parties the possibility to subscribe to receive new data as soon as they are available.

TrackMe, through another service, called AutomatedSOS, gives the possibility to elder subscribers to receive immediate help in case of need. This application detects if the user’s parameters are below a certain threshold and immediately contacts a medical center to send an ambulance to the exact location of the subscriber.

Another application created by TrackMe is Track4Run. This service allows spectator to track participants in a run using their position on a map. This application allows organizers to create a path for the run and participants to register to the run.

### 1.2.2 World, shared and machine phenomena

* World phenomena:

1. Third parties monitor health status and location of individuals
2. Individuals agree to provide their data to TrackMe
3. Third parties access to data of individuals (who agreed to give them)
4. Third parties access to data of groups of anonymous individuals
5. Third parties recognize an individual by his/her CF or SSN
6. Organizers define the path of the run
7. Runners enroll to a run
8. Users see on a map the runners’ position

* Shared phenomena:

1. Registration of individuals
2. Registration of third parties
3. Users’ data acquisition through smartwatches or similar devices
4. Forwarding of a third party’s request of access to personal data to a specific user
5. Users accept or refuse the requests from third parties
6. Let the previously saved user’s data available to third parties (if the request of access is   
   approved)
7. AutomatedSOS acquires health status data of its users from Data4Help
8. AutomatedSOS sends an ambulance in the location of its users (if their health status values are

below a certain threshold)

* Machine phenomena:

1. Request to access to anonymous groups data are approved or disapproved by TrackMe’s systems on the base of certain conditions
2. AutomatedSOS analyses users acquired data
3. AutomatedSOS sends requests to external medical service for an ambulance when the data go below the threshold

## 1.3 Definitions, Acronyms, Abbreviations

### 1.3.1 Definitions

* **Individual**: user of the application whose health status is monitored.
* **Third party**: user of the application who requests health status data acquired from individuals.
* **Data Acquisition Device:** device that can provide data about the health status of an individual.
* **Individual Request**: request (advanced by a third party) to get access to a specific individual’s data about his/her health status. In this case the identity of the individual is shown to the third party.
* **Group Request**: request (advanced by a third party) to get access to health status data of anonymous group of individuals.
* **Runner**: *individual* who has subscribed himself to a run.
* **Organizer**: user of the application who organises a run by defining a path.
* **Spectator**: user who can see the position of runners through the application.
* **Path**: path of a run.

1.3.2 Acronyms

* RASD: Requirement Analysis and Specification Document
* API: Application Programming Interface
* GPS: Global Positioning System
* DAD: Data Acquisition Device

### 1.3.3 Abbreviations

* [Gn]: nth goal
* [Dn]: nth domain assumption
* [Rn]: nth functional requirement

## 1.4 Document Structure

1. **Introduction**: this part presents *purpose* and *scope* of the applications Data4Help, AutomatedSOS and Track4Run. The applications goals are listed and described. In this section there is also an analysis of world, shared and machine phenomena that concerns these applications.
2. **Overall description**: further details about shared phenomena and model domain are provided. Also, most important requirements and domain assumptions are defined. The aim of this part is to focus user needs and to give an overall description of the application’s model.
3. **Specific Requirements**: all aspects presented in the previous section are more deeply analysed in this part. All application requirements are listed and their link with goals and domain assumptions is stressed. Use cases are defined, and most important cases are analysed with the support of diagrams. Hardware and software interfaces are analysed. Constrains and limitations of the application are identified; necessary software attributes are enlightened.
4. **Formal Alloy analysis**: More relevant and critical parts of the model described in the previous sections are deeply analysed in this part with the use of Alloy.
5. **Effort spent**: this part lists for each member who worked at this document the number of hours dedicated to each section.
6. **References**: external resources used in the development of the current document.

# 2. Overall Description

# 3. Specific Requirements