POLITECNICO
MILANO 1863

TrackMe project - Argiro Anna Sofia, Battaglia Gabriele, Bernardo Casasole

Requirement Analysis and Specification Document

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Contents

1 Introduction

1.1 Purpose

1.1.1 Goals

G1 Monitor the location and health status of users

G2 Third parties can request the saved data

G3 Third parties can subscribe to the data to receive it as produced

G4 Third parties can request data on specific users

G5 The users can approve or deny the specific request for their data

G6 Third parties can request data on groups on individuals

G7 The data on groups must be properly anonymized

G8 Call the ambulance if the system detects a critical health condition

G9 Users can organize running competition

G10 Organizators can monitor the enrols or cancel a comeptition.

G11 Users can enrol in existing running competition as competitors

1.2 Scope

The service Data4Help is designed to monitor the location and health status of individual registered to it using wearable devices. Upon registration the users agree to the acquisition and usage of data by TrackMe. The collected data is available to third parties to request after registering to Data4Help. The first possibility is requesting data on a specific individual, for which it is required an identification of the user; The second possibility is accessing anonymized data on groups of users, so the system will have to allow third parties to filter the users by age, geographic area, weight, etc. while keeping the data anonymized. For both possibilities third parties can simply acquire the data stored or subscribe to receive the data as soon as it is produced. AutomatedSOS is a service designed to provide emergency health support(?) for elderly people, to integrate on top of Data4Help. Those users parameters about blood pressure, heartbeat and blood oxygenation are constantly checked: whenever they represent a critical health condition, AutomatedSOS, within 5 seconds from the drop of those values, contacts an emergency service asking to send an ambulance at the user location. The main purpose of the Track4Run is to support running competition organizer and jogging lovers in convening great sport events with little effort. Namely Track4Run is a service-to-be focused on organizing running competition and on monitoring competitors. A user of Track4Run will also have to be a user of Data4Help.

Users will be able to:

- organize a running competition specifying time, path of the competition, restrictions on participants and message for who wants to enroll and, once organized, see the enrolled users;
- cancel a race they have organized and be notified if a race they are enrolled to is canceled;
- discover new nearby races upon their creation;
- search for organized races and register to compete in a future race or spectate an ongoing race.

During the race:

- the competing and the spectating users will be able to see the name and positions of the participants;
- the system must be able to distinguish between actual participants and users who registered to the race but are not competing, simply checking if their position is on the race path.

1.3 Definitions, Acronyms, Abbreviations

Definitions:

- *User*:
- *Third Party [TP]*:
- *Emergency Service [ES]*:
- *Race Organizer [RO]*:
- *Race Spectator [RS]*:
- *Race Participant [RP]*:
- *Monitor*:

1.4 Revision history

1.5 Reference Documents

1.6 Document Structure

2 Overview

2.1 Product perspective

2.2 Product functions

2.2.1 Data management

The users will be able to enter the data they are willing to share into the system. Data4Help will grant access to their data to third parties if requested anonymously. If not, it will warn the user a third party is questing access and ask for their approval; furthermore, the system will keep a record of third party subscribed to their data and it will allow the user to cancel the approval.

2.2.2 Data access

The Data4Help system will allow registered third parties to request saved data on users. Data4Help will allow them to request access to specific data on a user after providing a proper identification of the individual; it will notify them after the request is sent and when the user decides upon its approval. Third parties will be able also to request anonymized data by specifying a group of people according to relevant filters as age, weight, geographical area, etc. Data4Help will analyse the request and decide whether it is possible to properly anonymize the requested data and will notify the third party upon its decision. If possible, will grant access to the requested data.

2.2.3 Data subscription

The Data4Help system will allow registered third parties to subscribe to data on users. This service will provide data as soon as it is produced to the third party without the need for constants approvals. In case a third party subscribe to have live data for a specific user the system will act as with a stored data. If the user cancels a previously granted access Data4Help will warn the third parties that had access to those data.

2.2.4 Emergency call

The Data4Help system will be able to forward a request for help to the Emergency Service within 5 seconds from the moment AutomatedSOS detects a dangerous drop in health parameters values. The Emergency Service takes charge of the request and sends an ambulance.

2.2.5 Running competition organization

The Track4Run system will allow users to organize running competition. It will require to a RO:

- time of the competition
- path of the competition
- restrictions on participants
- an optional message for who wants to enroll

The system provides the RO with data on the enrolled users.

2.2.6 Running competition monitoring

The Track4Run system will allow users to monitor a running competition; it is mandatory for a RS to subscribe to the race as a spectator. The system will provide the RS with names and real-time position of all the participants.

2.2.7 Running competition enrolling

The Track4Run system will allow users to enrol to an already existing competition. Track4Run will provide participants them with the final ranking and their personal data throughout the run: rate per kilometer, instantaneous speed, the missing and ran distance, the position.

2.3 User charateristics

- *Visitor*: a person, third party or user, that has not registered in yet and has access only to registration.
- *User*: every registered person from whom the system collects location and health data. The user has access to all data collected since his registration and to the AutomatedSOS and Track4Run services.
- *Third parties*: every entity registered with the purpose to request data from Data4Help for external use.
- *Emergency service*: external participant that receives and take charge of the request for help sent by AutomatedSOS.

2.4 Assumptions, dependencies and constraints

D1 Data provided by the user on themselves are correct

D2 The kinds of data collected on the users health conditions is comprehensive and enough to determine their health status

D3 The device collecting the data is accurate enough

D4 The device can successfully contact the Emergency Service 24/7

D5 Emergency Service takes charge of every request sending an ambulance

D6 The ROs organize only authorized running competitors, respecting laws and common sense

3 Specific Requirements

4 Formal Analysis Using Alloy

5 Effort Spent