Progetto di ingegneria del software (5 CFU) 2017/2018

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1 Introduction

1.1 Purpose

The Data4Help system is designed as a distribute software application which can be installed on smartwatches, smartrings and smartphones that dispose of a NFC sensor and a GPS system inside for monitoring the position and the health of the owner. This application is thought for all people that want to keep under control their health during the day or who want to always know the position and the status of health status of a particular person in the world. Indeed, with this system a third party user can send a request to access data of some specific user, by means of his social security number: if the receiver agrees, it is possible to see in real time the last information registered about that person. The service supports the registration of individual who, by signing in, agrees that the company TrackMe acquires their data, which will be used anonymously by third parties for making statistics on groups of people.

Furthermore, in addition to the previous features, an AutomatedSOS service is available. It is thought for people that have serious health problems and, in case of illnesses (i.e. some parameters observed below the threshold), the system contacts, within 5 seconds, an ambulance. Secondly, the Track4Run service is also available. It is developed for organizers of sport events that want to monitor the runners in a race. The service allows organizers to define the path of a run, participants to enroll in the run, and spectators to see the exact position of all runners during the run on a map.

1.1.1 Goals

The goals can be distinguished into two families: the former regarding the users, and the latter regarding the third part customers.
The ones regarding the subscribed users, are the followings:

[G1] Allow a subscribed user to share his location and health status to third parties of his choice

[G2] Once the health parameters of a subscribed user have been observed below the threshold, an ambulance is sent to the user location. (requires further specifications and assumptions: e.g. who owns the ambulances?)

[G3] The time experienced between the moment in which the health parameters of a subscribed user are observed below the threshold and the time in which the ambulance is sent to the user location is equal or less than 5 seconds.

[G4] Allow a subscribed user to enroll in a run, as athlete

[G5] Allow spectators too see on a map the positions of all athletes taking part in a run

[G6] Allow an organizer to set up a run, by defining its path

The goals of the project, regarding the third part customers, are the followings:

[G7] Allow a third party to access the data on a certain individual, only if he accepts. This is satisfied as soon as the request is approved

[G8] Allow a third party to access statistical and anonymized data on group of individual greater than 1000. This is satisfied as soon as the request is approved

[G9] Allow a third party to subscribe to non-existing data. They will have access to them, as soon as the data is generated.

1.2 Scope

As already mentioned, the basic Data4Help service allows to monitor the position and the health status of individuals. When you sign up to the service you agree the application's contract that permit the acquirement from TrackMe company of the data from your device and store them into the system. Each ten second your device sends data to Data4Help servers that save them into the system, if your device go offline, on the server there will be the last available data.

The most probably people interesting in this service are parents or, in general, the people that have a particular attention at their health and to the health of their family or their close friends.Indeed this application allows to the parents to monitor their children when they are impossibility to stay with them. Moreover Data4Help permits to the users to see constantly their health status in order to be consciousness of owner condition, thus keeping patients regularly updated on their progress and providing proactive measures for better health control. For being able to see the status of a appointed individual, you must before send a request of sharing data by using the form provide by the system. In the form you must specify the social security number of the individual and a brief description of the motive whereby you send the request. The receiver obviously can accept or reject the request in according to the sender or the motive described. If the receiver accepts the request, you can see his data with the date of the registration into the system.

In addition the AutomatedSOS service result to be particularly helpful for old people that are more subjective to health problem and thanks to this instrument they can be assisted in every moment of the day. When the health parameters go down under the standard the system autonomously within 5 second calls the 118 number for providing an ambulance. The ambulance is manage by the owner of the vehicle (hospitals, onlus and privates) and it intervenes within the timing defined by the state. TrackMe, with this feature, hopes to help hospitals and private specialists to save lives. Data4Help provides different type of diagnostic procedures: blood pressure monitoring, pulse, and blood oxygen saturation levels.

The GPS system is exploited more by Track4Run feature which allow to third parties organizer to define the path for the run and to manage both participants and spectators during the race. For using this system the organizers must post the race events, with the description and the timetable, on the application. Then all the interest people both runner and spectators must sign up to the race in their specific section (runner or spectator). During the registration you accept to share your data during the competition. The day of the event at the defined time the application automatically ability the monitoring of the runner and the spectator can follow the race on their smartphone, while the organizers in addition to the runner position can see the health status for intervening in case

of illness. Note that the possibility of downloading data from the Track4Run service is allowing only during the competition.

The TrackMe company business concern in the sale of anonymous data for statistic company, which can request data both the health statuses and the position on the specific groups of people, for example people over 40. The company police prevents that third parties successes to find the real owner of the data. Indeed a request from the statistic company can be accept only if the group of people involved are more than 1000.

1.3   Definitions, Acronyms, Abbreviations

1.4   Revision history

1.5   Reference documents

1.6   Document structure

2 Overall Description

3   Specific Requirements

4 Formal Analysis using Alloy

5 Effort Spent

6 References