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TrackMe

R.A.S.D.

Requirements Analysis & Specifications Document

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Contents

Chapter 1

Introduction

1.1 Purpose

The purpose of this document is to provide a complete description of the systems Data4Help, AutomatedSos, and Track4run, through the analysis of the problems, the listing and presentation of the goals, constrainsts, phenomena, domain assumptions and models with the aim of provide to the stackholders a complete overview of the project.

Goals of Data4Help:

[G 1.1] The user can be recognized by providing his cf and password

[G 1.2] A third part can be recognized by providing his username and password

[G 1.3] Allow a registered user to manage the accesses to his personal data

[G 1.4] Allow a registered user to visualize his actual health parameters and position

[G 1.5] Allow a registered user to visualize his past data history

[G 1.6] Allow a third party to send an authorization request to an user for the access to its data

[G 1.7] Allow a third party to to request the latest data available of a registered user

[G 1.8] Allow a third party to request a subscription to the data of the registered users

[G 1.9] Allow a third party to request anonymazed data of a set of users

[G 1.10] Allow a third party to visualize the available data through useful statistics

Goals of AutomatedSos:

[G 2.1] Communicate to SSN the health status of individual in critical situations

[G 2.2] The system will interface with SSN IT insfrastructure in order to guarantee an optimal support

[G 2.3] The system finds the nearest emergency ward based on the user location

Goals of Track4Run:

[G 3.1] Organizers can define a path for a run

[G 3.2] Registered users can enroll to a run as participants

[G 3.3] Registered users can visualize the List of planned runs

[G 3.4] Registered users can visualize on a map the positions of the participants in a run

1.2 Scope

The aim of the project is to develop a software-based application for the company TrackMe that provides three different services: Data4Help, AutomatedSOS and Track4Run. Data4Help collects data of individuals through smartwaches and similar devices. Registered users can visualize their data through useful statistics, while third parties can acces said data, after authorization, in real time to monitor the location and health status of a single individual, or a set of individuals in an anonymized way. AutomatedSOS offers a personalized and non-intrusive SOS service to elderly people. Lying on the data collected by Data4Help, it detects anomalies in the health status of the individual. When necessary, the nearest emergency ward is alerted, allowing the dispatch of an ambulance as soon as possible. Track4Run is a platform that allows the organization of local runs. Users can create a new run, setting a predeterminate path. Partecipants can enroll to the run and invite other users to join them. The service uses Data4Help data to show the position of the partecipants on a map, allowing all the users to follow the run live on their devices.

1.3 Definitions, Acronyms, Abbrevations

In this part of the RASD Document there are some definitions, acronyms and abbreviations that will be used among the following chapters.

1.3.1 Definitions

- **The Software:** when referring to *The Software*, this document refers to the entire system infrastructure, at implementation and design level.
- **User:**When referring to *The User*, we refer to a logged- in user, since the software is usable only by a recognized user.

1.3.2 Acronyms

- R.A.S.D: Requirements Analysis and Specifications Document
- A.P.I: Application Programming Interface

1.3.3 Abbrevations

These abbreviations will be used both in this document and in the follows documents

- [G k]: The k-th goal
- [D k]: The k-th Domain Assumption
- [R k]: The k-th Functional Requirement

1.4 Document Structure

This document is divided into 5 sections:

- Introduction:

- Overall Description
- Specific Requirements
- Formal Analysis using Alloy
- Effort Spent

1.5 Revision History

1.6 Reference Documents

- Specification documents: *Assignments AA 2018-2019.pdf*
- 29148-2011 - ISO/IEC/IEEE International Standard - Systems and software engineering – Life cycle processes –Requirements engineering
- Alloy Language Reference

Chapter 2

Overall Description

2.1 Product Perspective

1)Immagine con shared phenomena

2)This is the uml model of the whole system, based on a class diagram:

3)State charts:

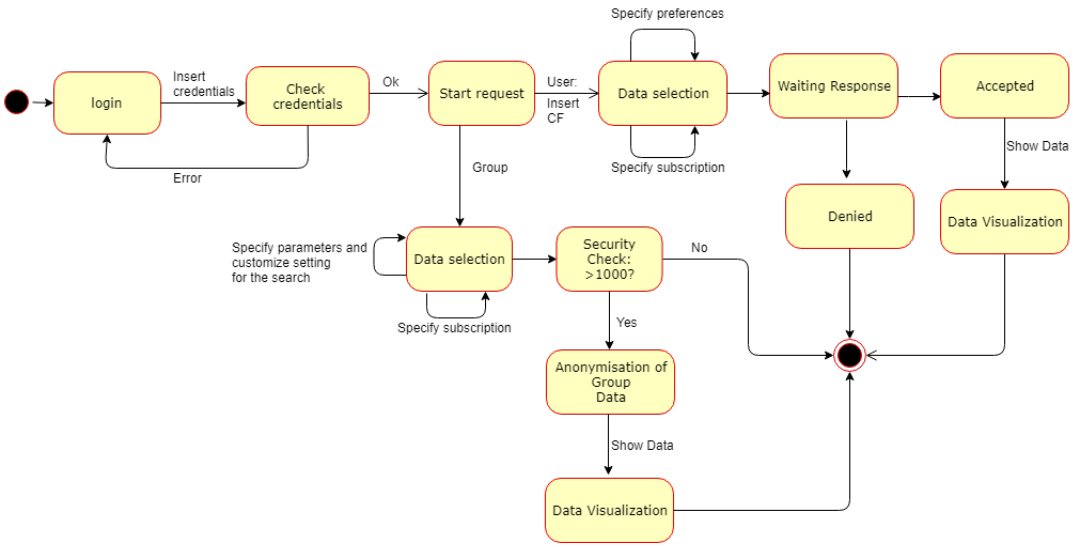

chart 1.png

Figure 2.1: State chart *Data4Help* System

This is a backgroud service that runs in order to keep track of the health status of each user, and notify the SSN in case of Emergency

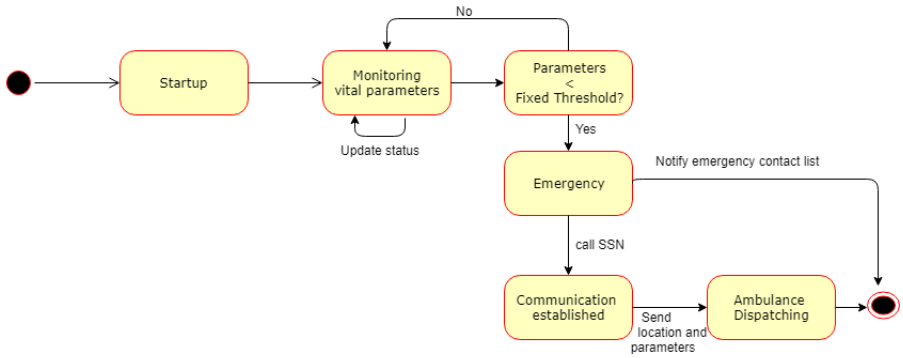

chart 2.png

Figure 2.2: State chart *AutomatedSos* System

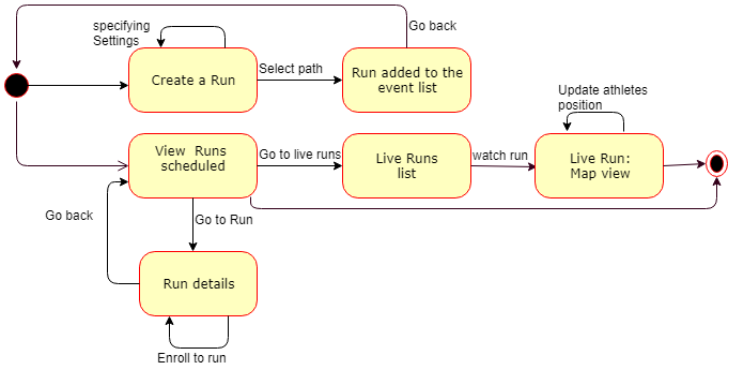

Figure 2.3: State chart *Track4Run* System

2.2 Product Functions

Here we list the main requirements, concerning each goal.

Data4Help:
G1)The user can be recognized by providing their cf and password

R1)The user have to specify its data at registration time: first name, surname,his fiscal code, age, city, wheight and height

G2)A third party can be recognized by providing his username and password

R1)The third party have to specify its data at registration time: company name, VAT number, address

G3)Allow a registered user to manage the accesses to its personal data

R1)The user receives in real time requests on its data from the third parties

R2)The Request can be accepted or denied by the user

R3)The user can see the specific type of data requested from the third part

G4)Allow a registered user to visualize its actual health parameters and position

R1)The user must be able to see its position on an interactive map

R2)The position must be update in real time (around 5 seconds) ??

R3)The system provides the latest health and location data available

G5)Allow a registered user to visualize its past data History

R1)the system asks the user what kind of data hewants to see

R2)The data are presented in the order specified by the user

R2.1)The system provides two grouping options: time and location

R3)A manual research on its own data history can be performed by the user

R3.1)The user can customize its search specifying the time or location range

G6)Allow the third parties to request the access to the data of a registered user

R1)the system asks to insert the fiscal code of the specific user

R2) the third party is asked to specify the type of data to be requested

R3)The system notify the user about the request R4)The system notify the third party as soon as the response is available

G6.1)Allow the third party to request only the latest data of a registered user

R4)if the request is accepted by the user, the system will provide the third party with its latest available data

G6.2)Allow a third party to request a subscription to the data of the registered users

R5)the third party can define the interval between updates for each specific parameter

R6) If the request is accepted by the user, the system will provide the third party with periodic updates

G7)Allow a third party to request anonymazed data of a set of users

R1) The third party is asked to specify the type of data to be requested

R2)The data requested will be chosen among those that match the preferences specified by the third party: age range, geographical area, localization, gender, weight, height

R3)The requested is allowed only if the number of users that match the preferences is more then 1000

R4)The data are anonymazed to prevent the possibility of a misuse of data

G7.1)Allow the third party to request only the latest data of the set of user

R7.1)If the request is allowed, the system will provide the third party with its latest available data on group

G7.2) Allow a third party to request a subscription to the data of the set of user

R7.2.1)the third party can define the interval between updates for each specific parameter

R7.2.2) If the request is allowed, the system will provide the third party with periodic updates on the group

G8) Allow a third party to visualize the available data through useful statistics

R1)The system provides the third party with different graphical representations of the available data

AutomatedSos:

G1) SSN is alerted when the user gets in a critical state

R1)the system continuosly keep track of the vital parameters of the user

R2)The system Communicate to SSN the health status of individual when parameters are below certain thresholds

R3) The system retrieves from its database the right emergency number for the geographical area based on the user's location

R4) The system calls the emergency number, communicates the vital parameters and the actual location of the user, and asks the dispatch of an ambulance

(D1)the threshold value will be provided by a medical authority) ??

G2)Allow the user to create a list of contacts to be alerted in case of emergency

R1)The system sends a message to all the numbers on the specified list in case of emergency

R2)the user can customize the text message to be sent

R3) If there is not a customize text message, the system will send a default message

Track4Run:

G 1) Organizers can define a path for a run

R1)the system asks the organizer to select a starting and finishing point for the run

R2)The organizer can add intermediate points that will be part of the path

R3)The system relies on an external service to provide the interaction with a map

R4)The system calculates the shortest path that includes all the points selected by the organizer

R5)The system asks the organizer to specify the maximum number of partecipants

R6)After being created, the run is added to the list of the scheduled runs

G 2) Registered users can visualize the List of planned runs

R1) the system shows only future runs

R2) A manual search can be performed by the user specifying the location range and the minimum/maximum distance

R3)The system provides the list of runs ordered by time and user's location

R4) The system provides a list of live runs

G 3) Registered users can enroll to a run as participants

R1) the system allow to enroll to a run only if there are available entries

R2)the system sends an email to the user's email address with the information related to the run and the ticket (bib number)

R3)the user is notified through email updates if there are changes until the day of the run

G 4) Registered users can visualize on a map the positions of the participants in a run

R1) The positions on the map are updated in real time

R2) The system shows the number of online visitors

2.3 User characteristics

The main users of Data4Help are third parties interested for various purposes in collecting and analyzing of user's data. Customers are users of all kinds, who want to keep track of their data in time and take advantage of the service derivative from the analysis of these.

The users of SosAutomated are people who decide to rely to this service essentially for a security factor, to be assisted in case of emergency.

The user of Track4Run are sports lovers who concerned in planning, partecipating and follow live runs.

2.4 Assumptions, dependencies and constraints

Domain Assumptions:

[D.1] The user's device collect the data through sensors

Chapter 3

Specific Requirements

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: Use Case Diagram and Scenarios description

3.3 Performance Requirements

3.4 Design Constraints

3.4.1 Standards compliance

3.4.2 Hardware limitations

3.4.3 Any other limitations

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

Chapter 4

Formal Analysis using Alloy

Chapter 5

Effort Spent