Politecnico di Milano

Master's Degree in
Computer Science and Engineering

Software Engineering 2

Data4Help and AutomatedSOS

Requirements Analysis and Specification Document

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1 Introduction

1.1 Purpose

This is the Requirement Analysis and Specification Document (RASD) of `Data4Help` and `AutomatedSOS` services, commissioned by TrackMe company. We will specify goals, domain assumptions, requirements, interfaces and high-level models using `UML` and `Alloy` languages of the systems that will be produced. This is an important step in software development, because identifying from the starts the correct scope, the constraints and the overall structure of our products is the key to produce mantainable and secure software that correctly responds to the stakeholder's needs.

Requirement analysis and elicitation is an iterative process. This is the version `v.0.0` of the RASD document. See section 1.4 for more details on revision history.

1.2 Scope

1.2.1 Description of the given problem

TrackMe wants to develop a software-based service that allows individual users to collect, store and monitor health data, called `Data4Help`. The data collected can be shared to third parties in two ways: single-person data (after authorization of the individual) or anonymized data (at least 1000 anonymized individuals). Third parties can subscribe to new data and receive it as soon as it is collected by the service.

Another service that TrackMe wants to develop is `AutomatedSOS`, built on `Data4Help`. This service analyzes users'data and calls a SOS whenever data exceedes the basic health parameters. For this particular purpose, system performances will be critical, because even seconds matter in critical health situations.

1.2.2 Goals

G1-Allow the user to share his personal data with Data4Help.
G1.2-Allow a user to update his DataSet anytime.
G2-Third parties can access either at specificl DataSet or anonymized DataSets of a group of individuals.
G2.1-Third parties can subscribe to new data and receive them as soos as

they are available.
G3-Elderly user can subscribe to AutomatedSOS.

1.3 Definitions, acronyms, abbreviations

DataSet=Set of all data shared by the user with TrackMe.
Threshold=It refers to a limit for a Health parameter. If crossed implies that the user needs help.

1.4 Revision history

Version	Log
`v.0.0`	Introduction sketch

1.5 Reference documents

- Mandatory Project Assignment AY 2018-2019

1.6 Document structure

This document uses the IEEE standards for requirement analysis documents as a guideline towards a clear and logical explanation of its contents:

- Section 1 gives a brief introduction on the project to be developed and adds notes on references and revisions
- Section 2 describes the world and the shared phenomena, by defining assumptions and constraints; it identifies also the goals and the main functions of the project
- Section 3, as the main part of this document, is about requirement analysis; it has also sections about interfaces of the system and software attributes
- Section 4 contains the `Alloy` model that certifies correctness of goals implication by requirements and domain assumptions

- Section 5 lists the overall modifications and additions to this document, ordered by date, as the hour counter of effort spent by each group member

2 Overall description

2.1 Product perspective

2.2 Product functions

2.3 User characteristics

2.3.1 Actors

- **Visitor**:Someone who hasn't got an account of TrackMe and therefore must complete registration before having granted the access to TrackMe.
- **User**:Person that has successfully created an account of TrackMe.She or He can exploit all the functionalities of the application.
- **Third Party**: Entity that can request to Data4Help the access to either individual or group DataSets.

2.4 Assumptions, dependencies, constraints

2.4.1 Domain Assumptions:

D1-The chosen thresholds are enough to describe user health.
D2-The Data collected by the external sensors and the GPS location are accurate enough.
D3-There is at least one ambulance available when It is required by AutomatedSOS.

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 Scenarios

:

3.2.1 Scenario 1

:

3.3 Functional requirements

3.3.1 Allow a Third Party to access at a speficy DataSet prior User Authorization

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3.3.2 Allow a Third Party to access at group of anonymous DataSets made by at least 1000 individuals

3.3.3 Activation of AutomatedSOS must be granted in case of need

3.4 Performance requirements

3.5 Design constraints

3.5.1 Standards compliance

3.5.2 Hardware limitations

3.5.3 Any other constraint

3.6 Software system attributes

3.6.1 Reliability

3.6.2 Availability

3.6.3 Security

3.6.4 Mantainability

3.6.5 Portability

4 Formal analysis using Alloy

5 Effort spent

References

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