Politecnico di Milano

Master's Degree in
Computer Science and Engineering

Software Engineering 2

TrackMe
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.
The audience of this document is very wide. It includes

- stakeholders, as it acts as a contract that certifies what is required to our final product in order to satisfy their needs
- developers that will be guided by this document's prescriptions
- testers that are asked to verify the correspondence between the implementation and the requirements
- managers, in order to keep track of the project development

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 Project description

TrackMe wants to develop a software-based service that allows individual users to collect health data, called `Data4Help`. This data, stored in the `Data4Help` system, can be retrived and visualized according to different filters and projections.
The system allows third parties registration. Third parties can request access to users'collected data in two ways:

Single-person data After the request by the third party is made through the system interface, the system asks the user for authorization; if positively provided, the third party is granted access to the user's data

Amonymous-group data Thirs parties can be interested in big amounts of data, regarding who are the people that are providing it; the system, once the request by the third party is sent, checks if the data can be effectively anonymized (it must find at least 1000 people that match the third party request) and, if positively evaluated, grants access to the anonymized data to the third party that requested it

Third parties can subscribe to new data and receive it as soon as it is collected by the system.

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 a critical aspect to be taken into account, because even the slightest delay matters in critical health situations.

1.2.2 Goals

Here we present the goals that will be reached once the project is completed:

`G1` goal 1

- `G1.1` goal 1

`G2` goal 2

1.3 Definitions, acronyms, abbreviations

1.3.1 Definitions

1.3.2 Acronyms

1.3.3 Abbreviations

Version	Log
`v.0.0`	Introduction sketch

1.4 Revision history

1.5 Reference documents

- Mandatory Project Assignment AY 2018-2019
- IEEE 830-1993 - IEEE Recommended Practice for Software Requirements Specifications
- ISO/IEC/IEEE 29148 - Systems and software engineering — Life cycle processes — Requirements engineering
- Collection and Processing of Data from Wrist Wearable Devices in Heterogeneous and Multiple-User Scenarios
  `https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5038811/`
- Google Fit API
  `https://developers.google.com/fit/overview`

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

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` da 1

`D2` da 2

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

3.3 Performance requirements

3.4 Design constraints

3.4.1 Standards compliance

3.4.2 Hardware limitations

3.4.3 Any other constraint

3.5 Software system attributes

3.5.1 Reliability

3.5.2 Availability

3.5.3 Security

3.5.4 Mantainability

3.5.5 Portability

4 Formal analysis using Alloy

5 Effort spent

References

[1] LaTeXtemplates
http://www.latextemplates.com/
http://www.overleaf.com/latex/examples/title-page-with-logo/hrskypjpkrpd

[2] Slides of the course by Prof. Di Nitto
https://beep.metid.polimi.it/