

Software Engineering 2

Travlendar RASD

Requirement Analysis and Specification Document

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# 1. Introduction

## 1.1 Objectives

This document represents the Requirement Analysis and Specification Document (RASD). The main goals of this document are to analyze the users in order to model a system that meet their needs, describe the system in terms of functional and non- functional requirements, specify the constraints and the limits of the software and define the main typical use cases and user’s behaviors. This document is addressed to the developers who have to implement the requirements and could be used as a contractual basis.

## 1.2 Scope

### 1.2.1 Description of the given problem

In this project we are going to develop and implement an application called Travlendar. It is a calendar-based application which allows you to create a calendar according to the events you have (meetings whether for work or personal reasons) and in addition to calculating the time that the user has between appointments so that he does not arrive late, the application will suggest the user the best mobility option between the appointments and also will alert him when it is impossible to reach a specific event on time. In addition to these functionalities, the system will allow the user to buy public transportation tickets and locating the nearest point to hire another type of service (bike of a bike sharing system, car of a car-sharing service, etc.). Users could define their transportation preferences, they can activate or deactivate any kind of transportation (including walking). The application will also take into account the weather in the location of the user. If it is raining at the time the user has to move to another event, the system will take this into account and will change the way of transport if it is necessary. The application will also allow the user to define breaks to eat or to develop other types of activities. In this way the system will organize the appointments of the user according to their breaks and the time they need to do these activities. Finally, users should also be able, if they wish to, to select combinations of transportation means that minimize carbon footprint.

### 1.2.2 Current System

Even though there are already applications in the market in charge of the planning of meetings, none of these have the functionalities of Travlendar. These are limited to organize the events and notify the participants through the application and that these participants can be put in contact with other users. By this we can say that there is no application in the market with the qualities of Travlendar and therefore it has no competitors until now.

### 1.2.3 Goals

* [G1] Allow a User to create a calendar with meetings at one time in a specific location.
* [G2] Allow a User to specify their own preferences according to the availability of that means of transport and to their pleasures.
* [G3] Allow a User to introduce the breaks that he requires during the day and the temporal range in which he wants to do the rest.
* [G4] Users should receive an alert if, when entering the location of an event, the system notifies that there is no time to arrive on time.
* [G5] Allow a User to choose means of transport that minimize carbon emissions.
* [G6] Users should receive an alert if the weather conditions are not pleasant or if there is some alteration in the route to their next appointment.
* [G7] The user must receive directions from their current location to reach the meeting.
* [G8] The system must take into account days in which the public transport or the transport chosen by the user is not available or delayed.
* [G10]

## 1.3 Definitions, acronyms and abbreviations

### 1.3.1 Definitions

* *Meeting:* appointment of any kind whether related to work or personal.
* *User*: a user of the Travlendar system
* *Calendar:* a timetable containing meetings sorted by date

### 1.3.2 Acronyms

* *RASD*: Requirement Analysis and Specification Document.
* *API*: Application Programming Interface

### 1.3.3 Abbreviations

* [Gn]: n-goal.
* [Dn]: n-domain assumption.
* [Rn]: n-functional requirement.

## 1.4 Reference documents

## 1.5 Document Structure

1. In the first part of the document the objectives as well as the main goals of the project are defined. In the same way is explained, without going into much detail, how the application works. Finally, is given some information about definitions and abbreviations to better understand the rest of the document.
2. In the second part it is given an overall description of the system including the functions of the application, clarifying some concepts of the system. Also list the actors who are going to take part of the system. In the same way the constraints and limitations of the system will be defined. Finally, are specified text and domain assumptions to resolve certain types of doubts that may arise by reading the document.
3. The third part of the document refers to specific requirements. We have defined both functional and non-functional requirements. In this part of the document we will go into more detail in the aspects mentioned in section 2.

# 2. Overall description

## 2.1 Product perspective

In present times, our lives are full of events. Work, family and friend events fill our daily schedules and it is hard to keep up with everything. Everyone needs to remember where, at what time and with who they need to be at a certain time of the day. To solve this problem the mobile app Travlendar comes in place. It helps the user to manage his events, how to go reach them and how to pay for them.

## 2.2 Product functions

The full list of functional and non-functional requirements as well as constraints, assumptions and dependencies will be discussed in the section 3. The main requirements are that the user can add events to his agenda. Additionally, the app must provide optimal suggestions of the different ways the user can reach his destination including travelling time, minimizing carbon emissions, event overlaps, etc. The app should assist the user in paying for tickets, bike and car rent subscriptions.

## 2.3 User characteristics

The only user that is affiliated with the application is the smartphone user himself.

User: A person who has downloaded, installed and authorized the app to use the phone’s native functions such as geolocation, calendar, etc.

## 2.4 Constraints

The system shall adhere to certain requirements regarding reliability and performance. Those will be discussed in greater detail in section 3.

### 2.4.1. Regulatory policies

Travlendar does not use a database and customers do not need to deliver sensitive information. Travlendar simply provides the means customers use to manage their events locally on their device.

### 2.4.2 Hardware constraints

- Android 4.4+ or iOS 9.0+ smartphone

- Internet connection

- Geolocation

## 2.5 Assumptions and dependencies

For Travlendar to function in a correct manner, these assumptions and dependencies must be met:

[D1] The smartphone device has constant internet connectivity.

[D2] The smartphone device has geolocation turned on at all times.

# Specific requirements

## External interface requirements

### User Interfaces

### Hardware Interfaces

### Software Interfaces

### Communication Interfaces

## Functional requirements

## Performance requirements

## Design Constraints

### Standards compliance

### Hardware limitations

### Any other constraint

## Software System Attributes

### Reliability

### Availability

### Security

### Maintainability

### Portability

# Formal analysis using Alloy

# Effort spenT

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# References