POLITECNICO
MILANO 1863

Software Engineering II

Travlendar+

Requirements Analysis
and
Specifications Document

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Indice

Chapter 1

Introduction

1.1 Purpose

Our team will develop Travlendar+, a calendar-based application that aims to provide a schedule of user appointments, giving a plan to organize his daily life. The main goals the app must fulfill are:

G1 Schedule user appointments according to his necessities and his preferences, identifying the best mobility options

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G3 Make sure that the user can be in time for his appointments

G4 Optimize the schedule with respect to some criteria and constraints chosen by the user

G5 Provide a way to move between appointments location using several kinds of travel means

G6 Localize public travel means or sharing services, and buy tickets or book a ride, respectively

G7 Arrange the trips of the user, allowing him to locate travel services and buy public travel means tickets or book a sharing service

G8 Create a system with a **graphic** user interface, in order to simplify input/output interactions with the user

1.2 Scope

Here we provide a brief description of the aspects of the reality of interest which the application is going to interact with.

User can receive an appointment on a certain date, time and location (over a region), that can be reached using different available travel means. The appointment can be held either at a specific time or in a time interval and lasts for a certain amount of time. An appointment can be recurrent, in other words, it repeats regularly over time (e.g., lunch, training, etc.). User can travel with someone else and can pick up or leave off these people during the day.

User can have his own travel means and a pass for public transportation. The travel means considered in this scenario can be grouped in three categories: public, shared or private.

- Public travel means: these include trains, buses, underground, taxis, trams. They have to be taken in their **appositi** stops. User must have a valid ticket in order to get on a public travel means (except for taxis, that pick up the user wherever he wants upon a call and do not require any ticket).
- Shared travel means: these include car and bike. They are located in specific places and require a reservation in order to be used by the user.
- Private travel means: vehicles owned by the user. They can be cars, bikes, motorbikes.

Weather conditions can change during the day affecting usable travel means. At the beginning of the day, or on demand, user can request a schedule of his daily appointments, following some criteria evaluated according to their assigned priority and satisfying some constraints imposed by the user. When a new appointment is received, user creates a new item in the application and saves it in the appointment list. User can request a reschedule to the application due to unexpected changes of his plan (e.g. a cancelled appointment).

1.2.1 World Phenomena

- User receives a new appointment

- User has to travel alone or with someone else
- User owns private travel means and/or passes for public transportation
- User wakes up
- User pass expires

1.2.2 Shared Phenomena

- Shared travel mean moves
- Shared travel mean its not available anymore
- Wheather condition changes
- Public travel means reach a stop-place
- Public travel means are late
- User requests a schedule to the machine
- User inserts a new appointment into the application
- User requests to book rides
- User moves

1.3 Definitions, Acronyms, Abbreviations

Appointment Constraint Criteria GPS Schedule/Scheduler System/Applications

GUI: graphic user interface

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1.4 Revision history

1.5 Reference documents

1.6 Document structure

Chapter 2

Overall Description

2.1 Product Perspective

Constraints are impositions on some parameters managed by the system during the process of scheduling the appointments. These can be selected by the user when he inserts an appointment or when he requests a schedule, otherwise the constraints are initialized to default values.

The costraints that can be chosen for a schedule by the user are the following:

- Maximum travelling distance with a specific travel mean: the user can set a maximum amount of km to travel with a travel mean;
- Travel means time slots: user can specify a time interval in which a travel mean can be used;
- User can deactivate a particular travel means;
- User can set a wake up time, before that the scheduler cannot assign any action to do;
- User can select which travel means use under certain weather condition

The criteria that can be chosen for a schedule by the user are the following:

- Minimize carbon footprint: the scheduler will try to minimize the amount of kilometers travelled in polluting means;

- Minimize money spent: the scheduler will try to avoid expensive means and to exploit the public ones (especially if the user has a pass) or going by bike or on foot;
- Minimize travelling time: the scheduler will compute the quickest possible path reaching all the appointments locations

2.2 Product Functions

The following requirements are derived in order to fulfill the specified goals.

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