

**Travlendar+ project Daverio Pietro,
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Design Document

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1 Introduction

1.1 Purpose

The purpose of this derivable is to provide an architectural design solution for Travlendar+ that fulfils all functional and non-functional requirements expressed in the linked Requirement Analysis and Specification Document.

The following document will also provide an overview of an implementation, integration and test plan solution, bounded with this derivable.

The target audiences of this paper are developers, testers teams and analysts involved in the project.

1.2 Scope

Travlendar+ is a calendar-based application thought to support user thorough his appointment scheduling and transport management.

The system will provide to user:

- the possibility to insert scheduled appointments
- the insertions, modification and organization of different types of preferences
- registration and login in order to access backup/sync options, beside a more advance preferences management
- different route choices to reach the location of appointments

(for further details look at RASD document).

The system will offer his services to user through a Web GUI and a mobile application supporting different operating systems and device format.

1.3 Definitions, Acronyms, Abbreviations

- *RASD* Requirement Analysis and Software Specification
- *DD* Design Document
- *Appointment*
- *Route*
- *Path*
- *MA*
- *GUI* Graphic User Interface
- *WebUI* Wew User Interface

1.4 Revision History

1.5 Reference Document

- *Travlendar+ RASD document*
- *"Mandatory_Project_Assignment.pdf"* : assignment given of the project

1.6 Document Structure

1 - Introduction The first section offers an overview on the content of the following document, highlighting the purpose of this derivable and recalling a brief description of the problem itself. It also contains references to other documentation linked to this project.

2 - Architectural Design Firstly, the architectural design section presents an overview of a proposed system architecture to accomplish RASD specification.

Secondly, it steps into the system identifying behaviour of components, their interfaces and interoperability with other components, inside or outside the system.

Finally, it explains the thought behind design choices and it gives a list of patterns employed.

3 - Algorithm Design This section provides a list of the most significant algorithms, used by system, expressed in object oriented pseudo-code. They are given in order to specify some critical operation steps.

4 - User Interface Design This section offers a look upon the user interfaces in order to give a good representation of how the UI will look like to users by mean of interfaces mock-up. Furthermore, it' offered a deeper inquiry on the user interaction with the system through UX and BCE diagrams.

5 - Requirement Traceability Section implied in the traceability purpose of requirements, defined in RASD document, with components identified by current derivable in order to increase the observability of requirements fulfilment in following parts of system development and testing.

6 - Implementation, Integration and Test Plan It defines the strategy and provides a sequential plan for the implementation, integration and test processes, describing the sequence in which components are developed, integrated and tested together.

7 - Effort Spent Appendix showing the commitment required by the project to the team.

2 Architectural Design

2.1 Overview

2.2 Component view

2.3 Deployment view

2.4 Runtime view

2.5 Component Interfaces

2.6 Selected architectural styles and patterns

2.7 Other design decisions

Here you can see how to include an image in your document.

Here is the command to refer to another element (section, figure, table, ...) in the document: *As discussed in Section ?? and as shown in Figure 1*, Here is how to introduce a bibliographic citation [1]. Bibliographic references should be included in a .bib file.

Table generation is a bit complicated in Latex. You will soon become proficient, but to start you can rely on tools or external services. See for instance this <https://www.tablesgenerator.com>.



Figure 1: DICE DPIM metamodel.



Figure 2: DICE DPIM metamodel in portrait form.

3 Algorithm Design

Organize this section according to the rules defined in the project description.

4 User Interface Design

Organize this section according to the rules defined in the project description.

5 Requirements Traceability

The purpose of this design project is to build up a system able to fulfil all requirements proposed in the bounded RASD document.

In the following section, it is reported the list of project's goals, and for each of them is given the set of components involved in related operations.

G1 Allow the user to add an appointment

[G1.1] The user can add the date of the appointment through a calendar

- Web Application
- Mobile Application

[G1.2] The user can select the location through a map

- Web Application
- Mobile Application
- SessionManager
- CalendarManager
- Map Services

[G1.3] The appointment must be processed by the system

- SessionManager
- CalendarManager
- Web Application
- Mobile Application

G2 - Provide a route to the user for reaching the appointments

[G2.1] The user must reach on time his/her appointments

- CalendarManager
- RouteManager
- Routing Services

[G2.2] The user can choose the starting location and time of the route

- Web Application
- Mobile Application
- SessionManager
- CalendarManager
- RouteManager

[G2.3] Generate routes according to the preferences of the user

- RouteManager
- PreferenceManager

- Database

[G2.4] The application provides a route for each objective, minimizing each of these attributes: length, duration, number of changes, carbon footprint

- RouteManager
- PreferenceManager

[G2.5] Always provide a route

- RouteManager
- CalendarManager
- NotificationManager
- Push Gateway

[G2.6] During strike days, public transportation must not be available

- CalendarManager
- ReportManager

[G2.7] Report unfavourable weather conditions

- NotificationManager
- Push Gateway

[G2.8] Update unfavourable weather conditions

- NotificationManager
- Weather Services

[G2.9] The user can save one route among the shown ones

- Web Application
- Mobile Application
- SessionManager
- CalendarManager
- Database

G3 Allow the user to sign up into the application

[G3.1] The registration must allow the univocal recognition of the user

- Web Application
- Mobile Application
- SessionManager
- Database

G4 Allow the user to log in

[G4.1] The system allow the login through e-mail and password

- Web Application
- Mobile Application
- SessionManager
- Database

[G4.2] The application allow the login through telephone number

- Web Application
- Mobile Application
- SessionManager
- Database

G5 Allow the user to add his own preferences

[G5.1] The user must be logged

- Web Application
- Mobile Application
- SessionManager
- Database

[G5.2] The preferences are synchronized between the application and the database

- SessionManager
- PreferenceManager
- Database

[G5.3] The user can choose the available transport means

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.4] The user can add a priority to the means of transport

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.5] The user can add the maximum length of routes on foot or by bicycle

- Web Application
- Mobile Application
- SessionManager

- PreferenceManager
- Database

[G5.6] For each vehicle the user can choose a time slot of validity

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.7] The user can set Flexible Lunch

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.8] The user can add breaks for fixed moments of the day

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.9] The user can add a private car or bicycle

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

[G5.10] The user can organize his preferences in “Preferences Profiles”

- Web Application
- Mobile Application
- SessionManager
- PreferenceManager
- Database

G6 Allow the user to manage his account

[G6.1] The user must be able to remove appointments and routes

- Web Application

- Mobile Application
- SessionManager
- CalendarManager
- Database

[G6.2] The user must be able to modify appointments and routes

- Web Application
- Mobile Application
- SessionManager
- CalendarManager
- RouteManager
- Database

[G6.3] The user must be able to delete his account

- Web Application
- Mobile Application
- SessionManager
- Database

G7 Allow the user to report events and disservices

[G7.1] The user can report strikes using the application

- Web Application
- Mobile Application
- SessionManager
- ReportManager
- Database

[G7.2] The user can report faults, malfunctions and suggestions

- Web Application
- Mobile Application
- SessionManager
- ReportManager
- Database

6 Implementation, Integration and Test Plan

7 Effort Spent

Daverio	20/11/2017	1h15m
	21/11/2017	1h30m
	22/11/2017	2h45m
	Total	

Fiorillo		
	Total	

References

- [1] S. Bernardi, J. Merseguer, and D. C. Petriu. A dependability profile within MARTE. *Software and Systems Modeling*, 10(3):313–336, 2011.