



RASD - Requirement Analysis and Specification Document



POLITECNICO
MILANO 1863

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1 Introduction

1.1 Purpose

1.1.1 RASD Purpose

This document represents the Requirement Analysis and Specification Document (RASD). Goals of this document are to completely describe the system in terms of functional and non-functional requirements, analyse the real needs of the customer in order to model the system, show the constraints and the limit of the software and indicate the typical use cases that will occur after the release. This document is addressed to the developers who have to implement the requirements and could be used as a contractual basis.

1.1.2 Application Purpose

CLup - CUSTOMERS LINE UP - is born to help people in a crucial historic period, Covid-19 era, in which the daily life of all us changed drastically. One of these changes, and probably the most important one, is the social distancing to avoid the spread of pandemic.

Indeed, the specific goal of this project is to develop an easy-to-use application that, on the one side, allows store's managers to regulate the influx of people in the building and, on the other side, saves people from having to line up and stand outside of stores for hours on end, which are themselves a source of hazards.

The application would work as a digital counterpart to the common situation where people who are in line for a service retrieve a number that gives their position in the queue. This method of ticketing allows a person to approach the store in time and in a more safe mood, only when his/her number is going to be reached.

In particular, CLup will provide a real-time ticketing service which, on request, give to the customer the number associated to the current store's queue that the customer want to visit. The stores adopting CLup system, can also guarantee the possibility to hand out tickets on the spot; of course this two approaches are integrated in a unique queue, always managed by CLup. CLup will also allows customer to book a visit in advance to the store, specifying in many ways the times and modalities of his/her visit.

The application should be very simple to use, as the range of users include all demographics.

1.2 Scope

CLup might be adopted by every type of stores all over the world. Of course, it will be mainly used by stores who sells necessities and who are subject to great turnover

of people. A small shop will not benefit as much as a large one from the use of the application. Moreover, CLup is not intended for these activities, which already have a booking system, since it will need to be integrated with the existing system. This project is strictly related with Covid-19 period, but nothing forbid that avoid a lot of queues and save a lot of time would be very fine for people. So, a pandemic is not the only scope of action of CLup. The application mainly aims to simplify the access to stores for customers, and at the same time it aims to help owners managing people's flow in their business. In addition, CLup can be useful in the people day's planning, to improve their time management; thanks to the possibility of book a visit to the store in advance, to the real-time knowledge of queues in shops and of the travel time a person can decide whereas today is a good day to go shopping or not. The protagonist of the CLup's scope are mainly people and stores. CLup should offer the possibilities to improve their relations and let positively grow the approach between customers and shops. Where is true CLup also might offer the chance for the users to indicate the categories of products they are going to buy, in order to give the system a better "idea" of the time they will spent in the store, the improvement and management of the act of buy itself – such as for example indicate to the user the max quantity of a product available in the store - is completely outside from CLup's scope.

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

1.3.2 Acronyms

- RASD: Requirement Analysis and Specification Document.
- API: Application Programming Interface.
- CLup: Customers Line-up.
- S2B: SoftwareToBe
- GPS: Global Positioning System
- UI: User Inteface

1.3.3 Abbreviations

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

1.4 Revision History

1.5 Reference Documents

- [1] R&DD Assignment AY 2020-2021
- [2] M. Jackson, P. Zave, "Deriving Specifications from Requirements: An Example", Proceedings of ICSE 95, 1995

1.6 Document Structure

The RASD is composed by 6 parts:

1. In the first part an introduction to the problem is given listing all the identified goals, describing the scope of the project and providing some basic information to better understand the other sections of the document.
2. The second part consists of an overall description of the system including a product perspective (with scenarios, further details on the shared phenomena and a domain model), the main product functions (requirements), user's characteristics (to clarify his necessities) and all the fundamental domain assumptions (to complete the customers' specification given and considered true in the project development).
3. The third part develops all the most important aspects of Section 2 which can be useful for the development team. Indeed, it highlights all specific requirements identified, both functional and non-functional.
4. The fourth part contains a brief presentation of the main objectives driving the formal modelling activity, as well as a description of the project's Alloy model itself, what can be proved with it, and why what is proved is important. To show the soundness and correctness of the model, this section shows some worlds obtained by running it, and the results of the checks performed on meaningful assertions.
5. The fifth part is accessory and summarizes in detail the hours spent in the document production.
6. The sixth part is the last and is composed by all the references of the tools used to redact this document and its contents.

2 Overall Description

2.1 Product Perspective

2.2 Product functions

2.3 User characteristics

2.4 Assumptions, dependencies, constraints

3 Specific requirements

4 Fromal analysis using Alloy

5 Effort Spent

6 References