CLup

Requirement Analysis and Specification Document

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1 Introduction

1.1 Purpose

The coronavirus emergency has put a strain on society on many levels, in particular, grocery shopping can become a challenge in the presence of such strict rules: supermarkets need to restrict access to their stores to avoid having crowds inside and long lines outside. The goal of this project is to develop an easy-to-use application that, on the one side, allows store 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.

The application will allow customers to "line up" (i.e., retrieve a number) from their home, and then wait until their number is called (or is close to being called) to approach the store. In addition, the application could be used to generate QR codes that would be scanned upon entering the store, thus allowing store managers to monitor entrances.

1. CLup should allow customers to queue up remotely and in loco (fallback) so that they don't need to form a physical line

2. CLup should allow store owners to allows store managers to regulate the input and output streams of customers in the building

3. CLup should provide the customer with a reasonably precise estimate of waiting time

4. CLup should alert the customers when it is time to get to the shop taking into account travel time

5. CLup should allow customers to book future visits to stores

6. CLup should allow customers to specify estimated visit duration and desired objects in order to provide a better guess

7. CLup should be able to infer an approximate duration of the visit from an analysis of the previous one to plan visits and manage the queue in a finer way

1.2 Scope

The system to be allows to avoid creating queues in front of stores. This is accomplished by enabling the users to queue up remotely. Moreover, the shop owners can oversee customers entering and exiting stores.
The system offers the following functionalities:

- it allows customers to line up remotely

- it identifies a customer

- it allows identified customers whose position in queue allows it to enter and exit the store

- it schedules customers in order to minimize overcrowding inside and outside of the store

- it alerts customers when they should head to the store

- it allows customers to queue up on the spot

- it allows customers to book a visit and optionally specify duration and desired categories of products

- it uses statistics build on entrance and exit data to better evaluate duration of visits

1.2.1 World Phenomena

1. Customer reaches the store

2. Customer enters or exits shop

3. Store owner keeps in check influx of customers in building

4. Customer buys products

1.2.2 Shared Phenomena

1. Customer queues up

2. Customer is identified in order to allow entrance/exit from store

3. Customer is allocated a time slot and is alerted when his turn is close

4. Customer books a visit to a store

1.2.3 World Phenomena

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

Ticket	Virtual or physical artifact used to identify the position of a customer in a queue
Identification	Customer is identified when he receives a ticket (be it virtual or physical) and he is inserted in the queu

1.3.2 Acronyms

RASD	Requirement Analysis and Specification Document
GPS	Global Positioning System
S2B	Software to be
UI	User Interface

1.3.3 Abbreviations

Gn	Goal number n
Rn	Requirement number n
Dn	Domain Assumption number n

1.4 Revision history

Not yet defined.

1.5 Reference Documents

1. IEEE Std 830-1998 Recommended Practice for Software Requirements Specifications

2. Specification Document: R&DD Assignment A.Y. 2020/2021

1.6 Document Structure

2   Overall Description

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 1.6 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.
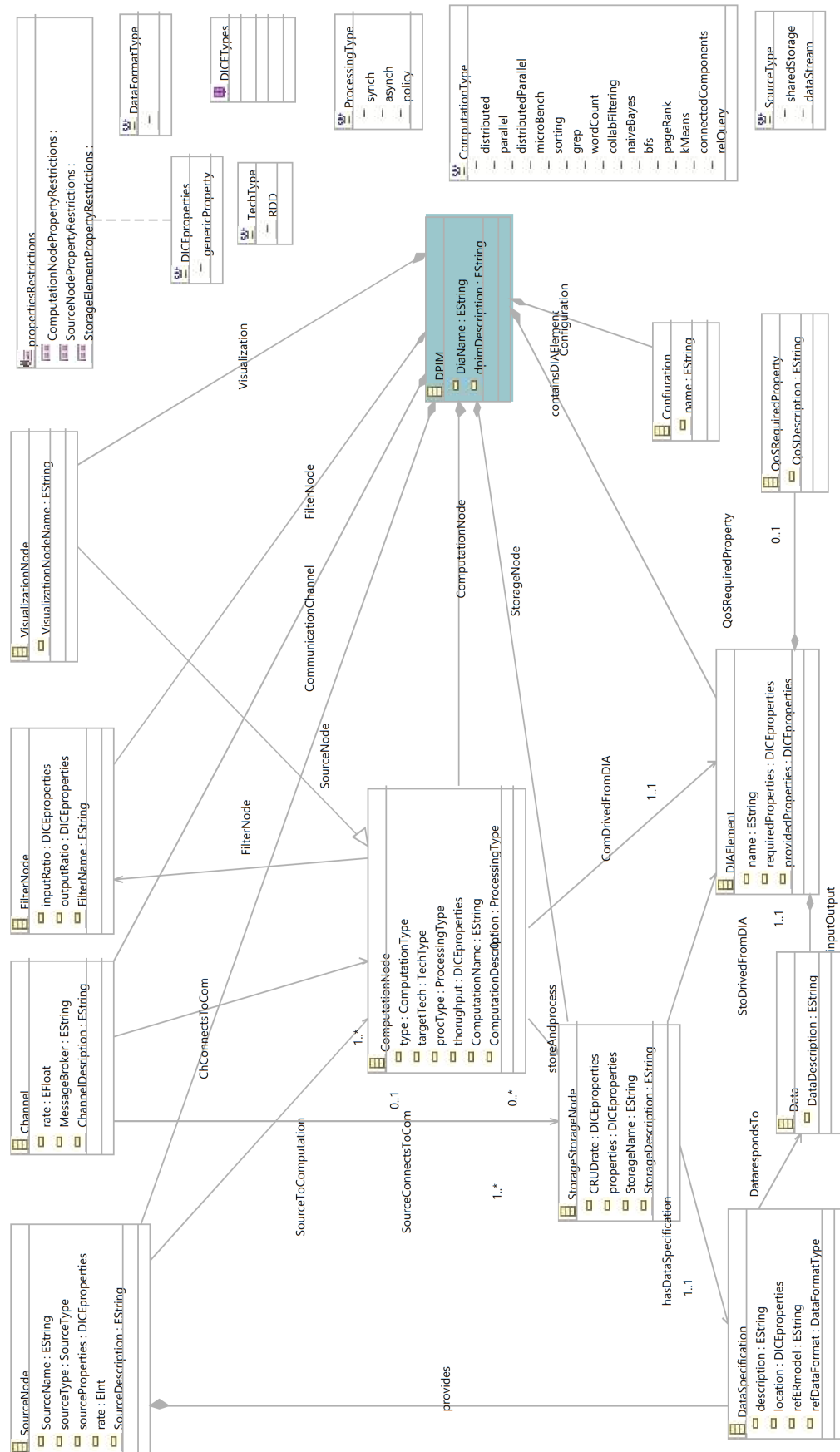
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Figure 1: DICE DPIM metamodel.

Figure 2: DICE DPIM metamodel in portrait form.

3   Specific Requirements

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

4   Formal Analysis Using Alloy

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

5   Effort Spent

Provide here information about how much effort each group member spent in working at this document. We would appreciate details here.

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1. Writing goals 3

References

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