Requirement analysis and specification document
Safestreets

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Indice

1 Introduction

The purpose of this document is to represent the Requirement Analysis and Specification Document (RASD). This document shows what are the goals and the requirements of the software. It has to represent how the application can be useful for the users that will use it and why they are fundamental to improve the quality of the service offered. Secondly, this document can be also used as a support for the testing of the system, for the verification activities and also the validation ones. The RASD can be also used to guide the changes in a already existing system.

1.1 Purpose

1.1.1 Descripton of the given problem:

SafeStreets is a software useful to help people to be safer when they are on the street.
The users can send to the municipality pictures of violation occurring in public streets: the reporting can concern violation on the road, in a parking and so on.
The software allows the users to send detailed information about the violation, such as the hour, the date, the type of violation and the position (they can be captured with GPS).
Furthermore, the service can provide, both to the user and to the municipality,information about the streets in which the user is around, such as the number of violations per street and consequently the level of danger of the street.
In addition, the user can have a different service based on the category to which he/she belongs.
The user and the municipality can also find on the application the most "dangerous" vehicles, that are the ones with the highest number of reports from the users.
The service must be different in base of the type of user, such authorities, motorists, motorcyclists, bikers, pedestrians, disabled people, etc, so it must be easy to use.
Finally, the users must be able to receive recommendations from the system to avoid using streets, parking lots that are risky in general or at a specific hour or date.

1.1.2 Goals:

- [*goal*1]: The service allows the users to report a violation to the municipality.

  - [*goal*1.1]: The user can send a picture of the violation.
  - [*goal*1.2]: The user can specify the date and the hour when the violation has happened and the type of violation.

- [*goal*1.3]: The position of the violation can be taken in an automatic way (by using the GPS) or it can be written by the user. It's a user choice.
- [*goal*1.4]: The date and also the hour can be taken in an automatic way or they can be written manually by the user. It's a user choice.
- [*goal*1.3]: The municipality must be able to receive the reports

- [*goal*2]: The service allows the users to have detailed information about the violations and the street safety
  - [*goal*2.1]: The users can know which are the most reported streets, areas or parking.
  - *goal*2.2]: The users can see which are the vehicles that commit the highest number Of traffic violations.
  - [*goal*2.3]: The users, in base of his/her position, can be recommended to use the safest streets/areas, etc or avoid the dangerous ones, that are highlighted in different ways on the map.

- [*goal*3]: The service offers different types of interfaces and accessibility in according to the type of user (biker, pedestrian, rider, driver, disabled person).
  - [*goal*3.1]: The user that want to park his/her car/motorbike can receive a suggestion of where to do it based on the safest streets around him/her.

- [*goal*4]: The service allows the user to be registered in the system with a username and a password.

- [*goal*5]: A user can specify the category to which he/she belongs (motorcyclist, biker, pedestrian, car driver, disabled person).In order to improve the service quality.

- [*goal*6]: A driver or a motorcyclist can add to his personal profile the license plate of his vehicle.

- [*goal*7]: Safestreet can send to the municipality suggestions of what to do in order to improve the safety on the streets for every type of Safestreets user.
  - [*goal*7.1]: The municipality must receive every suggestion sent by Safestreets.

1.1.3 Scope:

In this section is introduced the so called "world and machine fenomena".
We distinguish the world and the machine. The world is related to every phe-
nomena that take place outside of the region of events that the system to be
developed (called machine) is able to control or eventually observe. Instead,
the machine is related to phenomena which happen inside the machine and so
they're completely controllable. Some of the totality of the phenomena can be
observed by the machine but they're controlled by the world. and viceversa.
These are called shared phenomena. In this section there will be described on-
ly the world phenomena and the shared one.The machine phenomena will be
described later on in the next chapters.

World phenomena:

From the user point of view:

- The user sees one or more violations.

- The user wants to report a violation to the municipality.

- The user wants to know the area/streets where the major violations occur.

- The user wants to know where is safer to park his/ her car/bike/motorcycle.

- The user wants to know what are the vehicles that commit the major
  number of violations.

From the municipality point of view:

- The municipality wants to know what to do to improve the safety of the
  streets.

- The municipality wants to discover what're the most dangerous zones of
  the city.

Shared phenomena:

**Shared phenomena controlled by the world and observed by the
machine:**

- The user sends to the system a picture of a violation and all the other
  data relating to it.

- The user sends some data request to the system.

- The municipality sends a data request to the system in order to receive
  suggestion to improve the safety of the streets.

- The municipality sends a data request to know what are the vehicles that have commited the major number of accidents.

Shared phenomena controlled by the machine and observed by the world:

- the user receive data related to what he/she has asked