*[Edit: Matteo, 18/10/19]: Revised some goals and domain assumptions, willing to delete some due to integrated notes. Please take a look to them too. Some more could be added, need a discussion.*

Introduction

SafeStreets is a mobile application that relies on the help of lawful citizens to make life in the streets less stressful and more organized, as traffic violations are a problem people are forced to face in their everyday life, especially in big cities, whether they proactively take part in the traffic itself or not. The purpose of this document is to describe in depth SafeStreets in terms of functional and nonfunctional requirements, so as to help customer and developer be on the same page.

The goal of the application is to make traffic regulation more efficient and complete, by allowing users to report and notify violations, e.g. vehicles parked in the middle of bike lanes, or in spots reserved to disabled people, to the designated authorities. In particular, users should be able to send pictures as proof of vehicles parked illegally and attach additional information to provide authorities with a starting point they can work with, such as the date, the time, the type of violation which is to be reported and the place in which it has occurred, which can be retrieved through the geographical position of the user itself. SafeStreets stores such information in its database and employs it by running an algorithm on the picture to recognize the license plate number. The stored data can then be elaborated by both end users and authorities to highlight the zones with the highest amount of violations.

Furthermore, SafeStreets wants to exploit its own data by combining it with information about accidents provided by the municipality, if the latter has the resources to do so, and analyzing it in order to identify zones or streets whose safety could be improved by making interventions, possibly suggesting viable solutions as well.

Lastly, SafeStreets strives to assist the local police in generating traffic tickets, and possibly build various statistics. To ensure the effectiveness of this service, it is necessary that the exchange of sensible data which must occur between SafeStreets and the third party (municipality) cannot be tampered with in any way, e.g. modifying the picture of the violation at hand.

Goals

[G1] Allow a visitor to become a registered User by providing his own credentials;

[G2] Allow an User to report traffic violations by providing a picture of involved vehicles with readable license plate, the location and the type of violation;

[G3] The system must recognize if the license plate is visible from the picture and if not, it must ask to retake the picture; *(a requirement)*

[G4] Allow an User to view an history of his past reports;

[G5] Allow Users and Authorities to mine information to highlight areas with most violations;

[G6] If the municipality offers the possibility, users can notify accidents occurred on the municipality’s territory; *(infos about accidents are directly collected by authorities)*

[G7] Allow User to receive a notice which inform them if their notification has been approved or rejected. *(notification not necessary, all signalizations are accepted → see D3-D7)*

[G8] Share the received reports with Authorities, if requested;

[G9] Municipality can accept or refuse an user request; *(which requests?)*

[G10] Municipality can generate traffic tickets; *(not concerning the system)*

[G11] Municipality can consult statistics built by Safestreets. *(redundant with G4)*

[G12] Link issued traffic tickets to relative Users signalizations and build statistics on the Users with most verified signalizations; *(Two different goals?)*

[G13] Allow a System Manager to cross information coming from Users and Authorities to identify and signalize unsafe areas;

[G14] Allow a System Manager to suggest possible solutions for the areas in which most violations occur;

Domain assumptions

[D1] Each User is unique;

[D2] An User notification is evaluated by an Authority within a week;

[D3] An User sends information about a violation when he notes it;

[D4] Information about date and time of the violation corresponds to the date and time when the signalization is sent;

[D5] Information about position of the violation is collected through GPS;

[D6] Picture of violations are taken at the moment and are not inserted in a second time or from already saved pictures;

[D7] Violations can only be reported through the mobile application;

[D8] An user notify accidents which are really occurred; *(accidents not reported by users)*

[D9] An User reports a certain violation once;

[D10] Reporting about a violations already evaluated are rejected; *(more signalizations about a violation can be useful → of course not generating multiple tickets is authorities' duty)*

[D11] Authorities have tools for assessing if a reporting is a violation or not;

[D12] Authorities generate traffic tickets only for actual violations;

[D13] Authorities are able to find the owner of the vehicle by the license plate, which is unique to each car vehicle;