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| --- | --- | --- |
| Phenomena | Shared | Who Control |
| User sees a traffic violation | NO | World |
| User wants to notify authorities | NO | World |
| User launches the application and logs in with his own role | YES | Machine |
| SafeStreets software is loaded checking the role of the user (end user or authority or municipality) | NO | Machine |
| User inserts the picture, the type and the description of the violation | YES | World |
| SafeStreet application detects date, time and position from the device. | NO | Machine |
| SafeStreets asks to the user to insert again some wrong data | YES | Machine |
| User sends the violation report | YES | World |
| SafeStreets receives a violation | NO | Machine |
| SafeStreets runs the algorithm to read the license plate | NO | Machine |
| The algorithm can’t read the license plate so SafeStreets asks to the user to insert another picture or to insert the license plate manually | YES | Machine |
| User inserts the license plate manually | YES | World |
| SafeStreets stores the retrieved information | NO | Machine |
| SafeStreets calculates the statistics | NO | Machine |
| User or authority or municipality mines the information | YES | World |
| SafeStreets receives data about accidents from municipality | YES | World |
| SafeStreets identifies unsafe areas | NO | Machine |
| SafeStreets suggests interventions | YES | Machine |
| SafeStreets goes out of service | YES | Machine |
| Safestreet notifies authorities near the violation which has occurred | YES | Machine |
| An authority goes in the place of the violation | NO | World |
| An authority notifies other authorities that he is going to check the violation | YES | World |
| An end user wants to send a traffic violation report, but there is no internet connection | YES | World |

G1: A person (end user) who sees a traffic violation should be able to notify authorities of the violation in every moment and situation (such as with lack of internet connection).

G2: A person (end user) should be sure that reporting a violation does not put him under any kind of risk of retaliation, so no one can know the identity of who has reported the violation.

G2: A person (end user) should be able to be a user of SafeStreets app.

G3: An authority should be able to be a user of SafeStreets app with a different role with respect to a citizen.

G3: An authority and municipality should be able to know the recent traffic violations and the statistics related to them.

G4: A user should be able to know the statistics regarding traffic violations.

G5: Municipality should be able to collaborate with SafeStreets in order to provide information about accidents occurred in its territory.

G6: Municipality should be able to know the most unsafe areas of its territory.

G7: Municipality should be able to know possible interventions it can do in order to improve the unsafe areas of its territory.

G8: An authority should be able to know when violations occur around him.

G9: A user should be recognized and distinguished based on his role (end user, authority or municipality).

D1: A person (end user) knows the traffic rules.

D2: A person (end user) knows that he can notify the authority if there is a traffic violation.

D3: A person (end user) has a device with a camera, internet connection and GPS sensor.

D4: A user of SafeStreets is identified by the application.

D5: It is possible to verify that an authority is really such (through a governmental code for example).

D4: A user (End user, Authority or municipality) knows SafeStreets and has a device on which there is SafeStreets software and internet connection.

D5: A municipality has data about accidents occurred in its jurisdiction stored and offers a service that allows users to retrieve the information about these accidents.

D8: It is possible to verify that a municipality is really such (through a governmental code for example).

D6: An authority user is able to reach the position of a violations when notified.

D7: Users are fair with each other, so they do not lie when reporting a traffic violation.

D8: Users report a violation from the position where the violation occurred.

D9: An authority has a device on which there is a GPS sensor.

D10: An interface to check through a governmental code if an authority or a municipality is really such is provided by the government.

R1: When a user sees a traffic violation, SafeStreet application must allow him to take a picture of it, insert a description and immediately send the information to authorities.

R2: When SafeStreets app is launched, the user must be able to log in if he is already registered, otherwise he can register himself, and then log in.

R3: When a user wants to register himself in the role of authority user or municipality user, SafeStreet software must verify that he is really such.

R4: When a user wants to register himself as municipality, SafeStreet software must verify that he is really a municipality.

R2: When an end user sends a violation report, SafeStreets application must detect automatically the date, the time and the position from the device. The position is taken from the GPS of the user’s device.

R3: When detecting the date, the time and the position from the device, if it is not able to take one of these information, SafeStreet application must notify the user telling him which is the problem.

R4: When the picture of the violation inserted by the end user is not readable by the application, the system must ask him to insert it again or to write manually the license plate number.

R5: When an authority logs in from his device, SafeStreets must allow him to see information about the traffic violations sent by the end users and about statistics on the violations.

R6: When an end user logs in, SafeStreets must not allow him to see the traffic violations sent by the other end users.

R7: When an end user logs in from his device, SafeStreets must allow him to see statistics about the traffic violations.

R8: When a municipality user logs in from his device, SafeStreets must allow him to see statistics about the traffic violations, unsafe areas and possible interventions.

R9: When a violation is sent, SafeStreets dispatching software must find the nearest authority users and notify them.

R10: When an authority user is notified, SafeStreet software must allow him to warn other authorities that have received the same notification that he is going to check the violation so that not too many authorities deal with the same violation.

R11: When a violation is reported, SafeStreets must detect the position of all the authorities from their device in order to know who can be interested in knowing the occurrence of the violation.

R12: When a violation is reported, SafeStreets must not store the identity of the user, so that to guarantee anonymity.

R13: When an end user wants to report a traffic violation and there is no internet connection, SafeStreets software must allow him to save it and send it when internet connection has been restored.

R14: When a user registers to SafeStreets application, the system must ask him to select the role he held (end user, authority or municipality), such that it is possible to distinguish him and provide him the features associated with his role. In particular, if the user select “Authority” or “Municipality” the system must ask him also the governmental code and verify their identity through the provided interface.

R15: When a user logs in, SafeStreets must recognise him and his role (end user, authority or municipality), such that to provide him the right features.

Traceability matrix

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| --- | --- | --- | --- | --- | --- |
| Row ID | Goal ID | Assumption ID | Req ID | Use case ID | comments |
| r1 | G1 | D1,D2,D3,D4,D7 | RE1, RE2 | U1 |  |
| r2 | G2 | D3,D4 | RE2 |  |  |
| r3 | G3 | D4,D5 | RE3 |  |  |
| r4 | G4 | D5,D6 | RE8 | Non so numero |  |

Homonymous