Goals:

**Users:**

1. The system allows authenticated users to report parking violations occurring in the streets (missing parking disk, not paid parking meter, illegally parked vehicles).
   1. The system must collect the current position of the user, using GPS
   2. While reporting the violation, the system must allow users to take one or more pictures of the potential violation
   3. As input to the system, the client must select the type of violation detected
   4. The system must not allow users to choose pictures not taken in the moment of the report
   5. The system must allow user to confirm or delete the current report
   6. After confirmation, the system must add the current date and time to the report and must generate the digital signature //TODO
   7. The system must allow confirmed report to be sent to the server
2. The system allows users to register and log in in the application.
   1. The application must ask for credentials (Username and Password) when logging in
   2. The application accepts and completes the login only if the credentials are correct
   3. To register a new user the application must ask for the Username, Password, name, surname, birth date, Identity Card number and Fiscal Code.
   4. The system permits the registration only if: Username, Identity Card Number and Fiscal Code are valid, they are not associated with any other users.
   5. The system retrieves information about the user from the Identity Card number and permits the registration only if name, surname and birth month are equal to inserted ones.
   6. The system denies registration if any of the previous requirements are not satisfied.
3. The system allows users to retrieve information about streets or areas with the highest frequency of violations with or without authentication.
   1. The system must mine information from the reported violations.
   2. The system must allow the user to select a city. The user can choose either the city where he is, using the GPS position, or an arbitrary selected location
   3. The system must allow the user to select information about streets or areas in the city selected
   4. The system must show
4. The system allows users to retrieve statistics and trends about violations: information concern the effectiveness of SafeStreet initiative, issuing of traffic tickets
   1. The system must take information from the municipality exploiting the municipality service
   2. The system must use this information to build statistics
   3. The system must not allow user to see confidential data about other people
   4. The system must allow the client to choose the topic he’s interested in
   5. The system must show to the user the topic selected

**Municipality supervisors:**

1. The system allows supervisors to log in in the application through previously communicated credentials (Username and Password).
   1. Credentials are already manually inserted in the access database and are distributed to supervisors through a different channel (not through a digital way).
   2. Login is completed only if credentials are correct.
2. The system allows authenticated supervisors to request new account credentials for one of his employees.
   1. The system must provide supervisors a new account, communicating them a unique Username and a Password.
   2. The distribution of credentials to the employee is delegated to the supervisor.
3. The system allows authenticated supervisors to retrieve information, trends and statistics from Safe Streets.
   1. The system must mine information from the reported violations.
   2. The system must allow supervisors to access only to information about their own area of interest.
   3. The system must allow supervisors to select information about streets or areas with the highest frequency of violations within the selected area.
   4. The system must allow supervisors to retrieve information about the vehicles with the most violations within the selected area.
   5. The system must allow supervisors to retrieve information concerning the effectiveness of SafeStreet initiative, issues of traffic tickets and most egregious offenders within the selected area.
4. The system allows to suggest the municipalities for possible interventions about the mostly unsafe areas //ci pensiamo
   1. The system must take information from the municipality exploiting the municipality services
   2. The system must elaborate this information and try to find possible solutions for problems
   3. The system must notify the municipalities about the solution it has found

**Municipality agents:**

1. Municipality agents must be notified about potential violations, which are reported in their area of interest and are used to generate traffic tickets.
   1. The system must check reports to find if the pictures of the violations have been modified
   2. The system must find, according to the GPS position of the user and the pictures sent, if the position is fake or not
   3. The system must discard the report if fake
   4. The system must store the reported violation if correct
   5. The involved municipality must be calculated considering in which city the reported violation has been found, based on the GPS of the client that has sent the report
   6. The system must send the reported violation to the involved municipality
2. The system allows municipality employees to login into the application.
   1. The application must ask for credentials (Username and Password) when logging in.
   2. The application accepts and completes the login only if the credentials are correct.

Requirements:

UML

SEQUENCE DIAGRAM

USE CASE

Scenario

1.Reports a violation

Mark is a man in his thirties. He’s an employee at Esselunga supermarkets. One day, walking down the main street of his city he finds a car parked illegally in the middle of the bike lane. Mark is registered in the application SafeStreet. He takes out his smartphone and opens the application. After writing his credentials and logging in, he clicks the button “Report a violation” in the home page. He inserts the type of violation, so in this case he just writes “car illegally parked in bike lane”, and takes three different pictures of the car: one of the front of the car, clearly showing the license plate; the second showing the entire car and, in the background, the signal of bike lane; the third one highlighting important elements of the streets where the potential violation occurred, to help the matching of the photo with the GPS position of the user. He then confirms clicking on the “Confirm” button. The potential violation is now sent to the server for a verification. Finally, he closes the application and continues his walk.

2.The agent receives a notification and issues a traffic tickets

Lukas is a municipality agent that is working as usual at his desk and has the SafeStreet Web app opened. While checking his papers he receives a notification from the SafeStreet. He opens the window of the app and finds that a new report has been made about a violation. Lukas clicks on the row linked to the new violation. He observes that the violation has been reported by a certain Gianluca Verdi. The pictures of the report clearly show the vehicle that has made the violation (not paid parking meter), his license plate and the place where the violation occurred. There is now enough evidence that allows Lukas to issue a traffic ticket to the owner of the vehicle.

3. Checks for unsafe streets in his zone

Bob is a curious user that has the SafeStreet application installed in his iPhone 8 but is not registered in the SafeStreet database. One day, he witnesses an accident in the streets while driving his car, where a car runs over a biker correctly biking in his bike lane.

As he goes home, he’s curious about the most dangerous and unsafe areas and streets in his city and he wants to if the street where he saw the accident is one of them. He opens the SafeStreet application and clicks the button “Check statistics in a city”. After this, a new page opens in which Bob clicks on the “Check for most dangerous areas/streets”. The last click he does is on the “Search for a city using your GPS position” button. Now the screen shows a map with highlighted the most unsafe areas (with most accidents) in his city. Bob selects then the area is interested in and sees which are the most dangerous streets in the area. Bob discovers that the street he was searching for is the most dangerous one. Finally, Bob closes the application.

4. Needs to travel and searches for safe places for a car

Marie is a woman who often travels for work. She typically travels by car. She lives in Milan and this week she needs to go to Turin. He wants to know where she can safely park the car and take an hotel reservation. Before searching for an hotel, she takes out her Huawei and opens the SafeStreet application. She clicks the button “Check statistics in a city”. After this, a new page opens in which Bob clicks on the “Check for most dangerous areas/streets”. The last click he does is on the “Select a city you want” button. She chooses “Turin” among all the possible ones. Now she can use found information to look for safe zones near her workplace.

5. New intervention in an unsafe street

6.the user registers to the application

Luke and Walter are two close friends. Luke doesn’t know about SafeStreet application while Walter is a regular registered user of it. One day, Walter and Luke are walking down a road. Walter notices a potential violation and stops. He takes out his phone and opens the SafeStreet application. Luke asks Walter what he’s doing and Walter explains what SafeStreet is. Walter is pretty convincing and makes Luke install the application. Luke learns that to report violations he need to register. So he starts the process of registration providing his name, surname, birthdate, fiscal code and number of the identity card. After this, he creates his own unique username and the password. On screen, Luke sees that the registration has been successful.

Common hours: 1 h

Requirements, goal and domain assumption: 5 h

Scenarios: 1 h