**TO DO LIST**

* Scenario 1 da modificare, Luca torna da lezione, non sta andando (secondo me si può anche lasciare così by Gabri)
* Aggiungere scenari:
  + in cui si specifica una posizione diversa da quella attuale dell’utente,
  + uno dove viene specificata operazione di unlock,
  + scenario intervento cars hub controller

**ANGELO**

* Intro (?)
* Mock up

**GABRIELE**

* UML (use cases study + sequence (+ activity e statechart se serve), class diagram)

**MARCO**

* Alloy

La parte in cui vengono spiegati a grandi linee I’implementazione hardware e software penso si possa lasciare a dopo che avremo fatto il design document

**ASSUMPTION**

**ASSUMPTION: sconti applicati tutti insieme, (MAX= 10+20+30=60%)**

**ASSUMPTION: car with less than 20% battery life remaining are considered unavailable**

ASSUMPTION: auto non si spegne se non è in una safe area (o continua a addebitare anche se spenta, se fuori da safe area?)

**ASSUMPTION: Special parkin areas with power grid are a subset of the predefined set of the safe areas**

**ASSUMPTION: casi C (macchina messa in carica dopo uso) e D (macchina lasciata con meno del 20% di batteria) si compensano, no charges né discount di 30%**

ASSUMPTION: The car lock occours after 60 seconds the car was parked in a safe area (this include that the users exit the car and closed the car doors). After this time, the system calculate the total amount to pay. To obtain the 30% discount, the user has to plug the car into the power grid within this time

DOMAIN PROPERTIES: There is a CAR HUB CONTROLLER which monitor the status of every car and dispatch the “in place recharge” if a car is left with less than 20% battery life remaining and it isn’t connected to a power grid

🡪UNLOCK? **Utente localizzato vicino alla macchina (100m) fa richiesta di unlock**

🡪INCIDENTI? assicurazione casco, user non subisce rincari (troppo difficile capire se è colpa sua o meno), auto capace di rilevare incidente e avvisa cars hub controller. Servirebbe scenario apposta e modifica use case...

🡪PROBLEMI PAGAMENTI? **ASSUMPTION: The only payment methods accepted are credit card (payment guaranteed by the bank)**

🡪CANCELLAZIONE RESERVATION? Se vogliamo permetterla, aggiunta use case e scenario

**SCENARI**

Scenario 1

Title: Deal with the strike

Luca should go to class this afternoon, but unfortunately, today there is a strike of transport. His university is on the opposite part of the city, so he decides to try the new car-sharing service “PowerEnJoy”. Since it’s the first time he tries the service, first he should download the app and register to the system; after filling in his own personal data, including the payment information, he clicks on the submit button and, after a few seconds, he receives a message with his password. Now he can start looking for a car near to him.

Scenario 2

Title: Friends in saving

Marco, an expert user of “PowerEnJoy”, has gone to see a concert with his roommates Mario and Matteo, and now they want to come back home. Due to the late hour, the public transportation is no more available and, as the evening was rather expensive, they aim to spend as little as possible. Marco decides to use the “PowerEnJoy” service and, after he found and reserved a car near to them, he checks the “Money saving” option. When they get into the car, they set up their destination and the system calculates the most convenient place to leave the car. When they arrive at their destination, they will have to walk a bit, but they will have saved a lot.

Scenario 3

Title: A busy businessman

William is a businessman always in a hurry; he has just arrived to his office, but he already knows that, as soon as he will finish the morning’s meeting, he will have to go to the opposite part of the city for urgent commitments. William saw a “PowerEnJoy” car parked at a few meters from his office, so he thinks that he can save time using the car-sharing service instead of wait for a taxi after the meeting. William then register quickly to the service without paying much attention to all warnings and book the car.

Unfortunately the meeting dwells and William’s reservation expires and the system charges him 1€; when he leaves the office, he cannot get in the car because it was booked by another user, forcing William to call a taxi.

Scenario 4

Title: Desperate housewife

Laura went to the grocery store on foot, but when she exits the supermarket she realizes that it starts raining; she notices a “PowerEnJoy” car parked and, since his son has already registered her to the service to encourage her to use it, she decides to book the car to come back home without getting wet.

Once she arrives at destination, the car is low, but Laura’s first problem is to not get wet, so she looks for a park as close as possible to her house, and she doesn’t mind the warning concerning the fact she will pay more if she won’t leave the car in a recharge park.

**GOALS**

G1: Ensure system’s accessibility

Requests:

* The system must prevent guests from accessing any service before being registered or logged in
* The system must recognize already registered user
* The system must allow new user’s registration
* The system must allow user’s login
* The system must check data correctness (including payment method validity)
* If user is new and data are correct, system must provide a password to the user

G2: Cars hub controller must be able to check each car’s status

Requests:

* The system must be able to show each car’s remaining power
* The system must be able to show each car’s position
* The system must be able to show if a car is in use
* The system must be able to show if a car is reserved
* The system must be able to show each car’s “availability state”
* The system must be always able to communicate with each car

G3: Cars hub controller must know which cars need “in place recharge”

Requests:

* The system must notify the cars hub controller if a car is left with less than 20% of the battery and is not plugged into a power grid

G4: Guarantee the correctness of each car’s “availability state”

Requests:

* The system must consider a car “unavailable” if it has low battery (<20%)
* The system must consider a car “unavailable” if it has already been reserved by a user
* The system must consider a car “available” in any other case
* The system must consider a reservation expired after 60 minutes if the car reserved isn’t used
* The system must consider a reservation expired as soon as the car reserved is parked in a safe area and the user exits the car

G5: Allow user to find available cars within a certain distance from a specified place

Requests:

* The system must be able to detect the user’s location according to the user’s device’s GPS.
* The system must be able to detect cars’ location according to the cars’ GPS.
* The system must be able to detect a specific location according to the address provided by the user
* The system must be able to determinate the distance between available cars and the indicated position
* The system must show to the user the position, on the app’s map, of the available cars that are within 500 meters from the indicated position

G6: Allow user to reserve a single car

Requests:

* The system must allow the user to select a car among the ones that are showed after the search
* The system must allow the user to click the “reserve” button after he has selected a car
* The system must not allow reservation if no car has been selected first
* The system must prevent a user to reserve more than one car at a time

G7: Discourage fake and unnecessary long reservation

Requests:

* The system must notify the user about the fee he will pay if he won’t use the car that he is reserving within 60 minutes
* The system must emit a payment request of 1 € to the credit card of the user who has reserved a car and did not use it within 60 minutes

G8: Allow user to access his reserved car

Requests:

* The system must be able to check the position of the user
* The system must allow the user to click the “unlock” button after he has reserved a car
* The system must not accept request of unlock if the user is more than 100 meters away from the car
* The system must unlock the car when he receives the unlock request from the user
* The system must relock the car if no user enters the car within 60 seconds from the unlock request
* The system must not accept request of unlock if less than 60 seconds are elapsed since the last unlock request for that car

G9: Guarantee the correctness of the cost calculated for a trip

Requests:

* The system must be able to check when the car’s engine ignites
* The system must start count the minutes of car’s usage as soon as the engine ignites
* The system must switch off the car’s engine when the car is parked in a safe area and all the users have exited the car
* The system must stop count the minutes of car’s usage as soon as the car’s engine have stopped
* The system must calculate the cost of the trip based on the minutes of car’s usage

**Conteggio lavoro:**

GABRIELE

22/10/16: 1h

23/10/16: 2h

24/10/16: 30m

26/10/16: 3h