

## 1) Description

Our safeRide™ concept makes part of a new connected helmet generation. We see it as the only full usable solution in all crash cases. In facts, our helmet will assure all the support and the emergency for you. Conscientious or uncontentious, it will be able to contact rescue services at the second it detects the impact. Implemented by sensors, captors and a sim card, this helmet is at the cutting edge of technology. Design, compact and ergonomic, the detector housing will be invisible and perfectly aesthetic.

The operation of safeRide™ rescue device is to inspect the strength of the shock using different sensors to avoid false alarm and immediately contact emergencies. It does not require your phone if you are stuck or incapacitated to use it thanks to the incorporated card. This project is an all case solution completely optimal that allowed the wearer to be take in charge in every situation.

## 2) Related Work

Some connected helmet already exists today, but we didn't find any helmet like the one we think we will develop. Some of these have GPS, vocal command, heads up display, to give some examples:

- Apple Watch & iPhone SOS functionality
- Quin: only sends your location to your family
- Jarvish X-AR: to get additional information on a head-up display using holographic technology

None of the previous product can call the emergency services directly if it detects impact or accident and transmit localization thanks to GPS chip to help rescue services to arrive quickly and save time to save lives. We aim to bring this safety feature to your everyday ride.

## 3) Our approach

After working with the arduino during the labs, we aim to create our own project using a microcontroller.

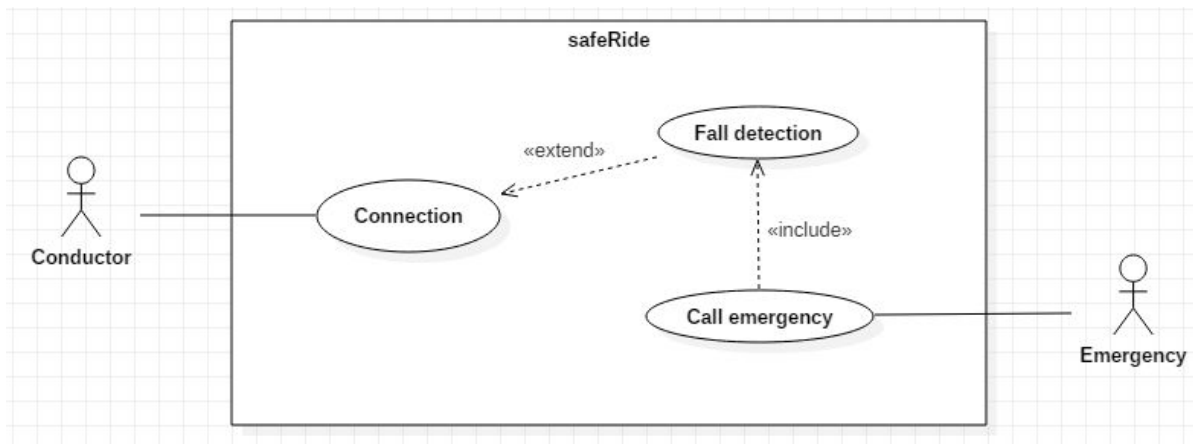
To create a smart helmet able to automatically call the emergencies we want to use a "linkit one" with an accelerometer sensor. This approach will reduce the size of the "SafeRide" module since the "linkit one" includes all the necessary components.

#### 4) Global schema

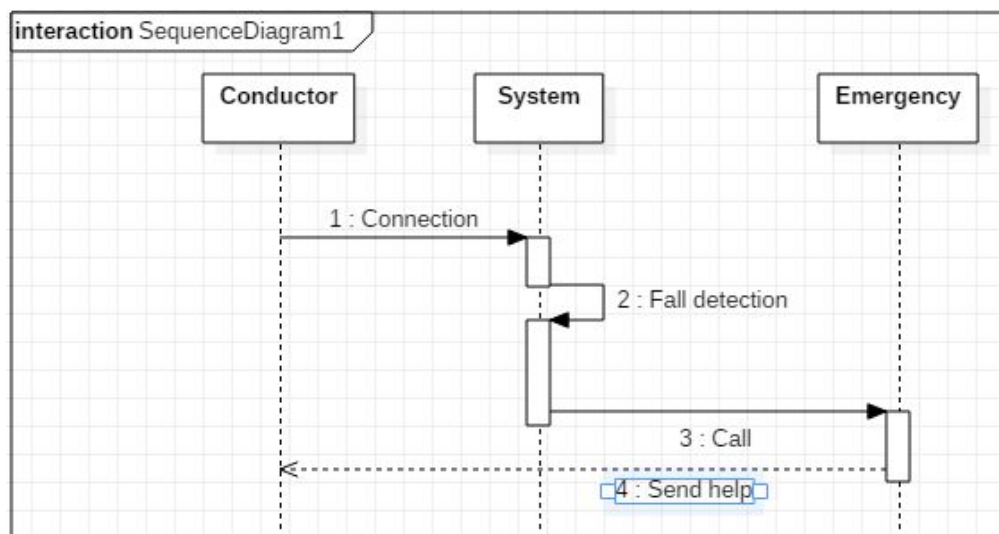


#### 5) UML diagrams (deployment, class, sequence, use-cases)

##### Use case



## Sequence Diagram



## 6) List of components

You can find below the details and arguments, prices and links of the components.

### LinKit One

total price : 50€

<https://www.mouser.fr/ProductDetail/?qs=SElPoaY2y5J5VJm1KoeVOA%3D%3D>

### Advantages included :

SIM slot	call emergencies
GSM	call emergencies
GPS	give position
Wifi	provide updates
MicroSD Slot	stock user information
Bluetooth	for mobile application

### Arduino

total price : 50€

No link for Arduino card because give by Efrei.

GSM antena + SIM 25€

[https://www.amazon.fr/dp/B07DK4RX7V/ref=dp\\_cerb\\_3](https://www.amazon.fr/dp/B07DK4RX7V/ref=dp_cerb_3)

Bluetooth 15€

<https://letmeknow.fr/shop/en/communication/10-module-bluetooth-arduino-4894479454268.html>

Wifi 5€

[https://www.mouser.fr/ProductDetail/Esspressif-Systems/ESP-WROOM-S2?qs=chTDxNgvsynGz%2FZSaAtErA%3D%3D&vip=1&gclid=Cj0KCQiA5dPuBRCrARIsAJL7oeiXaQOh7\\_YpRMmSmGJ8clJs0n5cvEfWBM\\_gLSGHJbVHHc4bIRSIs3kaAs\\_jEALw\\_wcB](https://www.mouser.fr/ProductDetail/Esspressif-Systems/ESP-WROOM-S2?qs=chTDxNgvsynGz%2FZSaAtErA%3D%3D&vip=1&gclid=Cj0KCQiA5dPuBRCrARIsAJL7oeiXaQOh7_YpRMmSmGJ8clJs0n5cvEfWBM_gLSGHJbVHHc4bIRSIs3kaAs_jEALw_wcB)

+ connectors 5€

#### Captor for Arduino or LinkitOne

Accelerometer 8€

[https://www.mouser.fr/ProductDetail/Adafruit/2019?qs=GURawfaeGuCOD7vRMbNtig%3D%3D&vip=1&gclid=CjwKCAiA8K7uBRBBEiwACOm4d0P2-aL7K0O-XIfQaaszIVtoMIsWDaDBj4Xlb28623db3TnQ9rXzBoCTKUQAvD\\_BwE](https://www.mouser.fr/ProductDetail/Adafruit/2019?qs=GURawfaeGuCOD7vRMbNtig%3D%3D&vip=1&gclid=CjwKCAiA8K7uBRBBEiwACOm4d0P2-aL7K0O-XIfQaaszIVtoMIsWDaDBj4Xlb28623db3TnQ9rXzBoCTKUQAvD_BwE)

In both cases we have to buy a accelerometer. In the case of the use of an Arduino card we may have other components to buy that we have not yet defined because we want to use a LinkitOne card.

Both cards with costs the same price with add-on components, but LinkitOne card allows us to save space, which is important for implementing it in a headset, it's also thinner and more compact than the Arduino combined with all components. The battery, the antenna, and the 2 others connection modules are too big and heavy for our helmet integration and increase the possibility to break it.

Multiplying the number of components and commands to have all the components for the Arduino increases the risk of not receiving all components on time and not meeting the final deadline and also time and integrity.

**As the prices are the same we want to order LinkitOne to have a smaller product, light, and practical.**

## SafeRide

7) an updated implementation planning in the form of Gantt diagram

Nom de tâche	1-15 oct	15-31 oct	1-15 nov	15-30 nov	1-15 dec	15-31 dec
Brainstorming						
Research						
Order						
Development						
Test and details						
Presentation						

This is our initial gantt diagram. We are now at the “order” step. We hope that we will can order quickly and begin to develop our solution around the scheduled date. All other deadlines were respected.