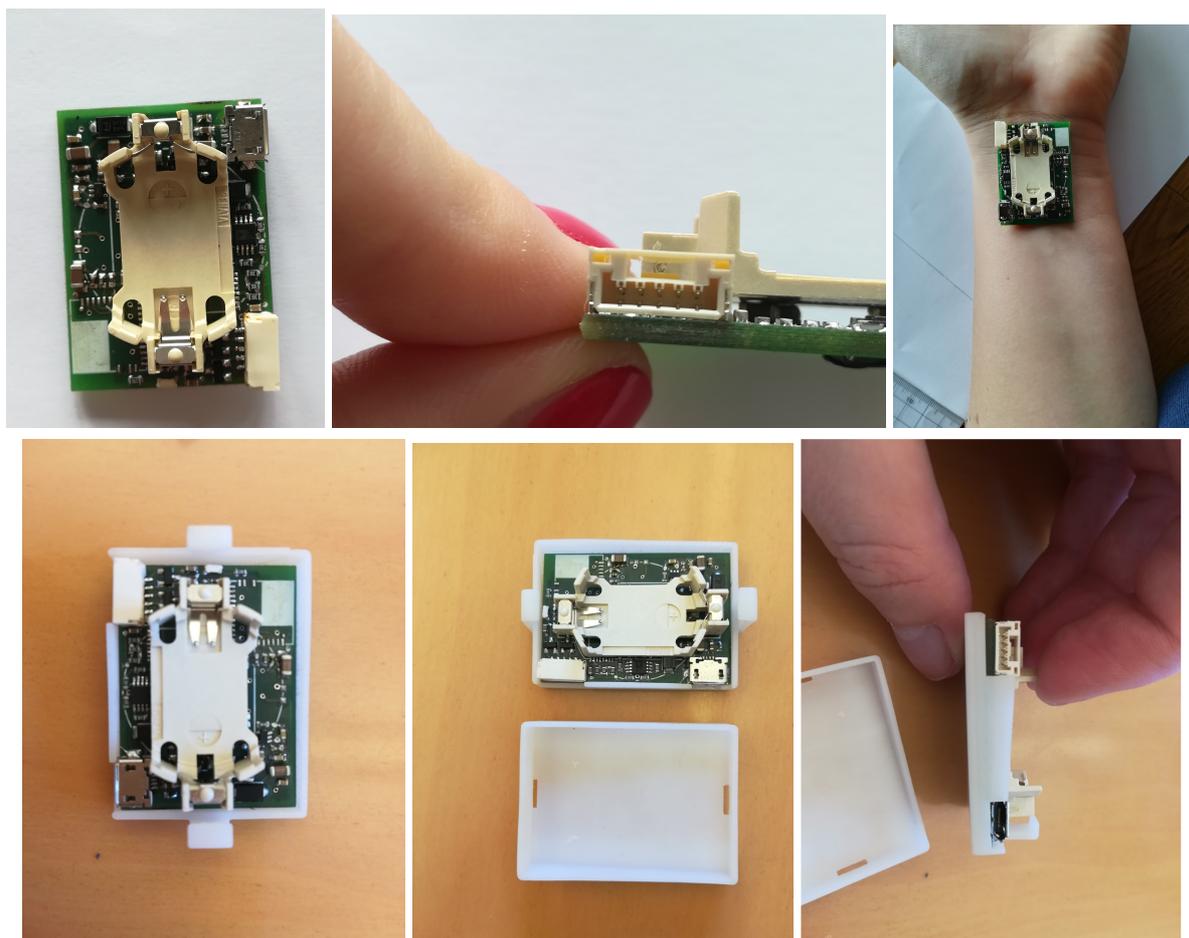


Design Concept 2 of 3 / Smart wristband and hub

The definition of the electronics for research line 1 - Vascular circulation and 4 - Dehydration drove to a collaboration with an electronic development company for a customized set of sensors. The first version included a photoplethysmograph, two golden plaques for the bioimpedance sensor, the bioimpedance sensor, a wifi module and the element to host the battery (technical sheets attached).



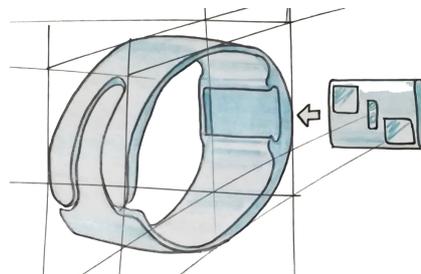
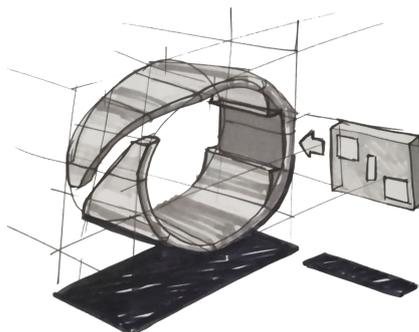
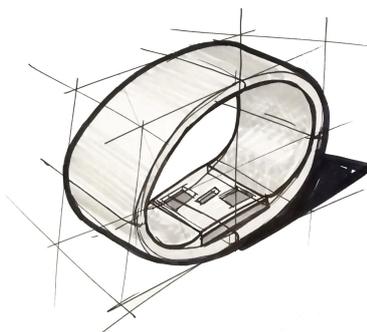
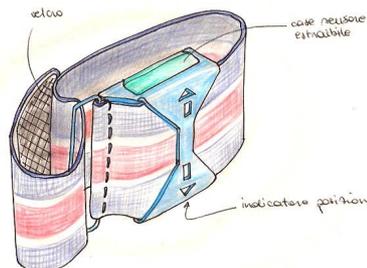
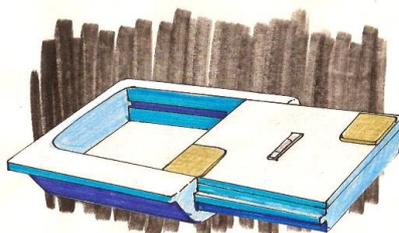
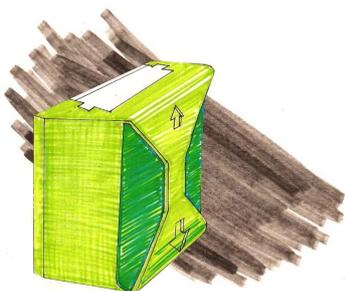
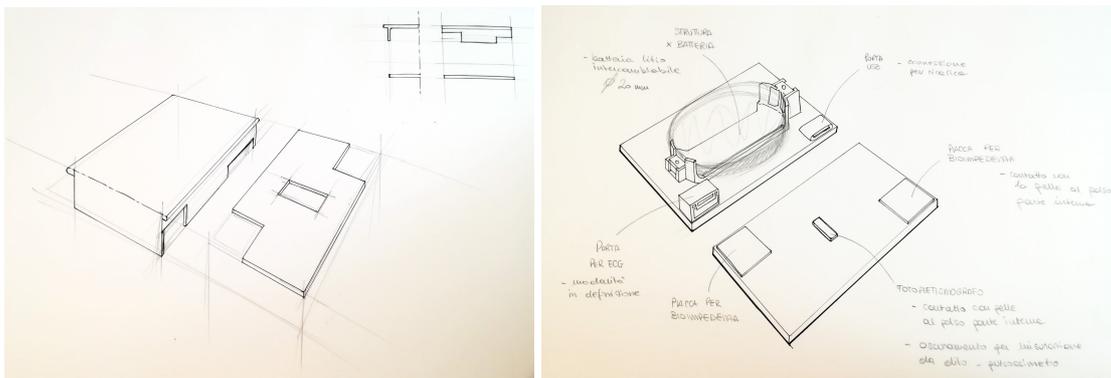
First version of electronics and case

The overall dimensions of the electronics implied a case of 30x40x20mm, resulting invasive when positioned on the wrist.

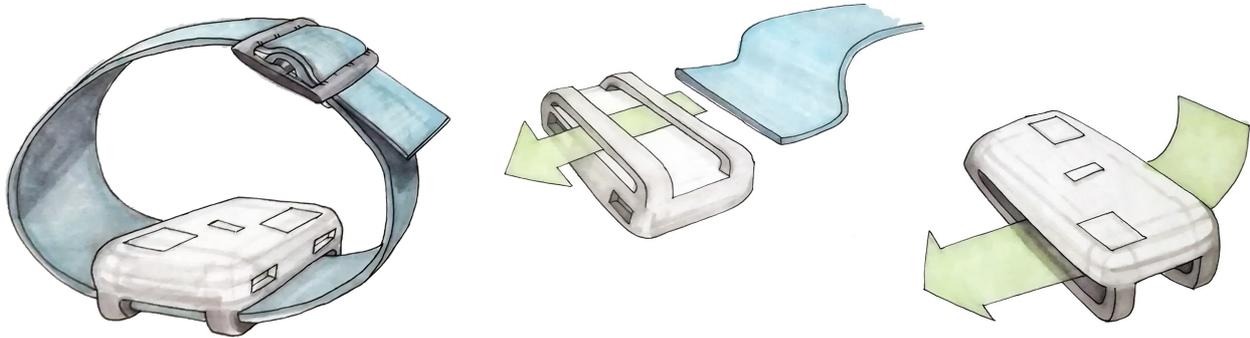
Sketches of the wristband and hub

Based on the first version of the electronics, we sketched a few designs for the case, the wrist and the hub.

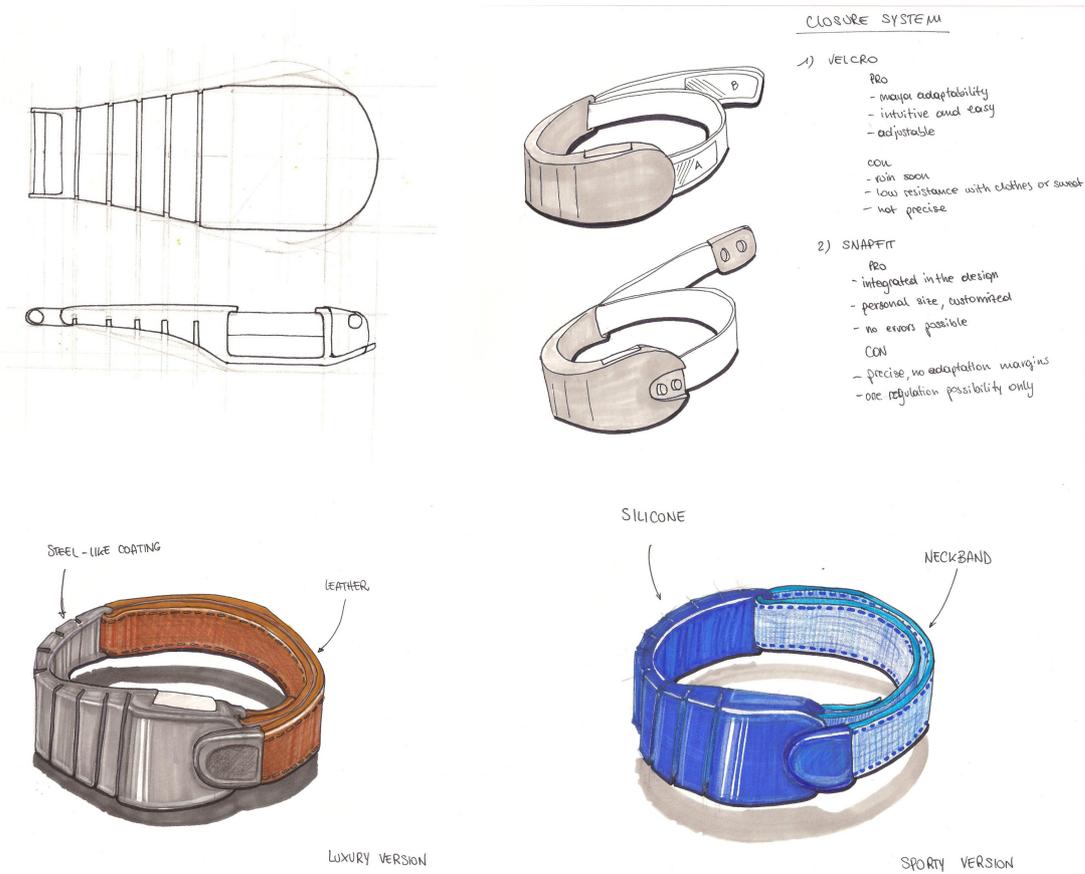
Options were to use the case of the electronics as removable element to be placed alternatively on the wristband or in the hub, based on the interaction required to record the health data.



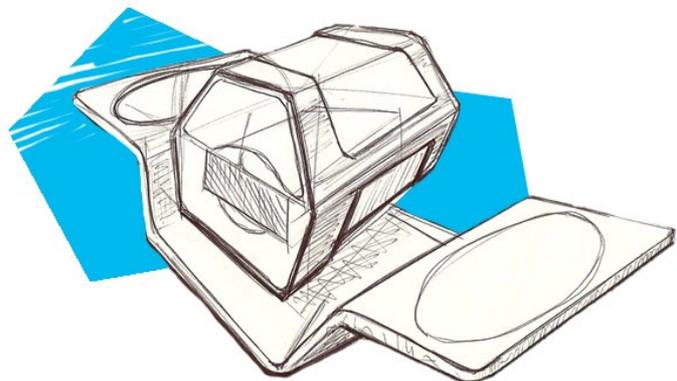
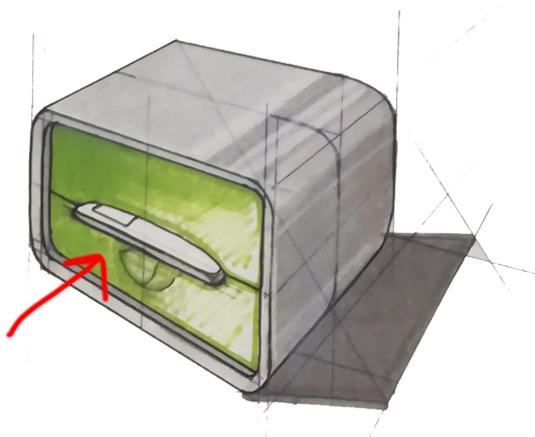
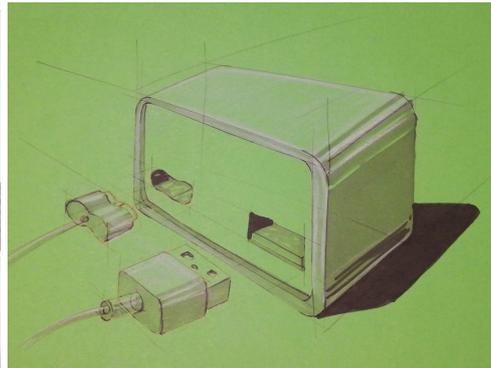
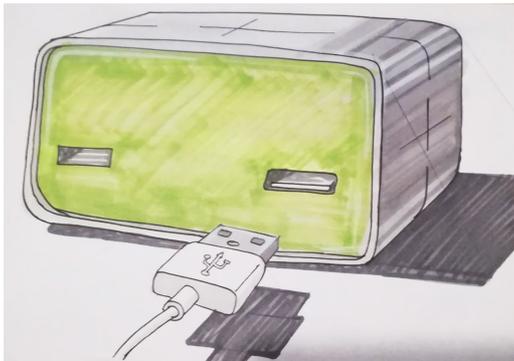
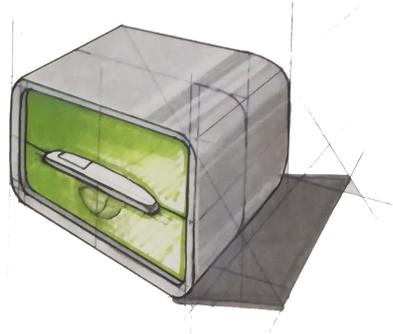
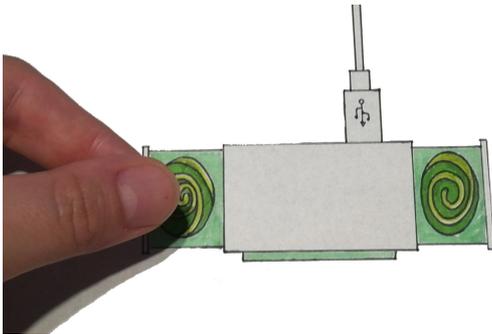
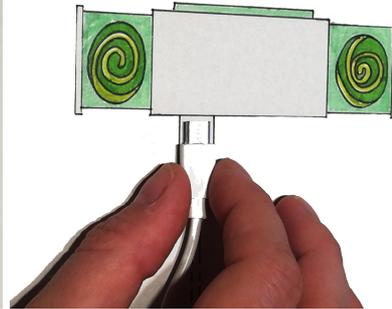
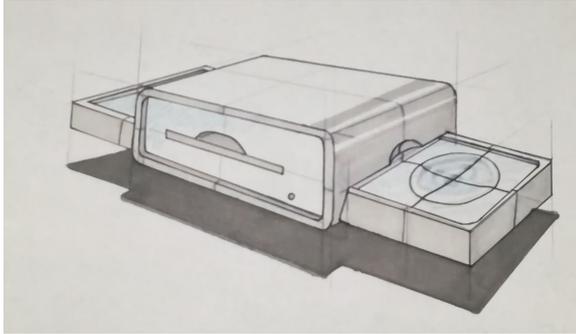
Sketches of wristband with removable case - version 1



Sketches of wristband with removable case - version 2



Sketches of wristband with removable case - version 3



Sketches of hub with removable case

First prototype of the case and wristband

Based on the electronics and their size, we define the shape and the dimensions of the elements of the system. We prepared different study models, using poor material, and then advanced ones with prototyping techniques (3D printing).



3D printed models of hub and wristband with removable sensors

Hub prototypes and final electronics (reduced dimensions and case)

The second and final version of the electronics was developed by Re:Lab, whose engineers were able to provide a miniaturized component that allowed the reduction of the case dimensions (20x30x10mm).

The reduced dimensions allowed a further study on the hub and bracelet dimensions and therefore on the interactions, plus the disposability of the engineers made it possible to implement the sensor changing the charging plug with a contact only system, to introduce a LED to check the state of the electronics and produce a visual feedback (ON/OFF, charging, connected).



Last version of the electronics and new sensor case

Following the redesign of the electronics, the cases, hub and bracelet have been implemented to be produced with 3D printing techniques, and trials with different materials have been conducted.



3D models for cases, hub and bracelet