Logbook

Weekly Reports

1st Week Report (2019-02-18 to 2019-02-22)

The first week was dedicated to presentations of teachers, teams and projects. There were also outdoor activities in “Team Building” class. We have chosen the “Smart Companion Pillow” project.

2nd Week Report (2019-02-25 to 2019-03-01)

In the second week, we received the confirmation of our project proposal. After that, we started the research about competition analyses and scientific studies. Moreover, we had a workshop about intercultural communication and started planning the project with the agile project management method “SCRUM”.

3rd Week Report (2019-03-04 to 2019-03-08)

We finished the research on existing products and scientific research. Furthermore, we summarized the results in tables and paragraphs and added them into the wiki. Additionally, we finished the introduction chapter in the wiki and defined the black box and the structural drafts.

4th Week Report (2019-03-11 to 2019-03-15)

We have decided the company name/logo - Sleepsense as also the product name/logo - bGuard. Additionally started working with Microsoft Planner in connection with Microsoft One Note and started the research of the hardware components.

5th Week Report (2019-03-18 to 2019-03-22)

We kept on working on the sensor research. Besides we created the first Structural Drawings, a first System Diagram of the concept and the cardboard scale model. Furthermore, we have done a leaflet to advertise our product and company. Moreover, we started working on some wiki chapters.

6th Week Report (2019-03-25 to 2019-03-29)

We finalized the research of sensors, micro-controllers, microphone and speakers. We inserted all this information in wiki. We have decided which components we will use.

7th Week Report (2019-04-01 to 2019-04-05)

We ended the schematics for the pillow and the home station. We continued to work in the chapters that should be ready for the interim report.

8th Week Report (2019-04-08 to 2019-04-12)

We have prepared the interim presentation and finished the chapters needed for the interim report.

9th Week Report (2019-04-22 to 2019-04-26)

We are about to decide the textile we will use for the cover of the pillow. Concerning the micro-controllers, we have started to write the code.

10th Week Report (2019-04-29 to 2019-05-03)

We have decided the cover for the pillow - Lyocell (Tencel). We started with the first designs of the app. Concerning the paper, we started to work in Overleaf/LaTeX. We refined chapters in wiki based on the feedback we have received.

11th Week Report (2019-05-13 to 2019-05-17)

Sensors are now working and configuration of the IoT platform was done. We have finished the first version of the paper and started working on the manual. Finally, we have all the materials for the prototype of the pillow.

12th Week Report (2019-05-20 to 2019-05-24)

The first version of the manual is done. We keep working on the code and the way functional tests must be done. We have started working on the report - Overleaf/LaTeX.

13th Week Report (2019-05-27 to 2019-05-31)

We improved the manual based on the feedback we have received. We started working on the video. We keep improving the information in wiki.

14th Week Report (2019-06-03 to 2019-06-07)

We finished the poster and the final version of the leaflet. The prototype of the pillow is done. We defined the tests according to the user stories. First tests were made.

15th Week Report (2019-06-10 to 2019-06-14)

More tests were made. We are checking all things in wiki. Video is done.

16th Week Report (2019-06-17 to 2019-06-21)

Wiki was improved based on the feedback we had from teachers and supervisors. A list with the names and e-mails of the Sponsors was sent to Benedita Malheiro in order that can be invited for the Closing & Certificate Awarding Session.

17th Week Report (2019-06-24 to 2019-06-27)

Video, poster and wiki were improved based on the feedback we had from teachers and supervisors. Project is closed.

Meetings with Supervisors

1st Meeting (2019-02-21)

Agenda:

1. Presentation;
2. Modus operandi;
3. Project proposals;
4. Electronic Logbook.

Minute:

Introduction of the Project Proposals.

2nd Meeting (2019-02-28)

Agenda:

1. Problem definition: parents worry a lot about (the health of) their children and want to monitor their children constantly;
2. Target group: babies (0-3 years old).

Questions:

1. Mobile app: do we have to develop it or just design the interface? Nobody in our team has experience in developing an app.

2. We would like to use really small sensors in the product, but, in reality, we may have to use bigger sensors for the prototype. Can we still make a cost estimation of the product with the small sensors?

Minute:

Ko did a short presentation of our idea. We were told to work on the State of The Art. We have started building the foundations of our project.

3rd Meeting (2019-03-07)

Agenda:

1. Present our research on wiki;
2. Discuss our conclusion.

Questions:

1. Wiki converter/editor for word;
2. Is state of the art fine like this;
3. Do we have to put all our requirements in a scrum way?

Minute:

Tobi guided the presentation. We presented our final product concepts and the results of our market and scientific research. We were told to edit the tables in the wiki syntax and to work in the report with flowing texts. The professors told us how to include the references in the wiki. We also got the advice to have a look at privacy issues and the intensity of Bluetooth and Wi-Fi to include in a product for infants.

4th Meeting (2019-03-14)

Agenda:

1. Summary of State of the Art;
2. Presentation of the “black box”-diagram and structural drafts.

Questions:

1. What kind of cardboard model do you want to see?
2. Where do we get the tools and materials for making a cardboard model?

Minute:

The presentation was done by Marcel. He mentioned the improvements we have made in wiki page

like the tables comparing existing solutions as the references on the scientific research. He also talked about the black box and the structural drafts we have uploaded. We were advised by the supervisors that we must calibrate the gas sensors.

5th Meeting (2019-03-21)

Agenda:

1. Logo and leaflet;
2. Schematic and structural drawings;
3. Price list based on the structural drawings.

Questions:

1. Are there Arduino Unos, BreadBoards, Resistors and Jumper Wires (M/M, M/F) from ISEP we use for the prototype?
2. Where can we find information about “power”/signal of Bluetooth, Wi-Fi and Smartphone?

Minute:

Elien started with the presentation of the product name, company name and the logos. After that, we were talking about the progress of the wiki including the sustainability and ethics chapter. Finally, Vaido presented the system diagram of the product. We are told to compare the chosen micro-controllers/sensors with other solutions to argue our decision. Furthermore, we have to create the System Diagram of the prototype.

6th Meeting (2019-03-28)

Agenda:

1. Show our table of sensors, discuss what kind of sensors we have until now;
2. Propose our pillow shape proposal, sock shape and cardboard model;
3. Schematic.

Questions:

1. Do we need jumper wires and USB cables?

Minute:

Vaido made the presentation. Mainly we talked about sensors and we were advised for a different temperature and humidity sensor - the HTU21D. we also were advised to use a spell checker for wiki. We wait for information from the supervisors concerning the availability from ISEP of a CO sensor starting measuring from 0 ppm.

7th Meeting (2019-04-04)

Agenda:

1. Concept drafts of the sock which is measuring the pulse;
2. System Schematics and choice of the power supply.

Questions:

1. Can we use the ESP32 micro-controllers from ISEP?
2. Do we have to calculate the costs of the product itself or only for the prototype?
3. The interim report is to be made based on wiki? What about the chapters that are not done yet?
4. How specific it has to be the interim presentation?
5. Can we go to the presentation room in building E before the interim presentation for training?

Minute:

The presentation was done by Alex. We talked about the design of the sock. Benedita told us that perhaps she could be able to arrange a visit to a hospital for us to see how babies are monitored. We also talked about the interim presentation as also the interim report. We were told to go to building H to the physics department and talk with Pedro Guimarães about the sensors he could provide us.

8th Meeting (2019-04-24)

Agenda:

1. Report adjustments based on the feedback from teachers and supervisors;
2. In the final product, the SOCK will have a microcontroller, a battery and a pulse sensor. The communication with the HOME STATION will be done by Bluetooth. In the prototype there will be only the pulse sensor in the SOCK that will be connected by wires to the microcontroller in the PILLOW;

Questions:

1. How to increase the size of the font on wiki?
2. Now our product is different from the one in the black box. How should we proceed? Do we insert a new black box and keep the first one?
3. Concerning the electronic schematics, they should be of the final product or of the prototype?
4. Should we include SI units in the glossary like for instance V - Volt?
5. In “Home”, “Sponsors”, DFI, ISEP and DEE, ISEP are to be considered as sponsors?
6. Also in “Home”, “Participants”, what should we say in the field “Client”?
7. Can we delete “Activities” that is at the end of this page as it is already detailed in “Project Management” chapter of the Report?
8. Can we delete “Project plan” that it is in “Deliverables” as it is already detailed in “Project Management” chapter of the Report?
9. Do we get the materials for the case of the prototype sponsored by ISEP (We want to use the 3D Printer)?

Minute:

Alex did the presentation. We talked about the difficulties team is facing to choose the materials for the pillow. Nevertheless, we have presented some samples of textiles and sooner we will make a decision. We informed that we keep looking for solutions concerning the foam. We went to Laboratório de Sistemas Autónomos (LSA) to handle the 3D printer subject.

9th Meeting (2019-05-02)

Agenda:

1. We have started the development of the design for the app;
2. We have decided which material we will use for the cover of the pillow;
3. We keep working on the foam subject to take a final decision;
4. We are now writing the code for the micro-controllers.

Questions:

1. Can we use the DHT22 for the prototype?
2. Can we use a soldering iron from ISEP? We need to weld two sensors.

Minute:

The presentation was done by Elien. We explained the design of the app and the reason why we chose Lyocell (Tencel) for the cover of the pillow. We were informed about the paper we must do until 2019-05-14. It was sent to us the template for doing the paper in Overleaf/LaTeX. We can use DHT22 for the prototype. Two sensors were welded.

10th Meeting (2019-05-16)

Agenda:

1. We finished the SolidWorks drawings of the home station and the cage to insert the heart sensor in order to print these parts in the 3D printer;
2. We have improved the explanation about the choose of Lyocell (Tencel) for the cover of the pillow;
3. We keep working on the design of the app;
4. We started working on the design of the vision of the product inserted in the baby´s room, the crib, and so on;
5. We keep working on code;
6. We improved the Functionalities chapter;
7. We finished the paper;
8. We started looking for a waterproof but not airproof material to cover the electronic components that will be inserted in the pillow and in the sock.

Questions:

1. What is the maximum temperature that the electronic components to be inserted in the pillow can reach? Microphone, speaker, MP3 player, 3.7 V Battery and micro-controller Espressif ESP32 DevKitC;
2. And the ones to be inserted in the sock? Heart rate sensor module, 3.7 V Battery and micro-controller Bluno beetle?
3. Where can we find Female/Male jumper wires at ISEP (we asked already in the physics and technics department)?
4. Are there any specific requirements for the manual?

Minute:

We were informed that the limit date to submit the paper is now 2019-06-17. We have to send the SolidWorks drawings to supervisor Jorge Justo. We got feedback from supervisor Paulo concerning the protection of liquids leakage into the electronic components as also an idea of the maximum temperature electronic components can reach. We have got feedback concerning some requirements for the manual. Female/male jumper wires were given to us.

11th Meeting (2019-05-23)

Agenda:

1. We started printing in LSA the home station and sensor casing for the sock;
2. These parts are already programmed and tested in functionality: DHT22, SGP30, MP3-Player, Speaker - In some cases, we had help from Paulo Ferreira;
3. Diagram of pulse measurement;
4. We are working on the manual of the product;
5. We started working on the report using Overleaf/LaTeX.

Questions:

1. Which differences do the concept model has to have from the prototype model?
2. Paulo, do you have any results because of data sending to the IoT cloud?
3. Where can we get an “OA 70” Germanium Diode? - We need it for the microphone sensor;
4. Can we get a direct connection with the micro-controllers to the “ISEPWLAN”, so we only need the “ssid” and the “password” for the internet connection? - The MAC-Addresses of the micro-controllers are: “B4:E6:2D:D6:07:C9” “24:0A:C4:C1:28:D4”;
5. How can we validate our measurements for the testing (Pulse, Humidity, Temperature, Carbon-Dioxide, Noise level)? Can we go to the metrology lab?
6. How we can pair the ESP32 with the other ESP32 via Bluetooth and how we can send the data?
7. We have programmed the pulse measurement. Paulo, can you please have a look at it?
8. In the report to be made in Overleaf/LaTeX, we only have two levels of paragraphs as in the paper or can we have more?
9. Can you please help us with the € symbol in Overleaf/LaTeX report?
10. How do we delete old projects in Overleaf?

Minute:

We have shown the already printed parts - bottom part of the home station and cage of the pulse sensor. An “OA 70” Germanium Diode was given to the team. Measurements can be validated at the Physics Department. We were helped on the construction of a table for Overleaf/LaTeX.

12th Meeting (2019-05-30)

Agenda:

1. Fixed the Bluetooth and Wi-Fi connection;
2. Can connect to the IoT cloud “ThingsBoard” - Presentation of the Dashboard (so far);
3. Programmed the reaction with playing music to the crying of the baby;
4. For the Functional Tests, we are planning to write about the installation and the calibrating of the sensors;
5. It seems that the codification to write CO_2 on wiki does not work on a title of a chapter.

Questions:

1. Can you please give us feedback on version 5.0 of the paper?
2. Should we upload the refined report as a PDF of Wiki? Or based on LaTeX? If based on LaTeX we would need a little bit more time - 5 days;
3. When we are trying to combine the Bluetooth-code with the HomeStation-code the sketch is too big. What can we change on the code to make it smaller?
4. Is the planning for the Functional Tests enough?
5. Can you please give us feedback on the revised State of the Art chapter of the report?
6. Also on the manual?
7. Are there any special requirements for the poster and the video?

Minute:

Supervisor Paulo will help us in the afternoon concerning code. We got feedback on the paper and the manual. Feedback on the State of the Art chapter is almost ready. There are no special requirements for the poster and the video - we just have to follow the design framing we have been doing about bGuard. We have presented the waterproof but not airproof textile to protect the electronic components of the pillow and sock from spillage of liquids.

13th Meeting (2019-06-06)

Agenda:

1. Show 3d print and pillow;
2. We have finished the first version of the poster.

Questions:

1. Supervisor Cristina - when testing? Friday, 2019-06-07, morning, at physics department and Tuesday, 2019-06-11 in the other university?
2. How to put electronics in the pillow? Difference prototype/end product;

3. What to integrate into PCB?
4. Black mini USB cable from Paulo? Can we swap? The home station was designed on this size;
5. Can you please help us on how to calculate the “autonomy” of each battery?

Minute:

We have shown the home station and the pillow. We will improve the smoothness of the home station with acetone. Paulo gave us the needed USB cable. We will calculate the “autonomy” of the battery of the prototype by measuring the power consumption with the software running. We will use the same values for the batteries of the end product.

14th Meeting (2019-06-13)

Agenda:

1. We have made the tests. The report for the microphone is finished. Temperature, Humidity and Pulse is in progress;
2. The wiki was updated with the Technical Specification Document and new images of bGuard;
3. The article for the concept of the IoT cloud Thingsboard is finished;
4. Report (not a complete version) in Overleaf/LaTeX, poster and leaflet were sent to the supervisors for feedback.
5. The manual, the poster and the leaflet are in wiki.

Questions:

1. 249.00 € is an estimated price sale for bGuard based on the market research and the costs of components/materials. Is that OK?
2. Advertisements on Facebook (1000 €), Instagram (2000 €), Google (2000 €), own website (3000 €) and exhibitions for baby materials (2000 €) sum up 10 000 €. Is that OK?
3. Which topics have to be presented in the final presentation? Do we need to focus on the described chapters of the interim presentation too?
4. We still have problems to combine the Bluetooth-code with the HomeStation-code. The sketch is too big. We sent the sketches to Paulo. Do you have any tips for us to improve it?
5. Do we need to solder the pillow and the sock parts?

Minute:

We got feedback of things we must correct in Wiki like units of the IS system, spaces between numbers and units, etc.. We must change the software in order to allow the home station to work without the need of the sock to be working. We need to insert units in some graphs. Selling price is OK. We can improve the budget for marketing. Final presentation must be mainly about project development.