1st Week Report (18.02. - 22.02.2019)

Our first week at ISEP was full of meeting new people, discovering Porto and getting to know the Campus. There were many activities like an International Lunch and a guided City Tour through Porto in which we could discover Portuguese traditions.

2nd Week Report (25.02. - 01.03.2019)

After Welcome Week, our EPS started. We were assigned to groups and spend a whole day with team building activities in which we played different kinds of games and built our own team mascot. Later that week we could decide which project we want to be working on the next months. After a discussion, we decided to choose the Mushroom Farm Project, as every one of us was interested in the process of growing mushrooms sustainably and we were excited about developing ideas and concepts.

3rd Week Report (04.03. - 08.03.2019)

In the 3rd week, project “Mushroom Farm” was about to get serious. We started thinking about whether to provide a service in which we just sell mushrooms sustainably produced from coffee waste or to build a device to directly sell to restaurants or individuals interested in growing their own mushrooms from coffee leftovers. Further, we were brainstorming for a suiting name for our product. To know the market we will be entering better, we made market research on what devices or services already exist. Also, we made research on the process of growing mushrooms as it is the basis for building a reliable and working product.

4th Week Report (11.03. - 15.03.2019)

After a few meetings of discussing and thinking about all our possibilities, we still had troubles to decide on what our product or service will be in the end. We did not like the idea of just selling mushrooms grown by ourselves but to build a device that everyone can use. A chamber that controls different factors important for mushroom farming like temperature, air flow, light and humidity. In addition, the first draft of our logo was designed.

5th Week Report (18.03. - 22.03.2019)

Our Mushroom Project is still in its planning phase but finally, we decided on what our product will be in the end: We want to provide a service whereby all the resources and information needed to grow mushrooms at home are provided. Our grow-kits will be fully colonized with mycelium so the customer will have mushrooms in just one to two weeks with minimal effort. Once the kit stops producing mushrooms, the customer simply returns it and we replace it with a new one. Our kits will come in a range of sizes to satisfy all needs.

This week we also designed a leaflet on which all relevant information about our service and product and a brief introduction in our philosophy and company is stated. Its purpose is to get the customer curious about our product. Also, for the moment we named our product “Waste to Fungi”. We will

keep brainstorming and change it eventually.

6th Week Report (25.03. - 29.03.2019)

This week we designed a cardboard prototype of our mushroom grow-kit. We also had several different classes and were working on our report. Next monday, we will have a pitch to present our mushroom project to a possible sponsor which may provide us space to develop our mushroom project and finally start building the grow-kit itself.

7th Week Report (01.04. - 05.04.2019)

We had pitch presentations with two different possible sponsors this week, we are now waiting for their decision. Also, one of them offered us a location next to a huge water tank which is supposed to provide a cooler place to cultivate our mushrooms. Furthermore, we continued to work in the chapters that should be ready for the interim report.

8th Week Report (08.04. - 12.04.2019)

This week we dedicated to the interim report and presentation. We wrote the last chapters and prepared the presentation. Also, we worked on our list of components for the Mushroom Farm.

9th Week Report (22.04 - 26.04.2019)

We are getting closer to first trying to cultivate our mushrooms. We decided on which mushroom spawn to use and what we would need for the first attempts to be successful. We keep working on our report.

10th Week Report (29.04. - 03.05.2019)

During this week there was not a lot of work that had to be done and therefore the team has used this week to review and consolidate the work they had already done.

11th Week Report (13.05. - 17.05.2019)

We finally started to cultivate the mushroom. For that, we used buckets and coffee from the cafeteria and mixed the coffee with hey and the mushroom spawn. We tried doing the whole process as sterile as possible and used two different types of Oyster mushrooms.

12th Week Report (20.05. - 24.05.2019)

After the first week, we checked the mushrooms several times and discovered some buckets are contaminated already. We put them in a save pace away from the buckets that are still good. We also

started to work on the actual chamber we want to build to regulate all the factors that are impacting the mushroom growth. Also, we started to work on the scientific paper.

13th Week Report (27.05. - 31.05.2019)

After we made a few more buckets with mushroom spawn and coffee grounds from the cafeteria we transferred 8 of our buckets from the closed cabinets in a room in the laboratory to the Robotics Lab where we have a more cooler place to work. Unfortunately, one bucket was already contaminated and can't be used anymore. This week, we were also working on the scientific paper and are planning to finish it by the beginning of next week.

14th Week Report (03.06. - 07.06.2019)

This week the Team dedicated to finalizing de scientific paper, as well as working on finishing the Wiki report. The first drafts of the poster were made. Unfortunately, all the colonies moved from the Laboratories to the Robotics Lab were contaminated and could not be used anymore which is why the Team started a new cultivation process in which all the mycelium that was left had been used. Also, an improvised chamber out of bin bags was built and sterilized to have more control of the impact of daylight as well as protecting the buckets from the water which may come from the pool where the farm is located next to. The Team is still working in the electronics for the final chamber.

15th Week Report (10.06. - 14.06.2019)

The project semester is slowly coming to an end. This week, the team finalized the wiki report and uploaded it to get a final review. Also, the last filming for the video was made and started to be edited for the screening next Wednesday. The scientific paper was improved as well. For next week, a presentation was prepared were also the video will be shown. The team now has final versions of the scientific poster, scientific paper, leaflet, and wiki report.

16th Week Report (17.06. - 21.06.2019)

17th Week Report (24.06. - 28.06.2019)

Meetings

1st Meeting (2019-02-21)

Agenda:

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

Minute:

We become familiar with a brief description of all project proposals, shortly after the presentation, We decided to arrange a meeting and discuss our personal choices. After presenting our personal views, we chose three topics in the following order:

1. Mushroom farm
2. 3D Music
3. Companion pillow

Luckily we were assigned to our first choice, which was “Mushroom Farm” project.

All members of the team were present.

2nd Meeting (2019-02-28)

Agenda:

1. Industrial or individual purpose of the farm.
2. Does it include the whole process of growing mushroom or is a colonized mycelium available?
3. What is our main goal (money, education, innovation, recycling)?
4. Where can we take coffee waste from?
5. What is a sustainable concept meaning according to mushroom farm?

Minute:

After discussion and suggestions, that there is a possibility to choose each of the following purposes of the farm, the team decided to choose more service orientated path of the project. The service would include two main parts which are:

1. Service connected with the collection of coffee waste from cafeterias and restaurants.
2. Growing mushrooms in the invented chamber in order to sell them into to targeted market:

- Restaurants, Canteens
- Individuals

Our goal occurs to cover all of the following aspects partly (money, education, innovation, recycling). Coffee wastes can be collected from our university, but it has to be first arranged. Sustainability in the concept of the mushroom farm in our case is a usage of the coffee waste and invention of the closed system (if possible).

All members of the team were present.

Spokesman: Alex Winter Note maker: Erendiro Pedro

3rd Meeting (2019-03-07)

Agenda:

1. Research Plan.(where can we source information?) (Is there anyone specific we can contact?)
2. Define Market (Competition)
    - Own secondary research
3. Consumer needs & wants (secondary research)
    - Individuals (interviews & surveys) (structured or semi structured?)
    - Restaurants (Interviews) (any points of ethics?) (what number of participants is considered reliable/ valid?)
4. What amount of coffee waste does ISEP produce. Who can we talk to about this?
5. Where in ISEP can we grow mushrooms? what resources do we have? Are there any health and safety regulation?

Minute:

As a result of our 3rd meeting, we are now aware of organizations providing relevant information to our topic such as

- Associação Portuguesa de Hotelaria, Restauração e Turismo (APHORT)
- Statistic Institute (INE)
- Fundação Francisco Manuel dos Santos (FFMS)
- Eurostat (Coffee Consumption)
- Statistica

Also prof. Abdel was offering us the Chemistry department room as a place to set our project. The coffee waste we will be using is going to be collected from the cafeteria which produces ~2kg of waste per day. In order to get the waste, we will contact the AE.

All members of the team were present.

Spokesman: Julien Battaglini Note maker: Julia Ślasko

4th Meeting (2019-03-13)

Agenda:

1. Business concept of farm
2. Design and feasibility (sketches review).
3. Blackbox review.
4. State of art-clarification of doubts.
5. Solidworks (the need for a license).

Minute:

For the State of Art chapter, we are missing sources for the figures. We should always do references as it would get confusing in the end. Further, we need to be working on our report to constantly improve it.

All members of the team were present.

Spokesman: Erendiro Pedro Note maker: Ronald Kivipelto

5th Meeting (2019-03-20)

Agenda:

1. New business concept
2. Deliverables review
3. Confirmation of the lab place

Minute:

We have to put all our sketches in the development chapter. Also, wee need to make a small presentation concept. We will have to do further brainstorming regarding the name of our product, as waste may not be a beneficial term concerning our product. Itshould focus on the recycling aspect of our service to make it sound more appealing to the customer. Also, to make references on our wiki consistent, we will be using APA from now on.

All members of the team were present.

Spokesman: Maike Fälker Note maker: Alex Winter

6th Meeting (2019-03-28)

Agenda:

1. Discussing schematics
2. Solidworks
3. List of Materials
4. Confirmation of the Sponsor
5. What ethics should be focused on?
6. What tools to build prototype are available and where?

Minute:

We will add minor changes to our Mushroom Project such as the fact that the device won't need a battery and the eventual implementing of an internet connection. Also, we added wires to our list of Materials. A pitch presentation for our possible sponsor will take place next Monday.

Websites to buy components for our grow-kits:

- **RS Components** https://pt.rs-online.com/web/
- **PTROBOTICS** https://www.ptrobotics.com/
- **Aquário** https://www.aquario.pt/
- **Farnell** https://pt.farnell.com/
- **Mouser Electronics** https://pt.mouser.com/

Websites to easily build an app:

- **MIT Appinventor** http://appinventor.mit.edu/explore/front.html
- **ThingSpeak Iot** https://thingspeak.com/
- **Scratch** https://scratch.mit.edu/
- **Easy Iot** https://iot-playground.com/

All members of the team were present.

Spokesman: Julia Ślasko Note maker: Julien Battaglini

7th Meeting (2019-04-04)

Agenda:

1. Details for pitch presentation (where, who?)
2. What exactly is expected for the interim presentation and report?
3. Review of existing report
4. What date do we need to order components by?
5. How does it work with our budget? Do we pay and then get refunded

Minute:

We will stay in contact with the sponsors on the date for the pitch presentations. The report still needs to be improved at several points. Concerning the budget: We have to provide a list of components and the supervisors will make sure we get it. Budget is 100€.

All members of the team were present.

Spokesman: Maike Fälker Note maker: Julia Ślasko

8th Meeting (2019-04-04)

Agenda:

1. Review of list of components
2. Discussion of budget
    - Pressure cooker
3. Feedback review
4. New Circuit Review
5. Mushroom Spawn
6. Where can we buy straw?

Minute:

After a discussion of the budget concerning our list of components, we had to make some minor adjustments. We found a place to get the Mushroom Spawn from (Horta do Marão). Also, Abdel is going to provide us with straw.

Horta do Marão Rua do Minho Velho, n90 4600-520 Amarante

Spokesman: Alex Winter Note maker: Ronald Kivipelto

9th Meeting (2019-05-02)

Agenda:

1. Review of list of components
2. Confirmation of mushroom spawn

Minute:

List of components has been verified. Mushroom Spawn is confirmed. We will get two types of mycelium

- Yellow Oyster Mushroom
- Grey Oyster Mushroom

Spokesman: Erendiro Pedro Note maker: Alex Winter

10th Meeting (2019-05-16)

Agenda:

1. Discussion of the start of the cultivation process

2. Documentation of the cultivation process(photos, video or written?)
3. Can we have one more temperature sensor?

Minute:

The cultivation process should be documented to have the most important values of the growing medium controlled.

- Temperature
- Humidity

It will be enough to have it written. We also got another temperature sensor (borrowed).

Spokesman: Julien Battaglini Note maker: Alexander Winter

11th Meeting (2019-05-23)

Agenda:

1. Can we cultivate again? If yes, when?
2. Need of a stronger servo (the MG996R)
3. Outsourcing of the mushroom incubation process as an option?

Minute:

Spokesman: Erendiro Pedro Note maker: Alexander Winter

12th Meeting (2019-05-30)

Agenda:

1. Contamination case: Observe or throw?
2. Mushroom party: Do you like mushroom risotto?

Minute:

- **LSA contacts**: Luís Lima (lul at isep dot ipp dot pt) or Guilherme Amaral (gasilva at inesctec dot pt)

We will keep a few of the contaminated buckets as there is a chance the mycelium will fight the mold. For the mushroom party, we will make a very easy dish made out of mushrooms as we won't have a kitchen to make fresh risotto.

Spokesman: Ronald Kivipelto Note maker: Julien Battaglini

13th Meeting (2019-06-06)

Agenda:

1. Contamination case update
2. Paper review
3. Mushroom party: postponed or changed to mycelium party
4. 10 more male-male cables
5. Another sensor DHT22 (one of them is not well calibrated)

Minute:

We will still have to work on the paper. We got the male-male cables.

Spokesman: Maike Faelker Note maker: Alexander Winter

14th Meeting (2019-06-13)

Agenda:

1. Issue with formatting results table in a scientific paper.
2. What would you like us to do with MP4 files?
3. Flow chart content review
4. Results review
5. Project development chapter review
6. New micro-controller not connecting with ThingSpeak server

Minute:

Change format in scientific paper to normal. Also, change celsius degrees to °C and basically make some parts shorter. On the wiki, put image with a link to the video Charts is missing description of x and y axis. Result table cannot be a.jpg, must be made in the wiki.

All members of the team were present.

Spokesman: Erendiro Pedro Note maker: Julia Ślasko

Activities

Please register here all accomplished project activities

Start	End	Task	Description	Who

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