Logbook

Weekly Report

1st Week Report: 20/02/2017-24/02/2017

Team building and choosing project subject. We were informed of all the different subjects and we chose the subject together. We got our second choice, which we are glad with.

2nd Week Report: 27/02/2017-03/03/2017

We had our first meeting with the supervisors and got answers to our questions.

We finished the Gantt chart and task allocation, so the planning became clearer.

We divided the different purposes between the five of us to do research. Next week we are going to discuss this and definitely choose the purpose of our project.

3rd Week Report: 06/03/2017-10/03/2017

We chose the purpose of our project and we all agreed on the distiller, but on the meeting we were discussing the purpose and the coordinators said that we have to focus on the mirror itself.

We did some research and uploaded it on our wiki page.

We have started doing some changes on the Gantt chart and we have also started working on the system diagram and structural draft

4th Week Report: 13/03/2017-17/03/2017

We did some more research about solar tracking and the mechanical part of the project.

We uploaded a new version of the black box diagram and the structural drafts.

5th Week Report: 20/03/2017-24/03/2017

We had a meeting with our supervisor Fernando Ferreira.

We made the initial cardboard scale model and also the 3D model of the cardboard.

We have started to correct the wiki page and updated the Gantt charge.

We have started working on the system schematics and structural drawings.

6th Week Report: 27/03/2017-31/03/2017

We uploaded the detailed system schematics and structural drawings.

We refined the cardboard model and uploaded images to the wiki.

We continued to refine the wiki page.

We carried out a risk assessment for the project.

We made the list of required materials for the project.

We discussed some of our ideas for the system with our supervisor.

7th Week Report: 03/04/2017-07/04/2017

We continued to refine the wiki page.

We started the PowerPoint presentation for the interim presentation.

We put the wiki page into a word document.

8th Week Report: 18/04/2017-21/04/2017

We prepared our interim presentation, we practiced the presentation several times in group.

We did the interim presentation and got feedback.

We made the final list of required materials for the project.

9th Week Report: 24/04/2017-28/04/2017

We finished the final list of required materials for the project.

10th Week Report: 01/05/2017-05/05/2017

The team finished and uploaded the refined interim report based on the suggestions made by the supervisors.

11th Week Report: 08/05/2017-12/05/2017

The team made some personal deadlines to work to in order to keep the project on track whilst waiting for the components to arrive.

12th Week Report: 15/05/2017-19/05/2017

Some initial testing began as many of the components arrived.

13th Week Report: 22/05/2017-25/05/2017

The team participated in a design thinking workshop held over two days with Professor Grazyna Budzinska from the Lodz University of Technology. Work also began on the construction of the prototype with the team being granted access to the workshop.

14th Week Report: 29/05/2017-02/06/2017

Construction of the prototype continued in the workshop - this included the creation of the base for the mirror as well as supporting structures and welding. Testing continued of the electronic elements of the prototype with this part of the construction nearing completion. Some test results were uploaded to the wiki. The scientific poster was refined based on the feedback the team received. Work began on the user manual for the prototype. Work also began on the video required as part of the project. The team uploaded to the wiki the team agreement that was signed by each member in the early stages of the project.

15th Week Report: 05/06/2017-09/06/2017

Work continued on the construction of the prototype with the team receiving the 3D printed parts. The team also received some feedback on the paper and began to edit the paper accordingly. The team received feedback also for the sustainability section of the report. The team attended a revision class for the Portuguese lessons to prepare for the test on Monday.

Meetings

1st Meeting (2017-02-23)

Agenda:

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

Minutes:

An overview of the European Project Semester was given, Information was given about all of the possible projects that could be selected. It was said that the teams should select three project

proposals they would like to work on and email them in order of preference to the project coordinators in order for the teams to be assigned to a project. An overview of the electronic logbook was given i.e. the wiki, and how it should be used.

2nd Meeting (2017-02-03)

Agenda:

1. What is the purpose of the mirror?

Proposals:

- Focus light on a solar panel
- Use it for agricultural purposes
- Use the light for heating
- Use it for cooking
- Use it for desalination water

2. Where do we build it?

3. How big do we build it?

4. Which materials are already at our disposal?

5. Do we have a sponsor?

Minutes:

1. Choose purpose by ourselves, try looking at the target group while choosing.

2. We build it inside, but it has to go outside, so we have to be able to transport it.

3. We build a small scale model, because it's less expensive, we have to watch our budget while planning the size.

4. Limited, we shouldn't really count on them, we have to know which materials we need before we ask it to the school.

5. Maybe, we have to be further in our research. We need a more specific plan.

3rd Meeting (2017-03-09)

Agenda:

1. We chose the distiller is that ok?

2. Can we use materials that we find, and can we just buy the material in a store and give you the

receipt or invoice?

3. Can we do the materials before the deadline?

4. Does it need to be sold commercially?

5. What is the system diagram and structural draft that we have to do for Monday?

Minutes

1. It was said at the meeting by the lecturers that it is not for them to decide the purpose of the solar mirror. However, they made some suggestions about the water distillation proposal. We were advised to consider the materials we would use. We would have to find materials capable of withstanding the extreme temperatures that concentrated solar radiation produces. We were also advised to think further about the water collection system. It was implied that perhaps the water distillation proposal was not the right way to go.

2. If we were to buy materials on our own, we would not be reimbursed. All materials purchased should be purchased with pre-authorisation from the team of lecturers. The companies that we purchase materials from must be vetted by the university to ensure they are operating in a proper manner. The authorisation process can take around 1.5 weeks. We must be able to justify the materials we are ordering and must carry out a comparative analysis of other materials.

3. We can request materials before the deadline but again, we must adhere to the aforementioned conditions.

4. We can decide whether or not our product is sold commercially. We do not necessarily have to sell a physical product. It would be acceptable to sell the design for the product. It would also be acceptable to sell the product in parts for user assembly. We could also sell our expertise or a maintenance service. We should keep in mind that NGOs are businesses too, therefore selling to charities etc. would be an acceptable marketing idea.

5. The system diagram is a block diagram representation of the system we are proposing. The structural draft is a set of functional drawings to help visualise the product and explain the operating principle of the device. We should make progress on these items as soon as is possible in order for the project advisers to offer us better advice. We are behind in this area.

6. Other matters arising from the meeting: We need to keep on top of filling in the wiki page. We need to reconsider the purpose of the mirror. It was suggested several times that we are using it to heat up water. We need to understand the power of the sun over a predefined area such as 1 square meter. The mirror is pointless if it reflects the sunlight back at the sun. Will the mirror be planar or parabolic? What temperatures do we need to produce and what temperatures might the mirror induce? Increasing the radiation supplied to a solar panel is something to consider. We should research and understand Kepler’s Law. Which method of tracking the sun will we use? The purpose of the mirror is very important but not the main objective. Purpose and objective should operate in parallel.

4th Meeting (2017-03-16)

Agenda:

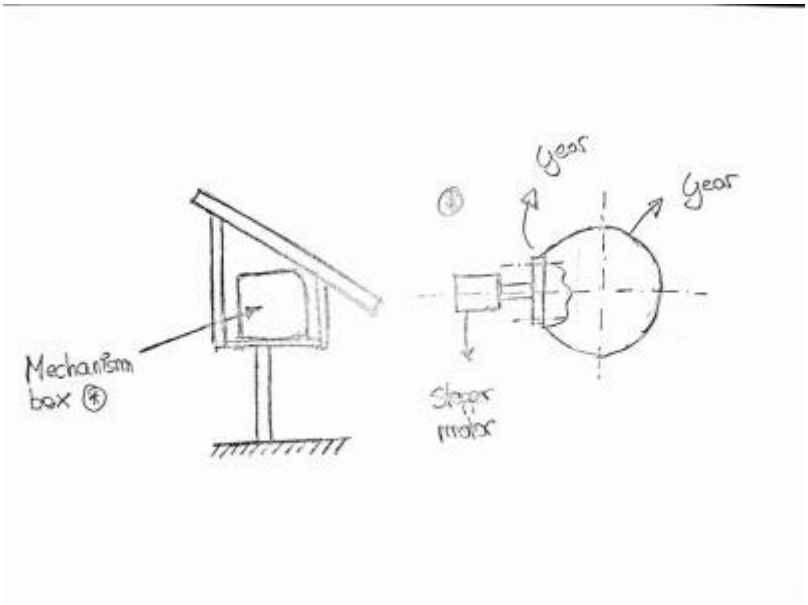
1. Benedita mentioned that there was a solar collector within the department. Would it be possible to arrange a time to view it?

2. Who is our coordinator?

3. Can you give us feedback on our Wiki page?

4. Can you recommend any mechanical or electronic/electrical stores we can purchase from?

5. If we decide to use the 3D printer, do we need to buy materials or are there any materials already available for us?



Minutes

1. Christina has a solar cell that generates power that she can bring here. There is also an solar cell on the roof that we can go and look at with Benedita some day.

2. Our coordinator is Fernando (office F329). We arranged a meeting with him on Monday at 11 am in our classroom.

3. Our wiki page was good but we need to do some small changes.

Under State of the art we need to: 1. Define an analysis framework (connected with our requirements) 2. Compare existing solutions based on the framework.

- We need to think about what aspects are relevant to our project. - We need to put all the references and links on the wiki. - We need to refer to the picture in the text.

4. pt.farnell.com; pt.rs-online.com and the rs-catalog; pt.mouser.com; ptrobotics.com; botnroll.com; electron.pt; Aquario

5. For the 3D printer we need to buy the plastic that melts, PLA or ABS . Some online stores are

filament2print.com and kuantokusta.pt. If we bring the drawings to Mediamarkt they can maybe print the 3D design for us.

Some other important things they said was that when we show them the prices for the materials we need to include the taxes and the transport in the price.

When we provide the material/component list we have to: 1. Survey and compare existing product candidates (wiki) 2. Identify those matching your requirements (wiki) 3. Make and send the list of materials. And we need to think about Price (€), Power (W), Voltage (V), maximum Currant (A), Torque (T).

5th Meeting (2017-03-23)

Agenda:

1. When can we use the lab? What's the procedure? Is there anyone in the lab to assist us?

2. Is there a welder we could use?

3. Can you provide feedback on the initial cardboard scale model?

4. Can you give us an idea of what is required of the detailed system schematics and structural drawings that must be submitted on Monday?

Minutes

1. There are multiple labs at ISEP. Regarding the mechanical laboratory the schedule will be set when the materials are purchased. There will be a supervisor, but after being shown how the tools work we will have to do everything ourselves. Appropriate clothing is necessary.

2. Welding is available except of aluminum welding.

3. We should build a new cardboard model using less tape. The general idea is OK.

4. Detailed CAD model and schematics of the control system.

Feedback on the 3D model of the mirror: wheels are not suited for a garden, upper beam supporting the mirror seems too thin.

We should include in the report the tables with comparison of different components and a final table for 'power budget' including voltage, current, power, quantity and price. This will let us find a power source and estimate the costs.

Feedback on the report: We should comply with the international standards for writing units and digits (100 000, 5 %, 5 V - a space is required). Figures ought to be referenced.

Schematics: Motors take some time to move, we should be aware of that not to make an oscillating system.

Mechanics: Power transmission part should include reference to our project. Screw system is

recommended for mirror movement. Some position feedback might be necessary.

6th Meeting (2017-03-30)

Agenda:

1. Can you provide an assessment of figure 45?

2. The group had decided on a sensorless system. We have received mixed views on this from different supervisors. What are your opinions on the systems discussed in section 7.4.4?

3. Is the list of materials submitted on Monday the 3rd of April final, or can changes be made before the next list is uploaded on the 24th of April, to reflect updates to the design?

4. We would like to set up another meeting with our closest supervisors. When would be an appropriate time to do this? We would like to suggest Monday April 3rd at 11am.

5. How long should the interim presentation last?

6. What form should the interim report take? Should it be a PDF of the wiki report or in the form of an academic/technical report?

Minutes:

1. Figure 45 was discussed. The figure tries to explain the solar mirror's operation, as far as the positioning of the same is concerned. Once explained and understood by the supervisors, the concept of operation without sensors was approved. However, it was suggested to add an image that clearly explains the idea that was intended to convey.

2. As far as list of materials is concerned, it should contain, as far as possible, most of the elements necessary for the manufacture of the prototype. This is because the paperwork to approve the purchase of the same is a process that lasts, at least, two weeks. Therefore, not delivering the list on time may mean the delay in the prototype's building.

3. Another meeting with the supervisor was schedule, with the purpose of deepening on the proposal of not using sensors.

4. The interim presentation need to last not more than 15 minutes.

5. Finally, due to the provisional nature of the report, a PDF version can be delivered, obtained directly from the report page.

7th Meeting (2017-04-06)

Agenda:

1. How do we put references in the equations?

2. How do we put the references from the appendices to the bibliography?

3. Can we change the presentation from the one we upload to the one we do on the 20th of April?

4. Can we go with Fernando to the lab, to see which materials are available?

Minutes:

1. Benedita showed us how to put the references in, but we still didn't manage to put them in correctly.

2. For some strange reason our references our put under appendices and not under bibliography. We weren't able to fix it yet.

3. We can not change it anymore, but we only have to hand in the presentation before the 16th of April and not the 9th of April as said at first.

4. We went to the lab with Fernando and looked at the different materials we could use and also the machines that where at our disposal.

8th Meeting (2017-04-27)

Agenda:

1. Feedback about the Manufacturing Sheet Template.

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2. When can we start to build the Prototype at the Workshop? Is there already a timetable for that?

3. Which components from the components list can we take from the university?

4. Could you start checking the providers from the components list? Even if you have some suggestions to change the list? (So we will know where to search)

5. We have some questions about the feedback of the interim report.

Minutes:

1. The structural drawings should be re-assessed to find a better solution to some of the mechanical workings.

2. The teams will be informed in due course of the workshop schedules.

3. The team will be informed about which components may be provided by the university. These components are likely to be resistors, capacitors, buttons and breadboard.

4. Checking of the providers will commence in due course.

5. Feedback about the interim report will be provided by email from a number of the project supervisors.

9th Meeting (2017-05-04)

Agenda:

1. Have you already got any information about the suppliers?

2. Is there by any chance anything not mentioned so far that we could get from the university?

Minutes:

1. There was an issue finding a retail store in Porto for Box Electronica as they were a delivery only business. However they are able to deliver to the university free of charge. The other suppliers were deemed to be suitable.

2. We may use a controller for testing but must return it when the purchased controller arrives.

10th Meeting (2017-05-17)

Agenda:

1. When can we expect the components to be delivered?

2. Is there already a schedule for the workshop?

3. Would it be a problem if we used a public repository on Github for the source code?

Minutes:

1. We got some of the materials at the meeting and also some money and papers to bring to the store when we go buy the other materials.

2. Next Monday we may get the schedule.

3. No.

We need to provide a list of the materials that we need from ISEP.

11th Meeting (2017-05-25)

Agenda:

1. Can you provide us with a workshop schedule in order for us to proceed with the construction of the prototype?

Minutes:

The team were informed that the workshop schedule would be emailed in due course, the team also received a multiple voltage power supply.

12th Meeting (2017-06-01)

Agenda:

1. Can you provide us with some information about the final presentation, how long should the presentation last and what information should the team include?

Minutes:

The team were informed that the presentation should last 15 minutes and the team were also informed about which information the presentation should include as well as the structure of the presentation. In other matters the team were provided with a different real time clock and also a light sensor in order to aid them in the construction of the prototype.

13th Meeting (2017-06-08)

Agenda:

1. what should the manual contain?

2. We asked for 3D filament, but instead of it we get the pieces directly printed from ISEP. Can u tell us, approximately, the cost of each piece? Or at least of all of them?

3. Some of the components of the list that we bought, we won't use. As the final report is concerned, which components should appear on the material list?

Minutes:

1. Like a normal user manual. The user should understand how the product works, and help if the product doesn't work. We can decide the size of the manual.

2. Don't know yet but they will tell us when they know.

3. Update the material list with everything.

In the conclusion part in the paper we should include feedback of the process of EPS, how do we proceed the process, our prospective.

In the test report we need to include everything, like weather conditions etc.

14th Meeting (2017-06-14)

Agenda:

1. Can you Provide us with an adjustable spanner and allen key for use in the classroom?

2. Can we make a separate document for the structural drawings and provide a link to it in the report as there are over 30 drawings?

3. Is it possible to reprint one of the 3D pieces?

Activities

Start	End	Task	Description	Who
27/02/17	03/03/17	Gantt Chart	Complete Project Gantt Chart	José (All)
27/02/17	13/03/17	Structural Drafts	Create and Upload Structural Drafts of Solar Mirror	José/Jan (All)
27/02/17	13/03/17	Black Box Diagram	Create and Upload Black Box Diagram of System	Raymond (All)