

Logbook

Weekly Report

1st Week Report (2013-02-20) - (2013-02-27)

Erasmus Welcome Days and introductory lessons for most of our courses.

2nd Week Report (2013-02-27) - (2013-03-06)

We chose the topic (Electronic buoy/beacon), gave several presentations and finished an assignment for the course 'Team Building'.

3rd Week Report (2013-03-06) - (2013-03-13)

We did the first research to collect background knowledge about the topic. We also created a schematic diagram of electrical part of the project and started searching for particular components. At the end of the week we prepared the first proposal for the client.

4th Week Report (2013-03-13) - (2013-03-20)

After the meeting with the clients and supervisors, we had a better view on the prototype the client expected from us. We held a meeting with our group and brainstormed about all the things the clients and supervisors had said. Afterwards we started to make an engineering storyboard. After the storyboard was made, we wrote the second proposal which included the requirements for our electronic buoy.

5th Week Report (2013-03-20) - (2013-03-27)

We had a long and productive meeting with our supervisors on Thursday. On the same day we had a long discussion among ourselves during which we agreed on many points of our work on the project. On Friday we met at LSA with our clients and had a similarly efficient meeting that clarified many aspects. We then met on Sunday and talked over the things we had learned in the latest meetings. We made a plan of work for the next week. Our team work has considerably improved.

6th Week Report (2013-03-27) - (2013-04-03)

During the Easter Holiday we focused on individual work, everyone was doing his tasks allocated last week, especially preparing materials for State of the Art. Bennet started finishing marketing plan.

7th Week Report (2013-04-03) - (2013-04-10)

We visited Enercon (wind energy company) and Continental (tyre company) to see their factories from inside. We prepared the SCRUM sheet for the interim report sprint and tried to follow this schedule. We met prof. Fernando Ferreira for stainless steel structure consultation. We started intensive work on the interim report and presentation - till the end of this week we almost finished e.g. Sustainability, Ethics and Marketing part. We did deep research for State of the Art.

8th Week Report (2013-04-10) - (2013-04-17)

We wrote the 'State of the Art' and finished the interim report, because the deadline was on the 14th of April. We had to present our interim report on 18/4, therefore we made our PowerPoint presentation during the 8th week.

9th Week Report (2013-04-17) - (2013-04-24)

We presented our interim report on the 18th of April. Afterwards we brainstormed about the future project development.

10th Week Report (2013-04-24) - (2013-05-01)

After the feedback of the supervisors and the teachers, we started editing the interim report to the final version. We discussed about how the final version of the steel structure should look like and began with the drawings. Regarding this, we contacted Mr. Fernando Ferreira again to discuss our thoughts. We began with a electronic/wiring scheme and did extensive research about micro controllers. We also started with finalizing our marketing plan.

11th Week Report (2013-05-01) - (2013-05-08)

We worked on the final report. After the remarks of Mr. Fernando Ferreira we changed our drawings and brainstormed again. We continued with the electronic/wiring scheme and extensive research about micro controllers. We finalized our marketing plan.

12th Week Report (2013-05-08) - (2013-05-15)

We worked on the final report. We had a meeting with Mr. Fernando Ferreira again and he helped us with the steel structure. We continued with the electronic/wiring scheme. We did tests at LSA to find out the buoyancy force of the fibreglass hull.

13th Week Report (2013-05-15) - (2013-05-22)

We had two meetings with Mr. Mario Alvim concerning the buoy hull and solutions for making it

waterproof. We finished the sustainability part.

14th Week Report (2013-05-22) - (2013-05-29)

Meeting with Mr. Alvim on Friday, 24.05. at LSA. He took the buoy back to ALTO in order to fix the broken parts of the hull. On Saturday we went to Multiborracha, Acessórios de Borracha e Plásticos, Lda. in Alfena to buy the EPDM rubber tape. Once Mr. Alvim fixed the hull, we will use the tape to seal the buoy clasp. Further, on 28/05 we spoke to Mrs. Malheiro and Mr. Ferreira to clarify the steel structure for a last time. Supporting triangles need to be added as well as a cover for the underwater part of the steel structure. In the mean time the final schematics were made.

15th Week Report (2013-05-29) - (2013-06-05)

At Dismotor-Comércio de Motores e Acessórios Lda. in Matosinhos all necessary parts regarding the mooring mechanism and lamps have been chosen. A pro-forma lists all parts. Also the steel structure has been confirmed and was handed in at the responsible workshop. During a test concerning the water-resistance of the hull it turned out that the clasp is not waterproof. We also have worked on poster, paper, final report, user manual, video, presentation.

16th Week Report (2013-06-05) - (2013-06-12)

During the last week everybody was confronted with finishing the project. We met every day at LSA in order to finish our final report, poster, paper, video, last but not least, the final presentation.

Meetings

1st Meeting (2013-02-28)

Agenda:

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

Minute:

First EPS meeting, including introduction of the EPS supervisors, further proceeding and detailed presentation of the electable projects.

2nd Meeting (2013-03-07)

Agenda:

1. general questions regarding ISEP facilities, Wiki, contact
2. Project questions:
 - Current status of the buoy?
 - Introduction to LSA?
 - Intensity of our research (fluid mechanic, buoyancy, strength theory etc)
 - How to get previous information/research results?
 - Functions of the buoy?
 - Autonomical timeframe for recording data without sun
 - Budget: material, sensors, solar panels etc.
 - Marketing: target market, final customer,
 - What kind of wireless communication? (WiFi, UMTS etc.)
 - Web based user interface

Minute:

Second EPS meeting, the supervisors answered most of our questions. They guided us in the direction we have to go to develop the buoy (regattas). Web based user interface is optional. After the meeting they showed us the current buoy.



3rd Meeting (2013-03-14)

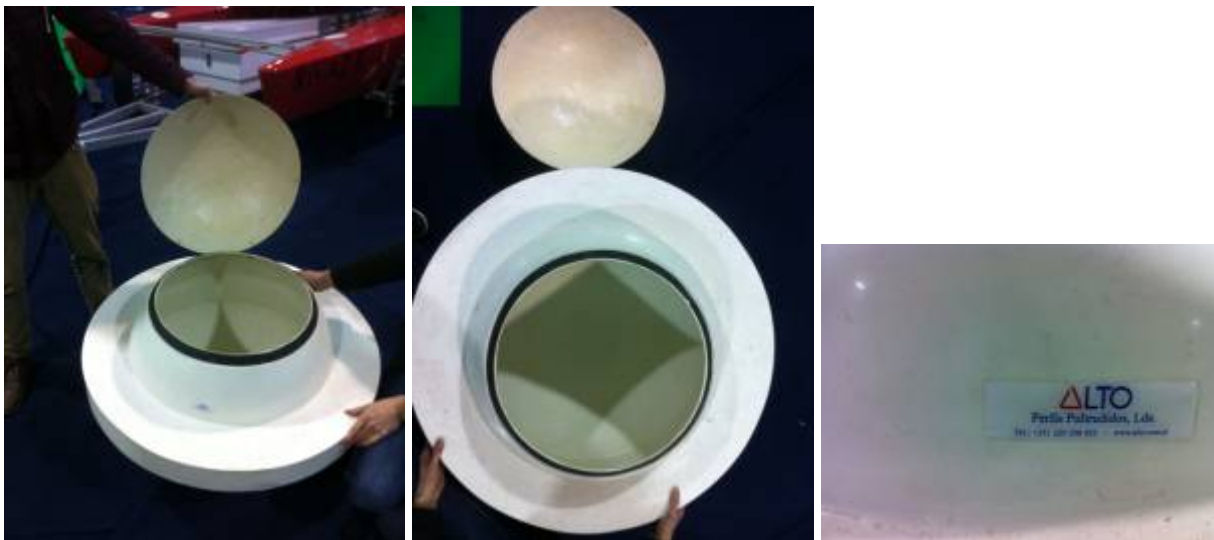
Agenda:

1. General questions:
 - Proposal for today's meeting.
2. Project questions:
 - Do we have to do our own drawings, 2D/3D models? How detailed should they be? What kind of? (CAD, SolidWorks)

- What kind of material has been used for the buoy hull? Are there more things to consider than wind strength, current, UV radiation and salt water corrosion? (polymer, teflon-cable)
- Power autonomy: Charging? Implementing of the solar panels?
- Communication: 3G, GSM, GPRS, Bluetooth, NFC (near field communication) etc.
- What is the idea of having a connection between the boats and the buoy during the regatta? Do we have to consider the 'information-dialog' between the boat and the buoy?
- Microcontroller: Raspberry Pi vs. Arduino? Just in general what will be the better solution? (or: what will be more 'doable'?)
- Ethical and deontological concerns - should there be a separate chapter in our report about it? (kind of a mission statement including our guiding principles)
- Poster - should it be advertising or informative one?

Minute:

At the 3rd meeting with our supervisors we got to know that we should: create tables comparing different technologies characteristics of each component, create all important technical drawings (especially of stainless steel part of the buoy), consider ethical aspects of our product in the final report. Some of our questions could not been answered, because they depend on the needs of our client. In the end we were shown several examples of posters. Further we had a first meeting with our client. Our project became more clearer and we earned necessary information of what the client expects from us, as a team and also from the project. To make things even clearer, we are supposed to create an engineering storyboard, including both necessary functions ('environmental-measuring' and 'regatta') until our next meeting. For further processing, we measured the inside and outside dimensions of the buoy with a measuring tape.



4th Meeting (2013-03-21)

Agenda:

1. General questions:
 - Can we put sources in other languages than english into bibliography?
2. Project questions:
 - Materials:

- How detailed the list of materials should be?
- What components are already available for us?
- Proposal:
 - How a proper engineering proposal should look like?
 - Can we discuss outlook of the proposal that we have already revised?
 - Could you give us your opinion of our storyboard?
 - Do we have to divide the requirements in: Critical (100% need to be fulfilled), Mandatory (high need), Desirable (only if we have time), Cosmetic?
- Autonomous sailing boat regatta:
 - How this type of regatta looks like?
 - What kind of protocol?
- What amount of standard sensor interfaces should the buoy have? We need this information in order to choose sufficient energy supply and data storage.
- For how long does the buoy have to work autonomously? We know that for regatta function it has to be maximum few days. What about measuring weather conditions except during the regattas?
- How often the data from buoy needs to be sent out?
- Are we going to do tests of the buoy in Douro river?
- Marketing
 - Definition of the product is missing (not detailed enough)

Minute:

This week's meeting took longer than expected. We talked for over an hour, instead of the assumed 40 minutes, and then after the two other groups have finished, we met yet again. The meeting was therefore very productive and we obtained many answers to our questions. First of all, we learned that we are allowed to use sources in a different language than English. Secondly, we were instructed to make a list of materials with references to their price, weight, current and voltage. Thirdly, we got to know that there were already many components that we could use, but we would know them on Friday. Furthermore, we were explained in detail how the autonomous sailing boat regattas' look like (boats of different size and shape, no human control from the beginning to the end, different position of the helm, different location and area of sails, different waterline, all boats start at the same time, handicapped formula etc.). Moreover, we were told that our buoy should send the data to a "world server", optimally each second if possible, it should have gnss and CTD sensors, it should be able to work for at least one week for the environmental function and one day for the regatta's function, and it must have a ballast. Additionally, we should consider providing the buoy with a servomotor for recharging the battery. The last point of our meeting regarded the "hardware box" which would contain the most important electronic components of our buoy, i.e. the control module, the communication module, the data storage module etc. We obtained a general vision of what it could look like and what characteristics it could/should have. At the second meeting that day, we discussed our proposal and storyboard for the client and made improvements accordingly to the suggestions of the supervisors.

5th Meeting (2013-04-05)

Agenda:

1. General questions:

- Where can we find detailed information regarding Douro (depth, current, temperature etc.)?
- 2. Project questions:
 - Can we fill the existing buoy with e.g. polyurethane foam if such necessity occurs?
 - Steel structure:
 - Should we make the calculations regarding its strength?
 - Should we determine the thickness?
 - Regulations concerning buoys
 - Anchoring
 - Is it our concern?
 - Can the buoy shift horizontally?
 - Do you have any suggestions as to the type of anchor we should use (embedment anchors/pile/suction pile/gravity etc.)?
 - Can we use railroad wheels/an engine block/ a concrete block as the anchor?
 - Do you have any suggestions/comments as to the type of connection between the anchor and the buoy (chain, rope, or polypropylene line)?
 - Are there any regulations that we should follow?
 - Energy and sustainability

Minute:

The meeting started punctually but lasted more than we expected. During this time we were given several useful advices and suggestions. At the beginning we were shown some webpages where we can obtain meteorological data about Douro river (e.g. meteo.isep.ipp.pt; www.hidrografico.pt). We were also told that near the ocean the riverbed is mostly covered with sand. Therefore we should consider type of anchoring suitable for this condition. However, we shall recommend the client to buy 2 types of anchors: for sand and for rocks in case of future change of buoy location. We were advised to visit Efurada - village where we can watch fishermen anchors. We should also think of safety mechanism to detach buoy from the anchor chain. Next, we discussed mechanical part. We were advised to do any forces calculations assuming that the buoy should stand approximately 50 kg of additional load. We were given contact to Mr. Fernando Ferreira who could help us design properly the steel structure. Afterwards we were given some clues about what should we include in interim report (how our buoy is sustainable, how and why we chose the final solution of the product, what tests should be done in constructing phase). At the end we were told what are the issues we could start thinking about from this moment, like preparing electrical and signal schematic of the buoy.

6th Meeting (2013-04-11)

Agenda:

1. General questions:
 - Interim presentation:
 - How long should the presentation be?
 - Are there any particular issues you want us to include?
 - Is it possible to obtain the Douro bottom chart?
2. Project questions:
 - Technical documentation regarding tests and further proceeding.
 - Drawings of existing buoy.

- When do we have to provide you with a steel construction drawing?
- Microcontroller:
 - What is your opinion about using these 2 controller boards:
 - STM32F3 as a controller for collecting and storing data from sensors/GNSS
 - STM32VL as a controller for other functions
 - What about inputs/outputs in these controllers?
- Interim report:
 - Content of Wiki should be as precise as the written report or shorter?
 - How would you like us to deliver the report?
 - In the list of components should we specify every component such as wires, screws etc?
 - How exactly should the state of art look like?

Minute:

- make sure that the presentation won't take longer than 15 minutes
- find out what the operating systems of the controllers provide
- check the boards
- design a flow chart

7th Meeting (2013-04-18)

Interim Presentation

Minute:

- Presentation
- Evaluation

8th Meeting (2013-04-26)**Agenda:**

- Where should we attach the CTD sensor?
- Douro chart.
- Contact with the stainless steel person.
- Drawing of the hull.

Minute:

- Detailed steel structure needs to be finished as soon as possible (double-check with Fernando Ferreira)
- Underwater weight attachment needs to be added

- Platform above the water needs to have two possible antenna attachments
- Douro chart will be provided in May
- The power consumption of the components need to be calculated (speak to Jose Miguel from LSA)
- We should use two microcontrollers
- Search for controllers and datasheets
- Find out dimensions of the CTD sensor

9th Meeting (2013-05-02)

Agenda:

- Drawing of the hull
- Datasheet CTD
- Signals schematics
- RS232 pins (do we need all 9 to make it work?)
- Programming

Minute:

Firstly we talked about the drawing of the hull we made. We discussed two types of connection for the antenna:

- PL259
- SMA connector

Secondly we discussed the choice of the GNSS sensor, the supervisors told us that the easiest way of choosing one, is to use the sensor LSA already has for the catamaran. Finally we talked about the different types of connections we proposed in the signal schematic. The supervisors mentioned that we can use self vulcanizing tape to make everything watertight. They also said that there are three layers in an interface: physical, protocol, electrical, so we have to keep these three things in mind.

10th Meeting (2013-05-09)

Agenda:

- Drawings
- ALTO contact
- Possible solutions for the clasp
 - glue
 - tape
 - rubber
 -
- Signals
- Additional board with copper lines

Minute:

- Finish steel structure and confer with Fernando Ferreira and send results to Mrs. Malheiro
- 'average' filter concerning the data storage
- Speak to Mr. Alvim about the clasp mechanism, possible solution and the transport to ALTO

11th Meeting (2013-05-16)**Agenda:**

- Memory usage of 1 measurement of windsensor, CTD and GNSS module
- Making the hull watertight
- Blinking lamp
- Programming
- Final deliveries
 - Printed final report
 - Printed poster
 - printed paper

Minute:

- We are supposed to drill just one hole for cables. To keep the hull watertight other holes need to be closed/fixed. One new rubber layer needs to be attached.
- The suggestion for the blinking lamp is to have a white lamp which is supposed to blink at long-term intervalls.
- For programming and electronics we need to find out connections, frequency of measurments, data path and test everything (at LSA).
- Firstly, create a programme to test the blinking lamp (get a blinking lamp)

12th Meeting (2013-05-23)**Agenda:**

- Steel structure - 2D drawings
- Storage data rate
- Must-haves of the project (except theoretical part) - are there any?
- Final presentation and report

Minute:

- use voltage regulators.
 - less losses of energy
 - proposed: 6V battery + regulators
- check the current of the components that we are going to use
- ask at LSA for power supply

- get an LED lamp (most energy efficient)

Further:

- think about a “rubberskirt”

13th Meeting (2013-05-30)

Agenda:

- Power supply:
 - schematics: we use different batteries to do tests, should we prepare 2 different schematics?
 - calculations,
 - voltage regulators: are they available at ISEP?
- Blinking lamp.
- User manual.
- Waterproof box for electronics.

Minute:

- We discussed different possibilities to provide various voltages. It is up to us to choose the best solution.
- The blinking lamp is supposed to be a white LED. Mrs. Malheiro is going to check what is available in different departments at ISEP.
- In order to write the ‘user manual’ we should include instructions for switching on/off the system. We also need to describe interface schematic and operation mode.
- Further we discussed boxes to place all electronics in. It needs to be watertight. Proposals are tupperware or a self-made plexiglass box. Mrs. Malheiro will check what kind of material is available at ISEP. After creating a draft, we need to speak to Mr. João Francisco da Silva (JFS) to confirm our ideas and build the box.

14th Meeting (2013-06-06)

Agenda:

- User manual
- Electronics
- Programming
- Non-waterproof hull

Minute:

- try to close the hull by using the rubber tape
- finish all parts as appropriate as possible

Activities

Please register here all project activities

Start	End	Task	Description	Who
2013-03-01	2013-03-04	Choose the project topic	/	All
2013-03-06	2013-03-06	Prepare the Second EPS meeting	We prepared our first general questions for the meeting with project supervisors.	All
2013-03-07	2013-03-07	2nd EPS supervisors meeting	Description is in the minute.	All
2013-03-08	2013-03-08	Meeting about the tasks, task allocation and Gantt chart	We thought of main tasks and discussed in what areas each team member is the best. We discussed a Gantt chart outline.	All
2013-03-09	2013-03-09	Gantt chart	Bennet created complete Gantt chart.	Bennet
2013-03-10	2013-03-10	Meeting about defining the tasks	We defined all main tasks to do and finally decided on task allocation.	All
2013-03-11	2013-03-11	Do research for target market	/	Bennet
2013-03-11	2013-03-11	Do research for motherboard type	We were looking for information mostly about Arduino and Raspberry Pi.	Bennet, Konrad
2013-03-13	2013-03-14	Prepare the first proposal for the client	We decided what structure should such proposal have and what should it include. Bennet created the final version of the paper.	All
2013-03-14	2013-03-14	3rd EPS supervisors meeting	Description is in the minute.	All
2013-03-14	2013-03-14	The "kick-off" meeting with the client (LSA)	We got to know what are main client needs. We had been given many important advices. We had been guided in how a correct engineering proposal should look like.	Bennet, Konrad, Toon
2013-03-14	2013-03-14	Measure dimensions of the current buoy	We measured all possible diameters, circumferences and heights inside and outside the current buoy.	Bennet, Konrad, Toon
2013-03-16	2013-03-16	Meeting to talk about the first proposal, plan the second proposal and start to make the storyboard	We discussed what should be improved in our proposal structure. We did the general research about storyboards. We created an outline structure of our first storyboard.	All
2013-03-??	2013-03-21	Prepare and write the first marketing plan	/	Bennet

Start	End	Task	Description	Who
2013-03-18	2013-03-18	Meeting to work on the project	We decided how our first storyboard for the client should look like, Toon drew the pictures. Konrad improved a schematic diagram of buoy components, Mateusz started to prepare a leaflet, Bennet was writing a marketing plan. Toon and Bennet discussed the "regatta mode" of the buoy. Konrad and Mateusz defined sustainability concerns that we should consider.	All
2013-03-18	2013-03-20	Prepare the first leaflet	Mateusz created the first leaflet which includes: team members pictures, short description of task, initial stage and purpose of our project, cartoon explanation of how our buoy is going to work.	Mateusz
2013-03-18	2013-03-20	Prepare the 1st revision of the proposal	We were working on improvement of our proposal. We defined all needed requirements. Toon put all storyboard drawings into Prezi presentation, created the general outlook and filled the main body of the paper. Konrad upgraded schematic diagram of electronic components and was responsible for adding last corrections to the document.	All
2013-03-19	2013-03-20	Short description of the project	Mateusz prepared a document shortly describing our project for an english class.	Mateusz
2013-03-21	2013-03-21	4th EPS supervisors meeting	Description is in the minute.	All
2013-03-21	2013-03-21	Additional meeting with supervisors	We presented and discussed our first storyboard for the client and our improved proposal.	All

Start	End	Task	Description	Who
2013-03-22	2013-03-22	2nd meeting with the client (LSA)	We presented our improved proposal. We talked with Mr. João Paulo Baptista about sensors. We have been given a wind speed/direction sensor. We have also been told that we should use compass to calibrate wind direction measurement. We talked with Mr. José Miguel Soares de Almeida who showed us 3 different microcontrollers available at LSA. We have also been given a CTD sensor. Mr. Eduardo Alexandre Pereira da Silva told us what are must-haves of our project. He instructed us in what should we prepare for the next meeting (e.g. quantify requirements, create technical drawing of steel structure, prepare state of the art about each component). We have been given an access to laboratory building.	All
2013-04-02	2013-04-02	Workplan	Updating/Creating a workplan (product/sprint backlog) and gantt chart	Bennet
2013-04-04	2013-04-04	Visit to Enercon and Continental	We visited 2 factories of Enercon (the company producing wind turbines) and Continental tyres factory.	All
2013-04-05	2013-04-05	5th EPS supervisors meeting	Description is in the minute (meeting was moved to friday due to the activity above).	All
2013-04-05	2013-04-05	Consultation of steel structure	We met Mr. Fernando Ferreira to discuss our concept of stainless steel structure. He gave us many very useful clues about designing the steel structures and helped us improve our concept.	All
2013-04-05	2013-04-08	Sustainability	Finishing the sustainability part and presentation	Bennet, Toon
2013-04-08	2013-04-14	Interim Report	Working on the report and presentation. (State of Art, Marketing Plan, Sustainability, Ethics etc.) Finishing it before sunday, April 14th	All

Start	End	Task	Description	Who
2013-04-12	2013-04-12	Consultation of microcontroller	At the additional meeting prof. Paulo Ferreira provided us with some general information about microcontrollers and possibilities of attaching particular interfaces. He also helped clarify description of microcontroller boards suggested by LSA. At the end he suggested what research should be still done and where to look for more information.	Konrad
2013-04-13	2013-04-13	Meeting to work on Interim Report		All
2013-04-18	2013-04-18	Interim Presentation	We gave the 20min presentation about our progress at the meeting with all supervisors and courses' teachers. We obtained some comments and remarks about our interim report (especially regarding minor mistakes).	All
2013-04-23	2013-04-23	Measuring the hull		All
2013-04-24	2013-04-24	Consultation of MCU board		Konrad
2013-04-25	2013-05-03	LSA	Testing functionality of the buoy hull; Meetings about steel structure and electronic schematic	All
2013-05-07	2013-05-16	Improving/Testing/Meetings	Further proceeding on the steel structure/electronic schematic/buoy hull. Different meetings concerning the three main issues took place. New materials and components needs to be provided. E.g. rubbertube, bolts, nuts etc.	All
2013-05-21	2013-05-21	Editing the sustainability part	/	Toon
2013-05-24	2013-05-24	Meeting with Mr. Alvim at LSA	Mr. Alvim took the buoy hull back to ALTO for repairing broken parts. Afterwards we had a Teammeeting and discussed further proceeding and essential steps for the next phase, the last phase.	All
2013-05-25	2013-05-25	Shopping	Bennet went to Multiborracha, Acessórios de Borracha e Plásticos, Lda. in Alfena to get the EPDM rubber tape (6,10 EUR)	Bennet
2013-05-27	2013-05-27	LSA Meeting	We met at LSA to work on the project. In a short meeting with Jose Almeida we asked about material/components LSA needs us to provide with. He explained that LSA is going to order at www.mouser.com . We are supposed to check, if the necessary material is available at this electronic store	All

Start	End	Task	Description	Who
2013-05-28	2013-05-28	Meeting	Discussing last decisions concerning the steel structure. The aim is to finish the structure till Thursday this week.	Mateusz, Bennet
2013-05-29	2013-05-29	Meeting at LSA	Measuring weights at LSA, start working with microcontrollers	All
2013-05-31	2013-05-31	Making the hull waterproof	We fixed a new rubber to make the hull watertight	Bennet, Toon
2013-05-31	2013-05-31	Microcontroller	We started to work with the microcontroller and did research about programming	Konrad, Toon
2013-06-01	2013-06-06	daily Meetings	at LSA, working on the report, the steel structure, electronics and the clasp of the hull	All
2013-06-05	2013-06-05	Tests	water-resistance of the hull	All
2013-06-06	2013-06-12	Finalising	Report, Video, Paper, Poster, Electronics, Tests at LSA	All
2013-xx-xx	2013-xx-xx	Template	x.x.x.x.x.x.x.x.x.x.x.x.	All

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