Table of Contents

Logbook

Weekly Report

1st Week Report

We had to choose a topic and area from the options provided. To help with this, we attended a presentation where projects from previous years were showcased, introducing possible directions for our own project. We found it challenging to decide on a project, as many of the topics were broad and vague, making it hard to develop concrete ideas. Our goal was to select a project that would be interesting and relevant for the whole team. After considering our options, we chose the area “Smartification of Buildings” (Smart Cities). Within this area, we brainstormed several ideas and are now exploring the development of a dehumidifier system that reuses collected water for watering plants or supporting a small indoor garden.

2nd Week Report

In week 2, we focused on developing our idea within “Smartification of Buildings.” We had several brainstorming sessions and had good dialogue within the team. During the team-building class on Tuesday, we got to know each other better, including which members of the team are highly competitive.

On Thursday, we had our first project meeting with all the professors. We left the meeting with some overall topics that we explored in our first Design Thinking workshop Friday.

At the moment, we are exploring an idea for a capsule that is meant for mini breaks to address the increasing number of mental health problems, such as burnout, which are often caused by challenging work environments.

3rd Week Report

During the third week, we participated in a Design Thinking workshop that focused on developing the design of our solution. In the previous week, we had already defined the main problem and identified our target group. Based on this, the goal of the workshop was to generate different ideas that could solve the problem and finally select one main solution.

In addition, we created a one-minute video explaining the problem and presenting our proposed solution. We also developed our first black box diagram and initial structural drafts of the product. This process was somewhat challenging because we had only recently decided on the project topic. Therefore, we needed to find a balance between explaining the concept in enough detail while keeping the design flexible, since some aspects may still change or be further developed later in the project.

Furthermore, we gave a presentation in the Communication class to practice how to present our problem and solution in a way that is clear and appropriate for our target group. We also prepared a

presentation for Marketing, where we focused on our problem statement and our value proposition, including the elevator pitch.

For the report, we divided the chapters and tasks among all team members. Everyone can contribute ideas and content to each chapter; however, one person is assigned as the main responsible member for each chapter.

4th Week Report

Week 4 was a busy one, mostly focused on getting our branding and presentations together. In Marketing we presented our updated problem statement and elevator pitch and we have already started the groundwork for the case study presentation.

In our teambuilding class we spent time reflecting on our team dynamic through some short essays. It’s clear that our bonding activities have paid off as some of us needed a timeout from the group to stay productive.

We also had a presentation in Communication where we showed off our first logo and flyer draft. It didn’t go exactly as planned because we had just decided to change our project’s name. Presenting an outdates flyer definitely wasn't our best look but it was a good reality check on how fast things are moving.

5th Week Report

In week 5, we focused on the project development chapter as well as on Jira. During this time, we planned in more detail which tasks need to be completed before the interim deadline in April. In addition, we created detailed schematics. However, we still need to continue working on how we want to implement all the electrical components. On the other hand, we also completed more detailed structural drawings. Based on these, we were able to decide on a more final shape for the capsule, as well as define the material layers and what should be included. Beside of that, we worked on a presentation about an ethical scandal, as well as a joint presentation summarizing all the work completed so far for the marketing and communication courses.

6 + 7th Week Report

During the Easter break, we focused on preparing the interim presentation. We discussed which aspects are most important and how to present them effectively, given that we only have 10 minutes. In addition, we finalized the interim report and revised several sections. In particular, we completed the ethics, project management and design solution chapters. For the next steps, we identified the need to work on the software side by developing an app and outlining how the prototype will be built. Furthermore, we will need to define the functionalities in more detail and determine how they will be implemented in the app. Finally we also enjoyed the break :)

8th Week Report

This week, we focused on finalizing our interim presentation. We reviewed the feedback from the

professors and discussed how to improve the structure, including which topics to present, the order in which to present them and how to organize the content on each slide. We also talked about presentation style and defined what each team member needs to prepare individually. In addition, we received feedback on our report and are currently reviewing it to implement the necessary adjustments. Most of these changes are relatively minor. We also met with Luis to go over our electrical schematics. During this session, we identified and corrected several errors and clarified how the electronic components should work together. At the same time, we started developing the 3D model of the capsule. We are currently working on the initial layers of the structure, but still need to go into more detail, particularly regarding elements such as the door mechanism.

9th Week Report

This week, the team continued to focus on developing key functionalities of the capsule. A major focus was on the design of the door mechanism, particularly how the door opens and how it is structurally integrated into the capsule. At the same time, suitable audio components were evaluated, and it was decided to use a speaker that can be mounted on the ceiling, something that was not previously possible. In addition, the electrical circuit design was further developed by integrating a second LED strip to improve the lighting concept. The mounting of the tablet was also finalized, it will be a special wall mount. With regard to the user experience, the seating area inside the capsule was further defined. A slight elevation of about 10 cm is planned, which will be equipped with custom made cushions. In this context, suitable fabrics for the covers as well as filling materials were added to the materials list. At the same time, development of the app continued. An initial layout was created that defines the basic structure, while the specific functionalities are being implemented step by step. Finally, an initial materials list for the prototype was created. Some materials have already been identified at a local store, but their procurement still needs to be coordinated.

10th Week Report

This week, we continued working on the packaging solution and further developed the 3D model of the capsule. During this process, issues were identified with the current door mechanism, which is not functioning as intended. As a result, we will need to either resolve the existing problem or develop an alternative approach for the door design. In addition, progress was made on the scientific paper. The introduction has been completed, while the remaining sections will be developed in the upcoming week. The team also worked on the scientific poster and the marketing leaflet. Both documents are currently in an initial draft stage and require further revision and refinement to improve structure, clarity and overall presentation quality.

11th Week Report

This week, the team focused on further technical development and documentation of the Bloem capsule. A key focus was on developing the packaging solution, particularly a modular flat-pack concept adapted to the curved geometry of the structure. At the same time, the 3D model of the capsule was further refined, with particular attention paid to the structural wooden ribs, the multi-layered wall construction and the interior design. Special attention was given to the door mechanism, as the originally planned sliding system presented technical and design challenges due to the capsule’s organic shape. Consequently, various approaches were analyzed to improve stability, user-friendliness and integration into the overall structure. In addition, work was carried out on the

scientific paper. The focus was primarily on the chapters regarding the proposed solution, the structure, the packaging and the conclusion. In addition to the report, the team also continued working on the scientific poster and the marketing leaflet. Both documents were revised in terms of layout & content structure. Additionally, a meeting was held with the project management teacher to discuss the current use of Jira within the project. During this meeting, the team analyzed the existing workflow and identified potential improvements regarding task organization, progress tracking and project coordination.

12th Week Report

This week, the team continued working on the technical development, documentation and visualization of the Bloem capsule. Significant progress was made on the integration of internal functions into the 3D model, alongside further refinement of the capsule structure. In parallel, rendering work was initiated to visually communicate the design and its key features. At the same time, several development and analysis tasks were completed, including stress analysis (material selection, force definition, mesh and simulation), functional testing documentation, and various Arduino-related implementations such as the on/off button and LED integration. The mobile application was also further developed, focusing on hardware integration, navigation and build stability. On the documentation side, the scientific paper was further advanced, particularly regarding personal outcomes, while additional sections such as the proposed solution documentation are still in progress. Marketing-related deliverables, including the poster design and supporting references, were completed successfully, along with final documentation outputs such as the user manual, installation instructions, and copyright page.

Meetings

1st Meeting (2026-02-26)

Agenda:

1. Presentation
2. Modus operandi
3. Project proposals
4. Electronic logbook (Wiki)

Minute:

Different kind of projects were introduced to us during the session as well as the objectives. In addition, the projects from the past years have been explained and helped to get an idea about the EPS. After that we were free to discuss the project options in our team.

2nd Meeting (2026-03-05)

Agenda:

1. Our Project Topic
2. Team Colloboration
3. Which Project Idea?
4. Topics for next week

Minute:

When making decisions in the project, we must consider ethics and sustainability. When choosing components, we should be able to justify our decisions. For example, when selecting a microcontroller, we will consider factors such as power consumption, available functions, communication types, etc. As we develop our idea, we must always consider the market and conduct a market analysis. For the next meeting, we need to create a black box diagram (an overview of the subcomponents that our system consists of).

We should consider:

1. What is the most important part of our product?
2. What makes our product different?

There is a difference between the prototype (POC – Proof of Concept) and the product intended for the market. We presented our idea of a humidifier to the EPS Professors and talks about possible ways to build it. Biggest problem is on how to create a unique way on storing water from the air. We discussed things as value of the idea. Here the Professors advised to go again into Ideation. Brainstorm of other ideas for “Smartification of Buildings” could be like Air quality, Natural light, Room structure (e.g., a main wall that can move), Energy optimization, Sound, Heat (or how can we cool buildings?), Problems with moisture, Airflow in buildings, Look at old buildings and assess how we can optimize them. Our biggest task for this week is to go again into ideation and find a suitable idea.

For next week: Prepare a presentation, investigate existing projects, define a search string, use AI, but be clear about our search string.

3rd Meeting (2026-03-12)

Agenda:

1. Final Project idea
2. Blackbox diagram
3. Structural drafts
4. Defining materials

Minute:

The professors explained to the team that we should already start filling the report chapters we have worked on, especially the chapters Introduction and Background & Related Work (our project as well as existing similar projects and products). If we create tables, it is important to refer to them in the

text before the table appears.

In addition, we should already begin working on the Project Development chapter by including a picture or image of the solution, as well as describing its features and components. For now, only the Introduction and Ideation part of the Project Development chapter is required.

The black box diagram can be further developed during the next weeks by adding more details about the power supply and the components that use it, as well as how they are connected.

Regarding the product itself, the professors advised us to think about the airflow system. For example, whether the airflow should start at the bottom and move upwards to the top, or whether a fan-based solution would be more appropriate. In addition, we need to examine the size of the capsule and the materials that will be used.

After the interim presentation, we can focus more on developing the prototype of the product.

4th Meeting (2026-03-19)

Agenda:

1. Material list
2. Logo
3. Branding guidelines
4. Plans for next week

Minute:

The professors provided guidance on key areas to focus on in the report:

1. Format the bibliography using BibTeX
2. The “List of Materials” must include local suppliers (a list has been uploaded in Teams for reference)
3. Material prices must include VAT and transportation costs
4. Use correct unit formatting (value + space + unit symbol), e.g., 23 %, 10.8 kg, 33 €
5. Be mindful of copyright regarding logos and names (this can be addressed in the ethics section)
6. Include a list of acronyms

Considerations for our product:

1. Frame: Consider screw-free joints (e.g., traditional Japanese joinery methods)
2. Investigate whether it is possible to avoid using metal and screws entirely
3. Functionality: Ensure the product is easy to clean
4. Evaluate how light will enter the structure
5. The buck converter and relay module can be removed from the materials list if no components require more than 12 V

By next week, we will begin writing the “Project Development” section and ensure that all references to tables are correct and consistent.

5th Meeting (2026-03-26)

Agenda:

1. Detailed Schematics
2. Structural Drawings
3. Cardboard Model
4. Plans for next week

Minute:

Minute:

The professors provided guidance on the interim presentation and report requirements:

1. Interim Presentation: Max 10 minutes and 10 slides. All team members must speak for an equal amount of time. The focus should be on the “design journey.”
2. Report Formatting: Describe every image and table in the text before they appear. Remove all titles/captions from inside the images themselves.
3. Terminology: Standardize all text to Bloem and ensure “Bloemshell” is completely removed.
4. Glossary: Complete the list of acronyms and technical terms.

Considerations for our product:

1. Structure: Use heat to bend the wooden beams for the shell. Continue investigating screw-free Japanese joinery methods.
2. Airflow: Use a quiet 12V fan (will require a voltage drop circuit). Consider regulated openings at the bottom for natural airflow, as high noise cancellation and high airflow are difficult to achieve together.
3. Smart System: The microcontroller needs WiFi to sync the mobile app with the lighting and music.
4. Audio: The speaker should be a standalone WiFi/Bluetooth unit connected to power.
5. Power: LED strips

6th Meeting (2026-04-01)

Agenda:

1. Brand Identity: Final Logo
2. Software Development Idea
3. Plans for next week

Minute:

The professors provided more feedback on the detailed schematics, they also suggested the usage Raspberry Pi because it supports more features

1. Reference in the report table figures
2. The materials voltage matching voltages and detailed schematics power supply

7th Meeting (2026-04-16)

Agenda:

1. Interim Presentation

Minute:

This week, we had our interim presentation. We presented the topics we have already worked on. Some of the key focus points for the final presentation are clearly how we communicate our content. No reading directly from the slides, face the audience, and present calmly but with energy. At the beginning of the presentation, all group members should be introduced. We need larger headings on our slides. We might also rearrange the order so that project management comes at the end. Pedro will send his comments by email.

8th Meeting (2026-04-21)

Agenda:

1. Electrical schematics
2. 3D Model
3. Prototype

Minute:

During the meeting, several areas for improvement were identified. First, the 3D model and video should be enhanced with clear annotations. Each component should be labelled to indicate its function, such as structural support elements, connection points, or assembly features, to improve clarity and understanding. In addition, the current presentation lacks a clear description of the system’s functionalities. It was recommended to explicitly highlight features such as Wi-Fi connectivity and integrated speakers and to each component of the smart systems. Visual captions should be added to demonstrate how users interact with the system and what functionalities are available. Furthermore, a detailed and realistic material and component list for the prototype must be developed, strictly limited to the elements required for the prototype and aligned with a budget of approximately €100. Regarding the scientific paper, access will be provided soon. The professors emphasized the importance of avoiding general statements and instead focusing on precise, evidence-based arguments supported by concrete statements. The same level should also be applied & reviewed on the written report.

9th Meeting (2026-04-30)

Agenda:

1. Final Material List
2. Prototype
3. 3D model update

Minute:

At the last meeting, it became clear that we need to further simplify our prototype, as the total cost of all components should not exceed €100. Accordingly, we should further reduce the list of materials and components, finalize it by the weekend and upload it. In addition, it was suggested that we explore alternative power solutions, such as a supercapacitor system, similar to the concept shown in a Wind-up Plane video. This is optional, but could be an interesting addition to the prototype. Regarding audio, it was clarified that a simple solution is sufficient, either a Bluetooth speaker or, alternatively, using a laptop directly. The electrical schematics should be significantly simplified. The focus is on basic functions such as powering on and off, as well as a simple status indicator (e.g. a green light when the system is functioning). For the 3D model, it was requested that all components be clearly labeled. Additionally, all electrical components must be visibly integrated (exploded view). Furthermore, realistic renderings should be created, based on existing examples such as Airscape.

10th Meeting (2026-05-14)

Agenda:

1. 3D model Door mechanism & ventilation
2. Packaging Solution
3. Leaflet
4. Scientific Paper
5. Prototype products purchase?

Minute:

During the meeting, it was decided that the door will open from the inside of the capsule. The door will use a sliding mechanism, opening from the middle towards two opposite sides. Regarding the 3D modelling, the door design is currently presenting some challenges. Therefore, we will not focus on ventilation at this stage.

The packing solution is progressing well. We will include measurements of the pallets as well as images from the 3D model. The leaflet will be updated with additional images. Work on the scientific paper will continue. We expect to receive the products for the prototype by the end of the week.

11th Meeting (2026-05-16)

Agenda:

1. Starting the prototype
2. Scientific paper (Prototype part)
3. Leaflet
4. User manual

Minute:

We have received information about how we pick up the plywood, that we would like to use for the prototype. We are waiting for a message, regarding what information, that needs to be included on the invoice. (We have received funds for the purchase of wood).

We have agreed that the decoration on the outside of Bloem can be made from cardboard (we can look in the store Olmar – Vicio da Cpoia Cantolina). We will get back with a colour choice next week.

12th Meeting (2026-05-28)

Agenda:

1. Leaflet
2. Poster
3. Prototype work
4. Integration of software and hardware

Minute:

During today’s meeting, we demonstrated that we successfully achieved integration between our hardware (ESP32 and LED) and our app. Kai-Ko and Timon are currently working on measuring the components needed for the prototype. We have been given access to a workshop where we can cut the required parts.

We received feedback on our stress analysis simulation, which highlighted areas that need improvement. As a result, we will modify parts of the base in our 3D design and conduct a new stress analysis test.

Finally, we reviewed our poster and received suggestions to change one of the headings to “Technical Features” and to adjust another text to “Up to 15-minute breaks.”

13th Meeting (2026-06-03)

Agenda:

1. Scientific paper
2. Prototype

Minute:

At today’s meeting, we reviewed our paper and received a few minor corrections that need to be completed before 05-06-26. We need to insert an image of our proposed solution. Additionally, we must add elements to the results section based on the functional testing of our app. We also discussed ideas for our video, which we will continue working on in the coming period.

Activities

Please register here all accomplished project activities

Start	End	Task	Description	Who

From:
https://www.eps2026-wiki2.dee.isep.ipp.pt/ - **EPS@ISEP**

Permanent link:
https://www.eps2026-wiki2.dee.isep.ipp.pt/doku.php?id=log

Last update: **2026/06/03 15:05**