Table of Contents

Logbook

Weekly Report

1st Week Report

Our team has reviewed all the project proposals and agreed to work on “Smart Health and well-being“. We brainstormed various concepts and set on our project – Healing Spaces. During our classes we developed our business concept and have identified our first idea of the target group (long-stay patients, especially children) as well as our core initial problem, which are the sterile, anxiety-inducing hospital environments. To make that happen the methods and materials from Marketing course were used and we created our value proposition chart.

We started looking for the already existing solutions, but we need to do more research on all possible solutions to make a more pleasant room/space, and improve the well being of people.

2nd Week Report

We want to focus on children that stay for a long time at the hospital. We searched about other solutions that could improve their well being.

We want to combine several sensory experiences into one device (or several devices if needed): visual projection, music/sounds, and potentially calming smells. The goal is that children can feel almost like they are at home, or to feel like they are outside the hospital, helping them mentally escape the clinical environment and reduce their anxiety.

We tried to develop the user journey map of our product (during the Design thinking workshop), to think about how our product could be used by the children.

We started to think about the ethical and safety contraints of our device: ensuring the projections do not trigger photosensitive epilepsy and figuring out how the device will work in shared rooms without distrubing other patients.

Another **brainstorming** about **how can we make our idea stand out?** We considered smart glasses: they could be connected to a device placed in the parents' house so that the child could call them and see them appear in front of them, as if the child was at home. This is different from a computer because the child could simply move their head to see the inside of their house, the pets, etc. Also, it could be a solution if two children are in the same room.

Some problems: the glasses are screens pretty close to the child's eyes: so the use of glasses must be supervised to avoid damage to children's eyes throughout their stay.

First try about the Black box diagram here :
https://www.eps2026-wiki6.dee.isep.ipp.pt/doku.php?id=report#hardware1

And first creating the storytelling of our product during Design thinking workshop.

3rd Week Report

This week we further developed and partially redefined our original idea around the “cocoon” or a multi-sensory projector. We compared various approaches, including smart glasses, virtual reality applications and our Cocoon approach, to identify the most sensible and effective solution.

Another step was to revise our black box diagram. We have adapted this to show how our system works more clearly and to better structure the individual inputs and outputs. In addition, we looked more closely at the topic of fear and discomfort in waiting areas, for example in dental practices. The aim of this research was to better understand which factors trigger stress and anxiety and how these can be specifically counteracted. Building on our basic idea of a multisensory device, we have also started to create an initial bill of materials (BOM). In the area of sensory appeal, we particularly focus on the elements of sound and Scent busy:

- Sound: Studies show that music therapy can relieve pain, reduce anxiety, and improve overall well-being during treatments.
- Scent: The use of aromatherapy, especially with the scent of lavender, has been proven to reduce anxiety and pain - especially in children before treatment.

These findings form an important basis for the further development of ours multisensory concept.

4th Week Report

This week we worked intensively on the design of our “Cocoon” project. We researched and compared various sensors and electronic components and finally made a selection that we would like to use for further implementation.

Another focus was on designing our logo. This shows a cocoon from which a butterfly flies out, symbolizing development and transformation. When choosing colors, we consciously chose blue, green and purple:

- Blue has a calming, relaxing effect
- Green has a balancing timing
- Purple also has a calming effect and is associated with what we use Lavender scent

We also designed a flyer. After joint coordination, we made adjustments to the background color and font size to improve readability and visual impact. Finally, we created a materials list that serves as the basis for the next steps in our project.

5th Week Report

This working week focused on finalizing our presentation documents and technically refining the design. A key milestone was the completion of our product flyer. In this, the diverse functions surrounding the “Cocoon” were clearly arranged and supplemented by a new view that visualizes the option for wheelchair use. At the same time, we have refined the SWOT analysis in the area of “opportunities” in order to highlight the market potential even more clearly.

Technical optimizations and accessibility In the area of construction, decisive adjustments were made to increase the flexibility of the furniture:

- The chair's swivel castors are now height-adjustable, which enables optimal adaptation to different surfaces and user needs.
- Thanks to a newly integrated ramp, the standard chair can easily be replaced by a wheelchair if necessary.
- For additional ergonomic comfort, the chair has been supplemented with a back support for the feet.

Material vision and hygienic standards In order to make our vision tangible, detailed material sketches were created. For the external structure, we are planning a combination of copper arches and PVC, with an integrated air gap providing effective sound insulation from the outside world. In the interior, we rely on high-quality textiles from the “Health Care” collection, which were specially developed for well-being:

- Hygiene through innovation: The fibers used are equipped with firmly integrated silver ions. These inhibit the growth of microorganisms and bacteria, which not only improves hygiene but also reduces odor formation. Since the ions are firmly anchored in the material, they only work there and do not enter the environment. Care and safety: The textiles are flame-retardant, washable up to 60 °C and meet the highest standards such as the OEKO-TEX® standard and certified antimicrobial effectiveness according to ASTM tests.
- Healing-promoting design: In collaboration with experts, a color concept of positive, natural colors was chosen that can actively support the user's healing process.

The BOM still needs to be completed

6th Week Report

In the last working week, our team (Team 6, EPS 2026) reached significant milestones in the development of the “Healing Cocoon” to realize the vision of transforming moments of fear in children's waiting rooms into positive experiences.

Conception and marketing strategy A key focus was on the strategic orientation. We finalized the SWOT analysis and particularly highlighted the strengths of our product - such as complete accessibility and high hygiene standards. Our product flyer was completed to clearly present core aspects such as multisensory relaxation (scents, sounds and 180° projections). In addition, the market positioning as a high-quality solution for pediatric facilities was sharpened.

Technical design and accessibility Significant advances have been made in the area of construction:

- The structural drawings and technical schematics for the system are now fully developed.
- Particular attention was paid to wheelchair accessibility in order to guarantee inclusive use.
- The choice of materials was made with sustainability in mind. We rely on durable and recyclable materials such as aluminum and brass and prefer to work with local suppliers.

Sensor technology and multisensory experience In order to achieve the goal of reducing anxiety, we have specified the technical equipment of the cabin:

- The integration of a lavender scent system and music therapy elements was technically planned to create a calming atmosphere.
- The visual concept uses a palette of blue, green and purple to promote relaxation and balance.
- We have completed the selection of electronic components, such as the ESP32 DevKit, as well as sensors for humidity, temperature and CO2, to ensure a safe and smart environment.

Digital development: website and dashboard In addition to the physical components, we worked intensively on the website for the “Healing Cocoon”. The user interface for the “Smart System” was developed, which includes a login page for clinics and a clear dashboard (user page). This dashboard allows medical staff to easily manage sessions, check accessibility status, and select different relaxation environments (such as “Ocean” or “Forest”) for the children.

By combining technical precision, well-thought-out marketing and intuitive digital control, the project took a big step towards prototyping this week.

7th Week Report

This week we made significant progress in the development of the “Healing Cocoon”, with the focus on improved accessibility, technical development and child-friendly design. Optimizing design and accessibility a significant advance concerns the physical construction of the Cocoon. We decided to remove the original ramp so that the Cocoon is now at ground level. This adaptation enables barrier-free access for wheelchair users and at the same time makes the product more space-saving, which makes it much easier to integrate into waiting rooms in clinics or therapy centers.

To better illustrate these innovations, we have created a 3D video of our product, which makes the vision of the “Sense of Wonder” tangible.

Technical development of the smart system: In close coordination with Louis, we developed the smart system in detail.

Material research and sustainability: We have intensified our research into materials and local partner companies in order to meet the high requirements for hygiene and sustainability.

8th Week Report

This week, we worked intensively on selecting our final materials and identifying suitable local suppliers. Our primary focus during this process was to find sustainable, high-quality, and economically viable solutions for our project. Additionally, we further developed our model video, optimizing both its content and its visual design.

At the beginning of the week, we compared various material options. In doing so, we took into account a range of characteristics, including quality, sustainability, cost, and availability. Following a comprehensive analysis, we were able to compile a shortlist of suitable materials and suppliers. As a next step, we contacted the selected vendors via email. Our objective was to obtain further information regarding the materials on offer and to solicit specific price quotes. Through this exchange, we aim to make an informed decision and select the best partner for our project. Communication with suppliers constitutes a vital component of our workflow, as it helps us optimally meet both our economic and quality requirements.

In summary, this week was marked by significant progress. We successfully narrowed down our selection of materials and local suppliers, and established initial concrete contacts with the vendors. Concurrently, we continued to refine our model video, thereby enhancing its overall quality. Through these steps, we have moved a major step closer to our goal of developing a professional and well-conceived final product.

9th Week Report

This week, our primary focus was on the further development of our packaging solution. We dedicated significant effort to exploring sustainable packaging options and devising various concepts that are both eco-friendly and creatively versatile. Additionally, we produced initial marketing materials to ensure we can professionally present and market our concept in the future.

For the outer packaging, we opted for a foldable cardboard box. This choice offers several advantages: it is sturdy, space-efficient, and can be easily folded flat and recycled after use. Furthermore, the foldable design facilitates transport and helps reduce packaging waste. For the internal cushioning of our packaging, we utilize a material derived from cornstarch. This material serves not only to protect the product during transit but also reinforces our commitment to sustainability. The cornstarch is biodegradable and can be repurposed after the product has been unpacked. A unique advantage of our packaging concept is that the cushioning offers an additional playful benefit: children can use the material as a toy after unpacking. Once slightly moistened, the individual pieces adhere to one another, allowing users to construct various figures and creative structures. In this way, the packaging acquires a secondary purpose rather than being immediately discarded. With this concept, we aim to fuse sustainability with creativity. Our objective is to ensure that packaging materials serve not merely a functional purpose, but also generate added value for the user. By encouraging the reuse of the cornstarch, we simultaneously foster a more mindful approach to material consumption and help minimize unnecessary waste.

In parallel with our work on the packaging solution, we also turned our attention to the marketing of our product. To this end, we created both a poster and a leaflet. Both materials are intended to be used at a later stage to showcase our packaging solution in an engaging and appealing manner. The poster was designed to clearly and concisely present the key information regarding our sustainable packaging. The leaflet serves as a supplementary informational brochure. It contains more detailed information. The aim is to provide potential customers and interested parties with comprehensive information regarding our concept.

In summary, this week was very productive. We were able to make key decisions regarding our packaging solution and further develop our sustainable packaging concept. In particular, the idea of using reusable cornstarch as a material for play and crafting represents an innovative and eco-friendly approach.

10th Week Report

This week, we worked intensively on revising our leaflet and poster, finalizing their designs in the process. A particular focus was placed on converting the existing continuous text into clear bullet points to ensure the content is more clearly structured and easier to understand. Additionally, minor design adjustments were made to give the overall presentation a more appealing and professional look. Furthermore, Benedita provided us with the initial materials we needed, including various sensors. She also offered helpful suggestions regarding local suppliers where we could source additional necessary materials such as Mauser for the loudspeaker and Leroy Merlin as a potential supplier for the acoustic foam panels. These recommendations are instrumental in helping us efficiently select and organize the appropriate materials.

Another key focus of the week was the ongoing procurement of the remaining materials required for our project. We dedicated ourselves to the planning, selection, and acquisition of individual components to ensure we are fully prepared for the next stages of our work. Finally, the

accompanying paper was fully completed and submitted on schedule. With this achievement, we have successfully reached a major milestone in our project.

11th Week Report

This week we worked intensively on our prototype. First, we calculated all the dimensions and clearly brought the individual components together to create a clear structure for the structure. The basic structure of the prototype was then built. PVC pipes form the basic framework, which was connected to each other using old garden hoses. In addition, we firmly secured the construction at the intersection points with adhesive tape.

We also carried out various functional tests. The hardware sensors were tested for accuracy, especially the light, temperature and air quality sensors. We also checked the responsiveness of the actuators, with both the scent sprayer and the audio system triggering immediately and reliably. We also tested the stability of the web application under load. This achieved an error rate of 0% with an average response time of just 34 milliseconds. All tests carried out were passed successfully.

12th Week Report

This week, we focused intensively on further developing our project and preparing presentation materials. Regarding the poster, we discussed various design options and decided to retain the child-friendly elements and images while reducing the amount of text, the aim is to make the poster more visually appealing and easier to understand.

We also revised the leaflet, adjusting the wording to avoid repetition and improve user guidance. In particular, we optimized the instructions concerning the QR code and access to the “Healing Cocoon.”

As for the prototype, we planned the selection of suitable materials and colors for the outer casing. We also decided to limit the prototype's size to a maximum of 50 cm to ensure the colored cardstock could be fitted optimally. Another key focus was developing a connector for the upper tubes, we explored various design concepts, including a custom-designed connector piece and the use of adhesive and cork elements to create a stable, circular structure.

Furthermore, we addressed the structural design of the prototype. In this context, initial considerations regarding the load and stress analysis of the structure and the materials used were undertaken to ensure the stability and safety of the assembly. Additionally, the requirements for the smart system were further defined. The focus here was on developing the app and designing the login area in order to create a user-friendly and functional digital solution for the project.

13th Week Report

This week, we conducted the functional tests for our project. We were able to successfully verify the various functions and document the results obtained. The tests provided valuable insights into the operation and reliability of our system.

In addition, we assembled our prototype and integrated the individual components. A particular focus was placed on developing a 3D model to serve as a connector for the individual tubes. This component was custom-designed for our prototype to ensure a stable and precise connection

between the parts. Integrating the 3D model allowed us to successfully complete the assembly of the prototype. This marks a significant milestone in the project and lays the foundation for further testing and optimization.

14th Week Report

This week, we focused intensively on further developing our prototype. We discussed various options and gathered new ideas for expanding and improving existing functions. Our goal was to analyze the current state of development and plan the next steps for the prototype's expansion.

In addition, we worked on the concept for our project video. We collaborated on ideas for the video's structure and design to present the project results and development process in a clear and engaging manner.

Furthermore, we were able to finalize the project report. To do this, we evaluated the final tests and documented the results achieved. We then made the final adjustments, meaning the report is now fully complete.

Meetings

1st Meeting (2026-02-25)

Agenda:

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

Minute:

Supervisors presented the different topics of the project to us, along with the wiki we will use to keep track of everything related to the project. Then we stayed behind to choose and discard the topics that each of us considered most interesting. Finally, we brainstormed more specific ideas for the different topics.

2nd Meeting (2026-02-27)

Agenda:

1. Review of the Brainstorming
2. Project Selection
3. Communication with supervisors

Minute:

In this second meeting, we focused on giving shape to the initial ideas for each topic. After doing this, we voted on the three topics that each person found most interesting, along with the ideas mentioned. Finally, we sent an email with the ranking of the topics.

3rd Meeting (2026-03-05)

Agenda:

1. Presentation of the idea powerpoint
2. Feedback from the supervisors.
3. Next steps.

Minute:

We have presented our first idea, which is to try to improve hospitals by allowing patients to draw on a device and project it onto the walls, or to project directly a picture from a data base, to improve their stay and reduce patient stress and anxiety, improve emotional well-being and support mental recovery.

The feedback we have received on our idea is to make it more specific, as there are several points that still need to be defined. For example, we need to consider whether we also want to add music or other senses, what we are going to do with people who are unable to draw, how many projectors we are going to have, and what happens in rooms with many people.

For the next steps, we need to research competitors, benchmarking, and existing solutions. We also need to consider how to make it as sustainable, ethical, and inclusive as possible. Finally, we need to think about all the components we will need and use that to create the ‘black box diagram’.

4th Meeting (2026-03-12)

Agenda to do before each monday/tuesday:

1. Our idea and other possibilities.
2. Feedback from the supervisors.
3. Next steps.

Minute to do after each meeting:

We talked about our idea and new ideas and possibilities.

We showed our first draft of blackbox, the feedbacks we had: is the app from the user interface? Wi-fi? Bluetooth? All devices need to be powered (projector/scent sprayer/speaker). We need to put some sensors (to measure the brightness level, noise level, moisture level???).

Cristina talked about something we started to think about: we need to be sure that the kids will not be impacted/damaged by the light/sounds (for example the photosensitive children or other psychologic pathologies). Also, sharing the devices between children with diseases could be problematic.

We may try to find and focus on another type of public or solutions: children in stressful situtation (dentist, psychologist…) ; a kind of cocoon where the child can go inside, see, smell, and listen to what he wants without bothering the other in the shared space.

5th Meeting (2026-03-19)

Agenda: about what we want to discuss and present

1. Feedback on renewed blackbox diagram
2. Feedback on updated user stories
3. Present our refined concept: the HealingSpaces Cocoon
4. Present comparison of different technological options (VR, smart glasses, projection, cocoon)
5. Explain why the cocoon concept was selected as the final direction
6. Present preliminary Bill of Materials (BOM)
7. Present concept visuals / prototype idea
8. Present storytelling scenario used for the product concept
9. Feedback on the presentation and project direction
10. Discuss next steps for development and research

Link to presentation

Minute:

We presented our refined concept, the HealingSpaces Cocoon, and shared our comparison of different technologies (VR, smart glasses) to explain why the cocoon is the best solution for shared waiting rooms. We also showed our BOM, and the concept visuals of the prototype. For the black box diagram, we received technical feedback: Wi-Fi is a medium, not a component, so it shouldn't be drawn as a block. Also, air, area and sound should not be listed as an output of the system, and we need to clearly show that actuators are part of the system. Regarding the physical design, the supervisors pointed out disabled children on the wheelchairs, and how to make sure our product is inclusive. We also need to analyze the specific materials used inside the cocoon (their structure and properties) and maybe consider adding a contact sensor to trigger the system, plus voice-to-text functionality for our interface to make it more accessible. For the future, we discussed that our actual physical prototype needs to be a scaled-down version of our overall vision. We also need to ensure our project includes functional, non-functional (technical), and usability test. Lastly, we need to work on updating our report weekly, so that our progress is clearly visible for the coordinators.

6th Meeting (2026-03-26)

Agenda: about what we want to discuss and present

- Finishing the design of the cocoon

- Selecting sensors and electronics
- Making a logo
- Creating a flyer
- Materials

Minute:

Feedback we received for chair design: Some of our designs don't match: sometimes a leg rest is included with the chair, and sometimes it isn't. Also, a solution to easily remove the armchair (and thus take it out of the cocoon to allow entry for a wheelchair) would be to include small wheels on the chair's base that could be attached once inside the cocoon and unlocked to allow movement. So we need to work on that.

Also, feedbacks about the materials: a thin layer of air can be used between the walls of the cocoon to “naturally” insulate the sound. Copper and copper brass could be of interest, particularly from a health and antibacterial perspective. Further research is needed to determine their compatibility with our project.

7th Meeting (2026-04-01)

Agenda:

- Detailed Schematics Review
- SWOT
- Change of name because copyright
- Start of Life Cycle Analysis
- Interim Report Questions

Link to Presentation

Minute:

We must resolve key technical and design details including the speaker's connectivity, the scent diffuser's placement, and updating our schematics to include the projector and motors. To ensure true accessibility and safety, we need to detach the control tablet for wheelchair users and source antimicrobial textiles, such as Creation Baumann hospital curtains. Finally, we must update the flyer with the latest wheeled chair design, explicitly list “Inclusive and wheelchair access” in the SWOT, and complete the main report with thorough competitor and research analysis.

8th Meeting (2026-04-16)

Interim presentation

- Problem Statement
- Project Management

- State of Art
- Marketing
- SWOT Analysis
- Sustainability and Materials
- Ethics
- Solution Design
- Structural System
- Smart System

Link: see in Deliverables

Minute of the midterm presentation

Really nice logo with nice colors and design. It was a nice idea to all come dressed the same way, with the logo printed on our t-shirts. We need to provide more justification for our choices of materials and suppliers, and expand the background section. We should think about what makes our product intended for children. No paper or tablet materials will be used during the upcoming presentation.

9th Meeting (2026-04-23)

Agenda:

- Materials and suppliers update
- Detailed schematics updated with the help of Luis Lima
- Expectations for the packaging chapter (packaging and transport of materials? of the cocoon?)

Link to Presentation

Minute:

360°+ how the user is gonna interact with the product, self explaining Video→ description of speakers, software

- 3D Model Video
- Wiki → ethics, sustainability → impact on design not only theory + references
- Prototype

→ Final schematics → List of components + excal providers + transport + VAT → Materials

- Packaging → Reusable transportation

10th Meeting (2026-04-30)

Agenda:

- Selection of Local Providers
- Final List of Materials & Components
- Improvements 3D Model Video

Link to Presentation

Minute:

Finish list of components (Scent sprayer from a portuguese supplier)

Packaging: just for the prototype: think of the packaging of the smart system device (we can pack the smart system and as an chock-absorber it can be a bag with popcorn inside so that the kids can eat it after their appointment)

THINK OF THE SIZE OF THE PROTOTYPE we want to do.

Think of the quantity of free foam we will use.

11th Meeting (2026-05-14)

Agenda:

- Final list of material for prototype
- Packaging solution

Link Presentation

Minute:

We still need to pick up the remaining items on the list. One potential store for this is Leroy Merlin, where we can look for materials for instance, the panel we will need for the basic framework. Furthermore, we need to revise the poster and the flyer, as they currently contain too much text. Bullet points would be clearer, and the design should also be tweaked slightly. Another idea Benedita had for a loudspeaker was a model by Mauser.

12th Meeting (2026-05-21)

Agenda:

- Improved flyer
- Improved Poster
- How to build the prototype (drawings)

Link to Presentation

Minute:

for the Poster: we need to mix both: keep the children dimension/pictures without so much text

for the leaflet:

“Scan the QR code” then “access the Healing Cocoon” instead of “Scan to access” etc.. because it is repeating.

Prototype: how many colored paper board we should use = where to go: Vicio da Copia→ cortalina just to know the color we want, OR Olmar if we want more choice

We need to scale it down: 50cm max (with the curve) so that the color paper can fit.

Think and design the piece to connect the tubes on the top. Think of using glue and a cork to connect the tube to make the circle Think and design

- structure: we need to do the stress analysis on the structure and materials
- Smart system
- App/login

13th Meeting (2026-05-28)

Agenda:

- Prototype
- Functionnal tests

Link to Presentation

Minute:

On the meeting we discussed our progress on prototype development. We looked into the instructions that we prepared (containing the step-by-step path, dimensions and materials) and compared this to the outcome. We need to work more on exact dimensioning for the structure we have, also it was suggested by the supervisors to change assembly method for joints. We used tape, but the 3D printed joints could work better. This proposition is later to be discussed with the group. Next, we looked through the paper, that we definitely need to shorten up and that we need to polish.

14th Meeting (2026-06-03)

Agenda:

- Prototype
- Functionnal tests
- 3D model

Link to Presentation

Minute:

- think and design the 3D piece on SOLIDWORKS to connect the lower tubes (so the part must to be T-shaped).
- do the video explaining our product (1-3 minutes)
- finish the paper: add the abstract, add all functional tests and explain them

15th Meeting (2026-06-11)

Agenda:

- Advertising video
- 3D printed piece waiting for feedback

Link to Presentation

Minute:

Our fifteenth meeting with the coordinators was held on June 11, 2026, to go over our work from the last week, which included editing our product video, wrapping up the final report, and improving the prototype. The teachers gave us some important advice on the advertising video. They suggested changing the background music because the current track does not match the vibe we want to create. They also mentioned that we need to fix the opening scene with the girl. Right now, she looks too happy at the start, so we need to make her look scared and anxious about her doctor's appointment so that using the Healing Cocoon feels like a real transformation from being worried to being relaxed. They also reminded us to double-check the music copyrights, make sure our code is included in the final deliverables, and remember to submit our peer and self-assessment forms. Finally, they recommended showing a few more features of the pod, like how it adjusts the temperature, to give a better idea of how it works.

Activities

Please register here all accomplished project activities

Start	End	Task	Description	Who