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# Logbook

### External tools

The team actively uses Miro throughout the project as a tool for sharing ideas, taking notes during group meetings, and as a draft space that feeds into the report writing process. We have also used to-do lists, but have since moved to Jira for task management. See miro board here.

## Weekly Report

### 1st Week Report

Getting know each other with teambuilding and other activities. Picking preferred project challenges. Brainstormed initial ideas. Agreed on picking the digital art project

### 2nd Week Report

#### Funding Research
In the beginning of the week we mapped out who typically pays for digital public art installations. We found four main categories: government and public entities (like municipal Percent for Art programs and transit authorities), private sector actors like property developers and local businesses, philanthropic organizations and foundations like the National Endowment for the Arts, and alternative models like public-private partnerships and crowdfunding.

#### Value Proposition
We worked on defining what values the project should have. Examples from brainstorming: being open, variety, helping people get out of their everyday bubble, and inclusiveness.

#### Presentation and Supervisor Feedback
From Monday to Thursday we prepared a presentation of our preliminary idea, which we held for the supervisors on Thursday. After the presentation we got an introduction to how the report should be written and what sections it needs to include. One question we got was how we are planning to handle accessibility in the project. We also got assigned a supervisor.

#### Design Thinking Workshop
On Friday we had a Design Thinking workshop. The main feedback we got was that we should start thinking more concretely about a specific place and type of activity as a starting point for what we want to achieve with the project.

#### Black box diagram
We should start drawing by hand – scribbles and rough sketches are fine. Each week we make the diagram more detailed. It should describe what the system needs (for example: must support wifi). This grows into a proof of concept using cheap/downscaled materials.

## 3rd Week Report

09.03.26–15.03.26

**Marketing**

The group has worked together on formulating a problem statement. Paula and Anna put together a presentation to be delivered on Monday 16.03., where they will present the team's problem statements and value proposition. The Big Idea Canvas was filled out and added to the marketing section of the report.

**Design**

On 10.03 we held design thinking workshops. Our design teacher encouraged us to work more concretely on specific locations and which media to use (sound/smell/light/image) for the project in order to improve the user experience. This led us to narrow our idea down to taking place inside the metro carriage itself, focusing on technology that connects sensors and LED lights.
In the group's Miro board, three different “frames” were created. The “Plan introduction” frame gathered initial ideas in the form of text and images about what we wanted to achieve with the metro experience, drafts of the concept, questions for further refinement of the idea, and other input and thoughts about the concept we had developed so far. The “Final visionboard», “Final concept» and «Project description” frames are continuations of “Plan introduction”, where we have discussed, agreed on, and collectively clarified what kind of aesthetic and message the project should have. This process gave us the foundation to start working on materials and the black box diagram. Giulia has had the main responsibility for leading the design and concept development process, and all decisions made here have been reached collectively with the whole group. We spent a lot of time discussing this solution — particularly what kind of “output” the sensors should produce.

**Black box diagram**

A black box diagram has been created and uploaded to the wiki under deliverables. The diagram describes the metro experience with inputs and outputs. Examples of inputs and outputs in the diagram include sensors and lights.

**Structural draft, List of materials&components**

After clarifying several details about the project, we discussed what kind of materials we would use to achieve a good result. Rui sketched out drafts of the space together with the rest of the group and received feedback along the way. In the same process, we had a good starting point for discussing the list of materials & components, which was also submitted in deliverables. Julian had the main responsibility for this task and compiled the list based on group discussion, which he later reviewed with the rest of the group before submitting it in deliverables.

## 4th Week Report

16.03.26-22.03.26

**Report writing**

The team has intensified the process of writing the project report in wiki. Most chapters are started on and some are finished, but will probably need to be changed or finalized later due to where we are in the process of the project. It is inevitable that all team members contribute somewhat to every part as we need to agree on the fundamentals of each aspect to the project. Still, different team members have had responsibility for different parts. Here is a summary of where in the process we are on the report:

1. 1 Introduction - Rui - started, still in process
2. 2 Background(..) - Anna and Giulia - finished(for now)

3. 3 Project management - Paula and Julian - in progress
4. 4 Marketing plan - Giulia, Paula and Rui - in progress
5. 5 Eco-efficiency - finished (for now)
6. 6 Ethical(..) - not started
7. 7 Project dev. León - finished (for now)

**Meeting with Luiz supervisor 17.03.26**
We had a meeting with Luiz.

- In the meeting we presented our project in more detail than what we have done for the rest of the supervisors in earlier meetings.
- He showed us how to do the citations properly
- He gave us feedback on what he thought about the concept
- He supervised us on problems regarding the implementation of the project
- Most of the meeting was spent on discussing solutions for the technology that will handle the input

**Project management - Jira**
The Jira is now «fully operable» with epics, ideas, sprints and tasks. Paula with assistance from Julian has had responsibility for this, and all team members have added ideas/tasks. Sprints are weekly but from thursday-wednesday.

**Components, black box and structural drawings**
This was made last week, but the meeting with Luiz made it clear that we need to look for more solutions on hardware. Rui and Julian has been main responsible for this part, making the solutions and component list. A new version of component was made. Giulia and Anna was also part of the discussion with Luiz.

**Draft of logo and flyer**
León have worked on the logo for Connect and Giulia on the flyer. They presented it in communication class.

## 5th Week Report

23.03.26-29.03.26

**Deliverables**
The group has worked on deliverables including the black-box diagram, structural drawings, and detailed schematics. On Wednesday we held a daily meeting on Teams since we were working from home, followed by a meeting with supervisor Luiz Lima to receive guidance on using the KiCAD software for creating detailed schematics. The cardboard model was built on Monday and completed on Wednesday.

**Tasks this week**
All group members have worked on different tasks this week. The focus has been on different parts of the report, deliverables, and improving logos, flyers, and design prototypes for the app. A case and presentation were prepared for the ethics scandal presentation.

**Project management**
We did a sprint retrospective after thursday meeting with supervisors. We agreed that we needed to add more specific tasks in jira and estimate hours on each task. We divided tasks for the next sprint

and ended sprint 3.

## 6th Week Report

30.03.26-05.04.26

**Interim report and presentation** We held a presentation in communication class to prepare/practice for interim presentation. We have worked on the report to make it completely ready for interim report delivery and divided slides for interim presentation.

**Preparing for easter break**
In our daily meetings we have agreed on some dates where report need to be done, and script for interim presentation, to make sure everyone can have easter break and work from home when they need to. We scheduled a meeting for the 6th of april to practice/discuss final details.

**Structural drawings**
Rui has been working on learning how to make the structural drawings with a tool that he has not used before.
**Design**
The clickable app was finalized by Leon, also system and brand guidelines. The interim presentation was done to match these guidelines.

## 7th Week Report 20.04-26.04

**Project management**
The group had daily meetings and managed tasks in jira.
**Design (logo)**
The logo was adjusted from feedback.
**3D model video**
The 3D model has been worked on further and a video was made to show the model.
**Smartphone app code**
The code for the phase two of the project is started on. It has all basic functions and styling. It is deployed on supabase.

## 8th-9th Week Report

27.04-14.05

Denne rapporten inkluderer perioden før, under og etter student week. **Deliverables: 3D video, poster, leaflet, packaging solution**
3D videoen har blitt ferdigstilt etter tilbakemeldinger fra veilederne fra forrige uke, og fra innspill fra teamet. Teamet er nå fornøyd med resultatet av videoen. Endringer som ble gjort var å legge til forklarende tekst underveis i videoen, sensorene (velostat sheets) ble inkludert, musikk ble lagt inn og det ble lagt til en demonstrasjon av hvordan produktet fungerer i videoen. Leaflet, poster, packaging solution har blitt ferdigstilt. Før ferdigstillelse ble det lagd flere versjoner basert på feedback fra professor i communication og evalueringer fra hele teamet.

**Paper**

Introduksjonen til paper har blitt skrevet og evaluert av team og professor i communication. På bakgrunn av tilbakemeldingene har det blitt gjort noen endringer, og introduksjonen er nå ferdigstilt.

**List of components, meeting with professor Luis**
Rui had a meeting with Luis before student week to evaluate and optimize the list of components for the prototype and «ideal» product.

**Electrical schematics, pcb-design changes**
Based on input from Benedita in meeting before student week, the electrical schematics and pcb-design was changed.

**Standardize wiki report**
The whole report have been standardized (same format on all headings, introductions, summaries etc.)

## 10th Week Report

18.05-24.05
**Prototype**

- the assembly of prototype was a bit blocked this week because of missing materials
- designs for the prototype was made

**Communication materials**

- all communication materials was updated: leaflet, poster, packaging poster

**Paper**

- Paper got feedback and was fixed according to that
- everyone wrote personal sentences for the paper

**Webapp**

- the webapp had some adjustments with prompts in send and read page
- testing of API was made and was ok

## 11th Week Report 25.05-31.05

- The assembling of the prototype have been started
- Stress analysis added to the report
- Scientific paper first sections are done. Now the more technical parts is missing and need to be prioritized
- The group has started the work to prepare for the final presentation by making the pre-presentation for monday 1st

# Meetings

## 1st Meeting (2026-02-26)

**Agenda:**

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

**Minute:**

We discussed the ideas from the topics available. We also choose a prefered topic.

## 2nd Meeting (2026-03-05)

**Agenda:**

1. Project direction: prepare a precise project topic
2. Skills assessment of each member
3. Summary of information from supervisors

**Minute:**

**Project Direction**
We should focus on one or two ideas after the design thinking phase. March is dedicated to designing the solution. Key focus areas going forward are market analysis, ethics, and sustainability. A similar project has existed before – we need to check what others have done and make sure our solution is different. Our USPs should be clear. One example brought up was creating 3D instruments in public spaces that people can interact with (like a theremin). The teacher also pointed out that people can feel isolated even in activities that are supposed to connect them, like a dancing class – this is relevant to our problem space.

**Skills assessment for each member**
Rui Mendez - .net, nextjs, angular, php (full dev), iot, system designing, mechanical design and CAD
Paula Macías -

- Experience in process simulation using WITNESS (system modelling, bottleneck detection, performance analysis)
- Ability to analyze and optimize production systems through simulation
- Basic experience in web development with Visual Studio (understanding how digital platforms are structured)
- Practical experience in a real engineering company (Internship at Sirkum Ingenieros)
- Understanding of how industrial projects work in real life, not only in theory
- Strong background in operations management and process design
- Knowledge of project planning and coordination
- Experience working with quantitative methods and data analysis

- Ability to connect technical systems with economic feasibility
- Familiar with automation and industrial environments
- Used to working in structured, analytical, and results-oriented ways

Giulia Vaneeckhout -
* Product Design / Development analyzing problems (interviews, research…) - defining the problem - designing a solution * Skills: - sketching - 3D modelling (solidworks) - design: product/poster/brand/pwp - prototyping - Human centered

Julian Bednarek -computer science:

- software engineering
- strong python knowledge
- familiar with java, c#, c++ etc.
- machine learning
- data mining
- a little bit of computer vision
- backend development
- a little electronics background

Leon Gunsilius- Interactive Media:

- UI / UX Design
- Design in General (Poster, Flyer, Web -/Appdesign)
- Prototyping
- Interfacedesign
- some knowledge in Animation and 3D
- some knowledge in Programming

Anna Bentzen - IT student

- IT (applied computer technology)
- nurse (5 years working experience)
- most familiar with java, .NET applications, some data science, databases etc

**Summary of supervisor meeting**
Before we can define requirements, we need to map out what already exists – both research projects and commercial solutions. We should search using Google and AI tools, and always include sources (links). Everything will be checked for AI and plagiarism. The analysis should include a comparison table of relevant projects and products, covering the aspects most relevant to our concept.

- Presentation link and wiki notebook are in the Teams channel
- Logs can be written during the meeting; minutes are written after
- Requirements are listed in the wiki

## 3rd Meeting (2026-03-12)

### Agenda

- Finalizing problem idea
- Blackbox diagram / structural diagram review

### Minute

We need to watch ourselves to regularly upload all of our work evidence to team and fill wiki on time. We need to keep focus on the Background and related works part of report. We need to think about expierience for many people (50+) to make unique for each one. TO DO most important bolded Wiki:

1. **backgroudn related work (must be full of citates)**
2. **examples to see different possibilities**
3. **this background ends with a table for comparisson (to dine the best idea)**
4. **we need to compare our idea with others ideas - and write about it in report**
5. **comparison tables - where we find other peoples ideas**
6. need to work on the report
7. project development

Project:

1. integration of multiple inputs
2. solution that is not power intensive
3. **materials: materials that change color based on temparture/pressure (two levels of interaction)**
4. **Propositions on how to do it: a censor that change with temperature (?)**
5. safety aspects
6. look for ectual imporvements we want to make
7. **meeting with luis for extra**
8. **link to logbook in presentation**
9. Describe our idea (being specific) and put it in the wiki

## 4th Meeting (2026-03-19)

### Agenda

- Material selection review
- Finishing Backlog, Global and Initial Sprint Plan, Gantt Chart
- Review of already done sections in report (Background and related work, Project development especially)
- What parts of the report should we prioritize next week?

Presentation link

### Minute

### General feedback about project:

- The core idea was positively received.
- Revisit the hand-press interaction: one color should appear on the ceiling and change with each new touch (rather than per person/pole).
- If any messaging feature is retained, a content filter or equivalent must be in place to prevent inappropriate messages.

- Check copyright for any logos or branding used — consider adding a suffix or modifier to the name “Connect” to avoid potential conflicts.
- Copyright considerations should also be addressed in the ethics section of the report.

**Materials & Components**

- Source components from Portuguese suppliers rather than platforms like AliExpress.
- Prices listed should include VAT and transportation costs.

**Jira**

- Create an epic specifically for the prototype phase.

**Black Box Diagram**

- “Communication Protocol” is not a hardware block and should not appear as a standalone element.
- Move it inside the Microcontroller box; connect the output directly to the LED output block.

**Report Structure**

- Fill out the test/validation structure — for example: if the LED lights red as intended during testing, mark it as passed across functional, technical, and usability criteria.
- Under Project Development → Design → Smart System: add draft images to the ideation section.

## 5th Meeting (2026-03-26)

**Agenda**

Meeting with supervisors:

- Review of design: logo, flyer, application
- Review of deliverables: black-box, structural drawings
- Review of updated materials&components, detailed schematics
- Review of Cardboard model
- Plans for interim presentation - what are the requirements?

Team:

- Organizing work for Easter break

See presentation here

**Minute**

**Design, logo, flyer**
The feedback on these components was positive, with no remarks.
**Black-box and structural drawings**
The supervisors went through these components. The team got the impression that the vision for how we intend to carry out the project became clearer. The execution of the black-box and drawings was

good, however the supervisors were critical of the number of microcontrollers we planned to use, and said we should consider a more efficient alternative.

**Detailed schematics**

The supervisor provided some feedback on changes that needed to be made for the schematics to be correct. This was noted by Rui and corrected after the presentation.

**Cardboard model**

No specific comments or required changes for this model.

**Interim presentation requirements**

Benedita gave us an overview of what we need to include for this presentation, and had written the outline on the whiteboard. We took a photo of it.

## 6th Meeting (2026-04-01)

### Agenda

- Showing progress of interim presentation
- Review of our wiki progress
- Review of finalized deliverables (schematics, materials, drawings)
- Wishing each other Happy Easter :))

### Minute

**Message application**

No download - webapp

- Feedback: take pictures to add to the webapp?
- Discussion whether it is possible due to moderation. We will focus on the initial plan before we add more components

**Brand - design system**

- Unordered List ItemShowed the design system with no remarks

**Structural drawings**

- 3D drawings is started on, no special remarks from supervisors on this one
- Still work in progress- need more time to finish

**Materials&components**

- Feedback: Everything need to be from Portugal, or else we will pay taxes on the products and it will not be the same price
- Showed both versions of materials&components and explained

**Other feedback or comments:**

- Update kiCad from 5V to 12V in detailed schematics and send Luiz. Luiz need to review the new detailed schematics, and to review the solution about power supply and amps..
- Look at the power budget for the detailed schematics

- Update components list on wiki (always update in wiki when we make new verisons of deliverables)

## 7th Meeting (2026-04-23)

### Agenda

- Review of 3D Model
- App progress showcase
- Review of electrical schematics
- Plans for prototype development

### Minute

### Feedback

- We didn’t make an agenda this time which we need to do every time.

### 3D video

- Need captions and arrows for the components in the video instead of text in separate slide after
- The sensor need to be addressed in the 3D model

### Challenge

- There is a conference on engineering in ISEP this fall. If we send in our technical scientific paper by the 15th of May, the project could be presented on this conference

### General remarks

- Be consistent about logo and name, connect or connect & share
- All red comments in wiki need to be fixed (these are from Benedita)
- Make sure the theory and the product is linked together, the theories need to be implied into practical solutions

## 8th Meeting (2026-04-30)

### Agenda

- Wiki consistency
- Summaries
- 3D Assets
- Procurement

### Minute

### Prototype / Hardware

- Logo – Approved as-is.
- Video – Add background music; must be copyright-free.
- 3D Model – Increase brightness/visibility of the velostat color in the model.
- Interaction Demo – Add a video or image demonstrating how touching the pole triggers the LED.
- Ink on Vertical Poles – Explore using color-changing ink on the poles activated by touch. Suggested technologies: thermal ink, piezoelectric ink, or thermochromic ink.
- Copper Tape – Use two pieces of 10×10 cm copper tape.
- 3D Printing – Final dimensions must not exceed 20×20×20 cm.
- On/Off Switch – Add a physical on/off switch to the prototype.

#### Web Application Testing

- Use Postman for performance testing of the webpage.
- Run a minimum of 10 requests.
- Metrics to capture per request: response time, time deviation, character count (including maximum number of characters), and number of bytes exchanged.
- Compile results into a table.
- Identify the longest request and perform a load analysis using JMeter (JMeter table required for the longest request only).

#### Usability Evaluation

- Create a SUS (System Usability Scale) form in Google Forms for a full characterization of the web application.

#### Documentation

- Box drawings – Provide more detailed technical drawings for the enclosure.

#### Packaging & Presentation

- Check the packaging deadline.
- Idea from Benedita: Design a box using a quality material such as wood. The box could function as a station unit — either to assemble/interact with the product, or to house a display showing an explanatory poster or product information.

## 9th Meeting (2026-05-14)

#### Agenda

- Review of edited 3D video
- Review of leaflet, poster, packaging solution
- Review intro of paper
- Review testing of webpage
- What is expected for functional tests for 27th May?

#### Minute

#### Leaflet

- What, whom, when, where, how and why: do we need the what, who and why with space and question mark
- Travelling lights or LED strips in description
- do not use «we» in the leaflet
- do we want to write in english or american english
- dont need to add the proximity, simplify the technical details (instead of PA rail, railways - write safe and remove railway)

#### Poster

- Use colors from the logo in the text, proposal from Benedita

#### 3D video

- Initial part where we see the carriage can be shorter, the best part is when the velostat/technical parts is
- Can add real images in the video later
- Change music to something that is not lullaby

#### Packaging

- add QR code
- no other remarks

#### Web Page Testing

- kelvin bytes or kilobytes - change with small keyletters
- other than that there were not any remarks about the testing

#### Paper

- no feedback today because it was written in the wrong place

#### Other things

- do we want grey, black, or yellow 3D print material?
- we landed on yellow which was available in leroymerlin

#### Functional testing

- test everything that we have so far
- add everything to wiki and paper
- depending on the status on the electronics: do the tests that we are able to do

## 10th Meeting (2026-05-21)

#### Agenda

1. Progress on assembling prototype (pictures in teams and presentation)
2. Review of software updates on wiki
3. Preparation for performing tests
4. Review of paper progress

5. Review on web app changes (pictures in presentation)

Link to presentation

#### Meeting

- we went through the prototype plan (reviewed the design) and received no specific feedback on it

feedback on the paper, what has been written so far — avoid using “we” and “us”, and focus on smart system/prototype/hardware going forward

- we went through the updated communication materials: leaflet, poster, without any new remarks
- we went through the updated packaging without any remarks
- we went through the “prompts” in the app, without remarks
- software testing was fine without remarks
- Benedita and Rui made a plan for getting materials for prototypes

## 10th Meeting (2026-05-28)

Link to presentation

#### Agenda

- Review of paper so far
- Review of prototype assembly so far

#### Minute

#### Prototype

- Jorge need to see and revise stress analysis in both report and paper. Make sure files that are sent to him is stp format
- All components are here now for the prototype: it needs to be printed but the material is here

#### Paper

- complete citing nr. 14
- can make the power consumption table smaller
- finalize paper next week
- what is red needs to be fixes. what is blue Benedita already fixed

## 11th Meeting (2026-06-03)

Link to presentation (update it)

**Agenda**

- Review of paper: do we delete the rest of the «LaTex help text» and the citations that was added from before?
- Review of prototype assembly so far
- Review 3D model for prototype

**Minute**

# Activities

*Please register here all accomplished project activities*

| Start | End | Task | Description | Who |
|---|---|---|---|---|
| | | | | |