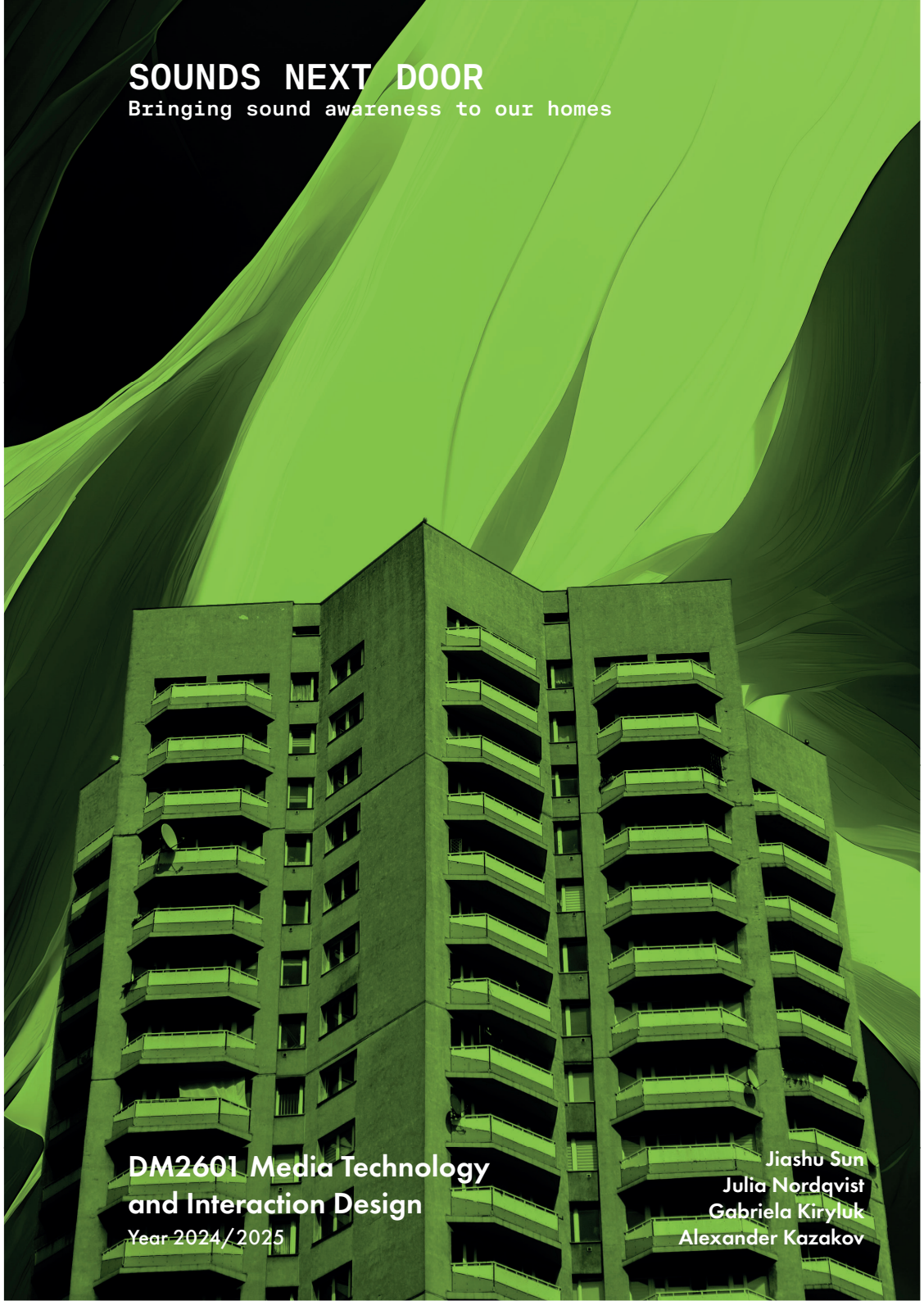
SOUNDS NEXT DOOR

Bringing sound awareness to our homes



DM2601 Media Technology and Interaction Design

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INTRODUCTION

In a shared building, sound becomes an invisible thread connecting lives, even between strangers. The hum of a neighbor's radio, footsteps above, or laughter through thin walls whisper stories of routine and intimacy. Each sound—a cough, clatter, or conversation—reveals the quiet rhythm of intertwined lives, reminding us that we live not in isolation, but in the subtle presence of those around us.

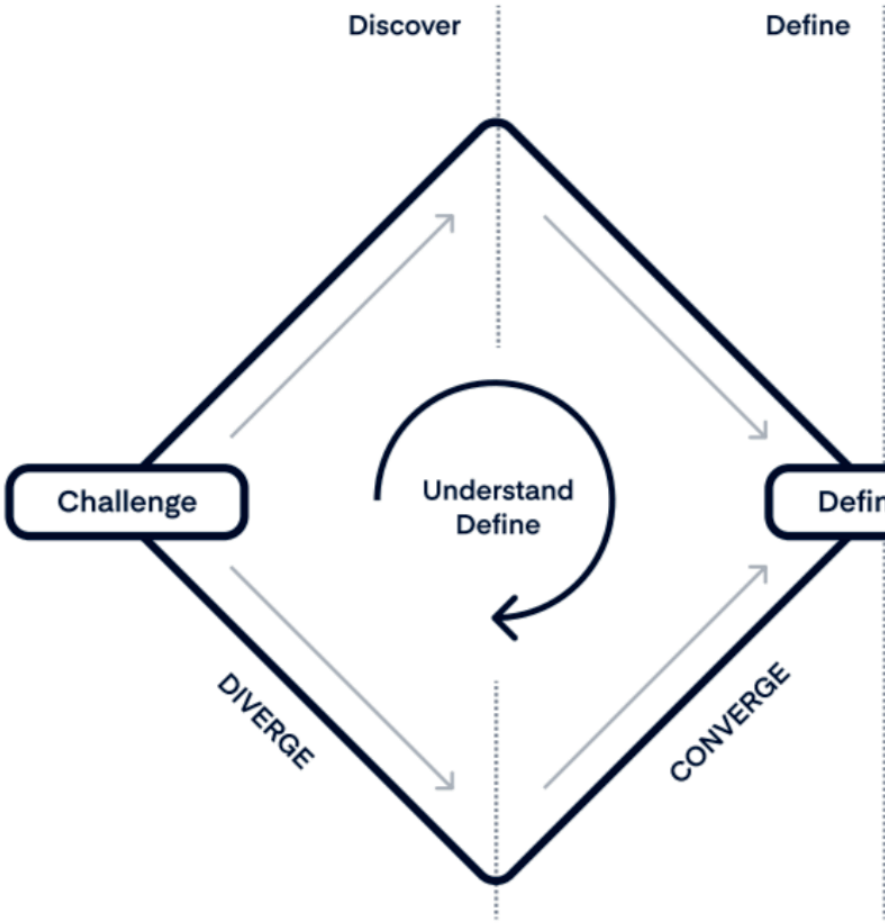
THE BRIEF

Create an interactive hi-fi prototype of an interactive system with a focus on media technology. The theme is designing for interdependent living. Technologies in our lives are often built on ideals of self-sufficiency. From helping us create shopping lists, search for recipes, and set workout goals, these technologies automate human assistance, reinforcing the assumption that maintaining dignity means needing other people as little as possible. However, this unexamined "autonomy myth" hides the reality of social relationships and the ecology of care that sustain our daily activities. We want to explore how technologies might look different when we move away from a culture that organizes around independence toward one that embraces and recognises the importance of interdependence between people.

OUR INTERPRETATION

In our work, we wanted to highlight the subtle, yet essential relationships between neighbors in shared living environments, which are facilitated through sound. Particularly, our focus was to showcase how people influence each other through sound, and make these relationships more apparent.
In apartment complexes, sounds from daily activities like conversations, music, or even footsteps naturally travel through walls, making sound a shared experience, whether intentional or not. This soundscape creates an inherent interconnection between residents, where one's actions directly affect others.

01 USER RESEARCH



Problem

REFERENCES

Allport, G. W. (1985). The historical background of modern social psychology. In Lindzey, G., & Aronson, E. (Eds.), The Handbook of Social Psychology (3rd ed., Vol. 1, pp. 1-46). New York: Random House.

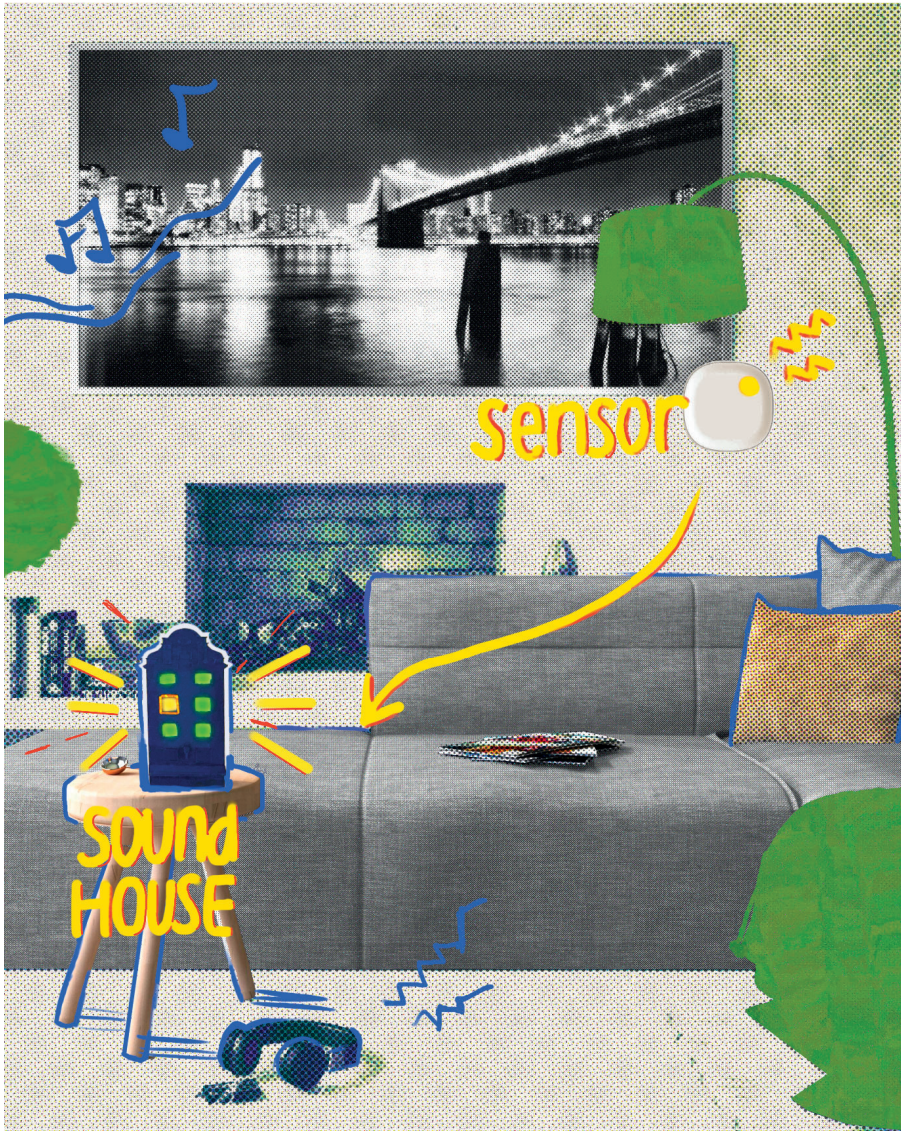
Da Silva, T., & Palm, J. (2019, May 22). Stockholms nattliv hotat – barer och klubbar tvingas stänga. SVT Nyheter. https://www.svt.se/kultur/stockholms-nattliv-hotat-barer-och-klubbar-tvingas-stanga

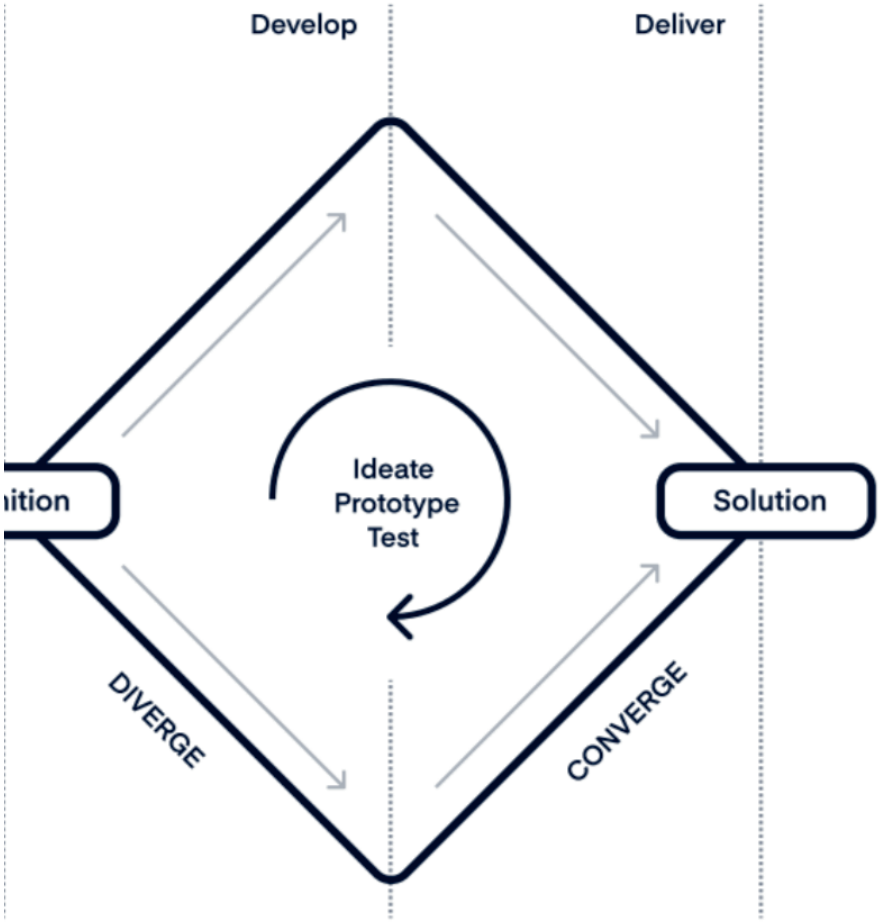
Maris, E. (2008, December 17). The social side of noise annoyance (De sociale kant van geluidhinder). Retrieved from https://hdl.handle.net/1887/13361

World Health Organization. (1999). Guidelines for Community Noise.
Authors: B. Berglund, T. Lindvall, and D. H. Schwela (Eds.). Geneva: World Health Organization.

Double Diamond image: https://www.productboard.com/blog/double-diamond-framework-product-management/?

In the future, we will expand the design of our products. We will design a wider variety of appearances to offer users more choices, such as a Rubik's cube, flowers, and more. This gives the product the added functionality of personalizing room decoration.

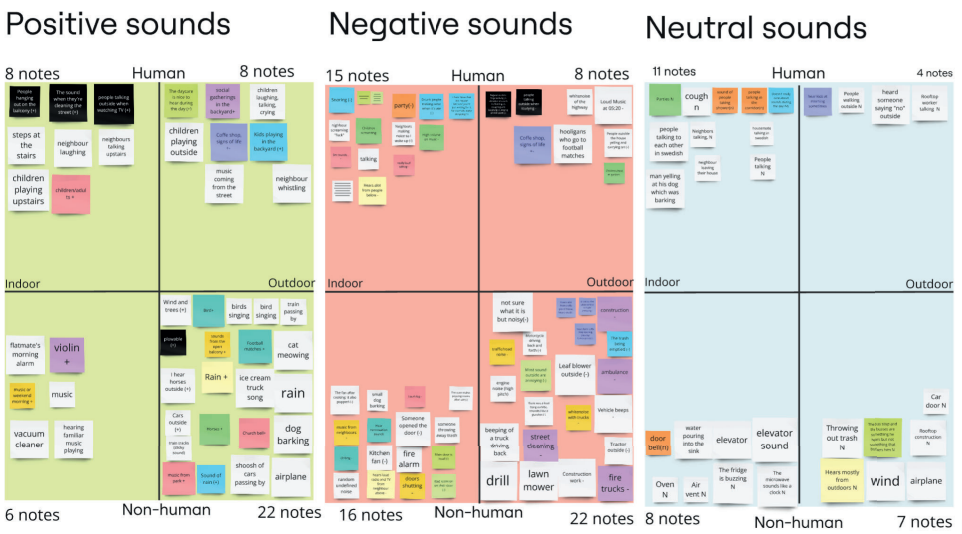




Solution

DISCOVER

Following a pilot interview, we have conducted a total or twelve interviews with members of various housing associations in Stockholm. Our age group was 21-65 year olds. Additionally, we kept ten sound diaries - over four days participants were asked to note any sounds that they noticed coming outside of their flats (our neighbours + outdoors), as well as how they made them feel.



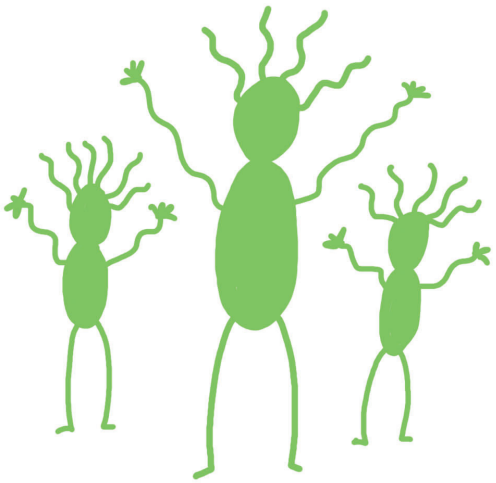
The sound house can function in various contexts, not limiting its use to the housing environment. Possible uses may include: office spaces, kindergartens, libraries, clubs in residential areas - where noise constitutes an issue and the demand for silence is high. We see this product working well with children due to its fun look and high level of interactivity.

REAL WORLD CONTEXT

In the real world context the 3d-printed artifact would be similar in construction while the wooden construct would be replaced with a decibel sensor mounted in the apartment. Adjustments to the 3d-printed artifacts appearance would be made in order to accommodate for mass production.

Use various communication methods:
leaving notes, emails, knocking on peoples door

Time of the day greatly affects their perception of the sound their neighbors make.



INSIGHTS ABOUT THE TARGET AUDIENCE

Some believe that their neighbors are unaware of the excessive noise they make.

They tend to equally enjoy and hate outdoor sounds more than the sounds caused by indoor activi-ties.

LITERATURE REVIEW

“Being exposed to man-made sound is a social experience”. (Maris, 2008). When you expose me to sound, the way I think, feel or behave in response to that sound will be influenced by your actual presence, or my imagination of it (Allport, 1985).

Many clubs and social spaces the inner city of Stockholm have been forced to shut down due to noise complaints from their neighbours. These include Snotty, Bitter pills, the bowling alley, the Kägelbanan concert venue and more (Svt Nyheter, 2019). This leads to expulsion of culture further out of the city, where cultural venues may face even more noise complaints in residential areas. The inner city loses its vibrancy and the music scene needs to go underground.

The World Health Organization highlights effects on health and well-being associated with noise which include: annoyance responses, noise-induced hearing loss, detrimental effects on sleep, reading acquisition, social behavior, performance, productivity, and on the cardiovascular and psychophysiological systems (WHO, 1999).

ETHICAL CONSIDERATION

From an ethical standpoint, this device might be seen as intruding into someone’s personal life because it continually measures the sound levels in your apartment. People may be skeptical that it is only recording sound levels and not actively listening to conversations and activities. To address this concern, the marketing for this product must clearly emphasize that its sole function is to measure sound levels. Additionally, users have the option to manually turn the device on and off if they do not wish to have their sound levels monitored.

DESIGN DECISIONS

This section describes design decisions we made following the user feedback, which led to the final design of the prototype.

Feedback: A lot of users were confused on how the product would work if two people are loud in two neighboring flats at the same time.
Decision: Therefore, we decided the house lamp will only show how the sound in your flat affects your neighbors. It does not show the sounds that are made in those flats, but rather showcases if the sound made by you can be heard by your neighbors.

Feedback: Users reported that the color convention of sound levels was easy to understand.
Decision: We did not change the color palette.

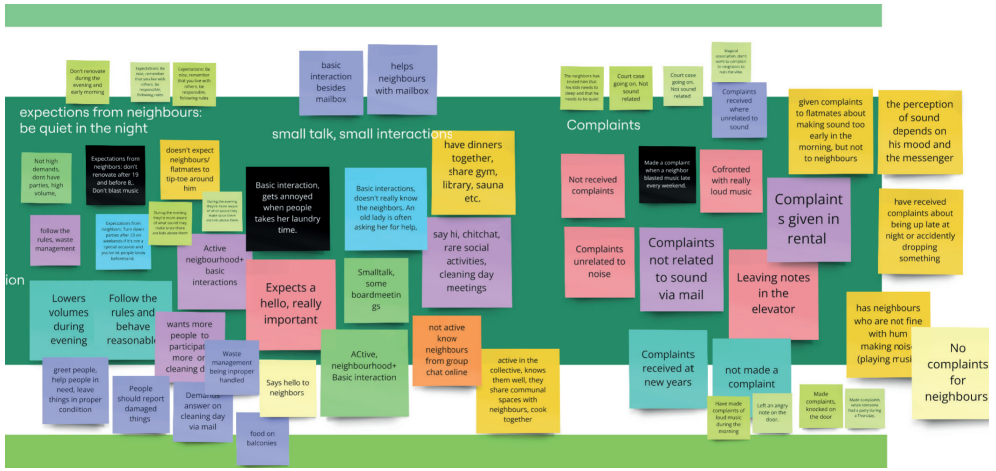
Feedback: Initially the buttons activating different sounds were placed on a breadboard in front of the apartment scene. Some users reported that it feels disconnected activating the sound outside of the flat.
Decision: We have placed the buttons inside the scene to make it more clear that the sounds come from that apartment.

Feedback: Some users could not easily identify which flat in the sound house they “live in”.
Decision: We have marked the frame of the scene and the frame of the window with a rosegold tape accordingly.

Feedback: One user suggested to replace the sound building with a cube, to make it more universal and easier to mass-produce.
Decision: Following careful consideration we decided to leave the sound house prototype. We thought it conveyed the concept more clearly.

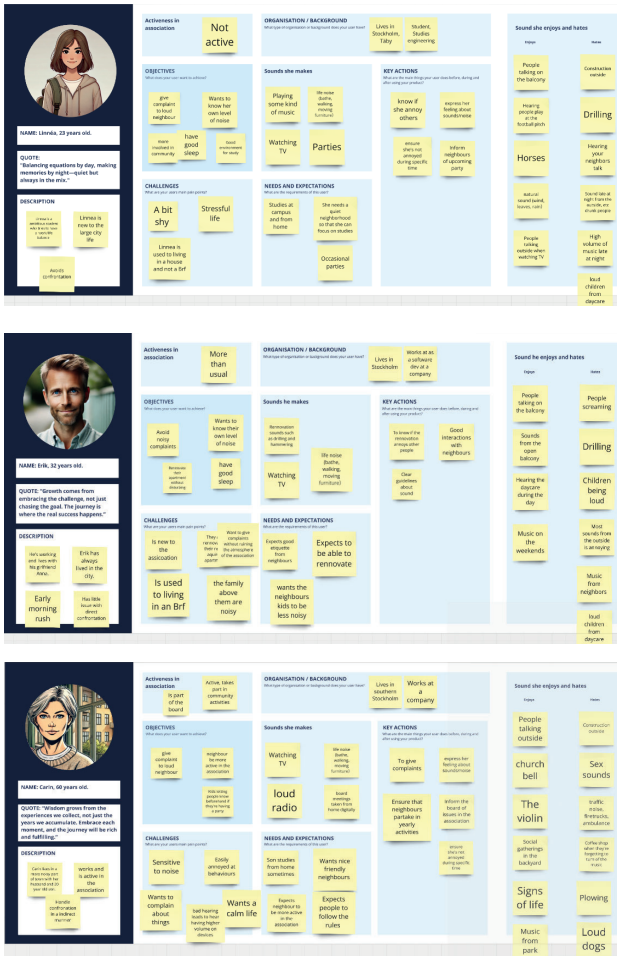
DEFINE

We used various methods to help define our problem area.



THEMATIC ANALYSIS

We have gathered key information from the conducted interviews and organized them into themes: sound self-awareness, complaints, expectations from neighbours, confrontation style, day-to-day interactions, complaints. This thematic analysis was conducted collectively, however, to minimise our biases, we have conducted the thematic analysis seperately too.



PERSONAS

We created three personas based on the data. One representing the student category, one representing an adult living in a relationship and one representing the elderly. We looked through all the data and wrote down the most common traits for these three groups. They were all different and had different lifestyles, which also affected what sounds they liked/ didn't like. Once our personas were done we could start doing scenarios.

The prototype is made of two parts- apartment scene and the sound house. The scene imitates the sounds made in one apartment building, and the corresponding part (marked with rose gold tape) showcases how those sounds affect the neighboring flats.

Green - the sound is barely audible/ it is quiet
Yellow - the sound is definitely audible in the apartment
Orange - the sound is audible and might be noisy
Red - the sound is very loud

The bottom right apartment is off - they decided to switch off their device. Due to privacy consideration, the device can be

SCENARIOS & HOW MIGHT WE STATEMENTS

The scenarios were created with the personas in mind. We created three different scenarios for each persona which stated some type of problem based on the interview data. From this we started working with “How might we (HMW)” questions and “Point of views” statements. These questions and statements were done at the same time together as a group.

When looking at all of our HMW questions we then decided to vote for the three we resonated with the most. We ended up with seven different HMW questions and from these HMW questions we could describe our main problem area.

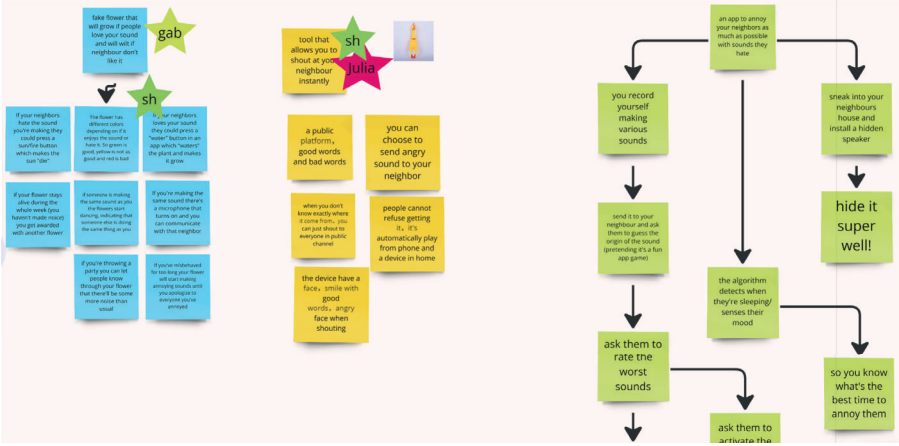
DEVELOP

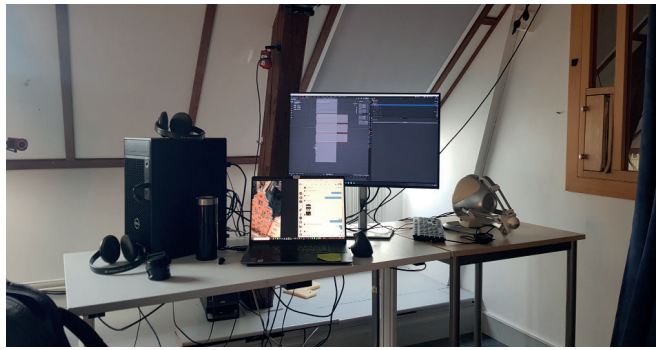
We applied multiple ideation methods to explore possibilities that respond to our problem statement:

“People do not know how the sounds they make impact their neighbors and how they react to it.”

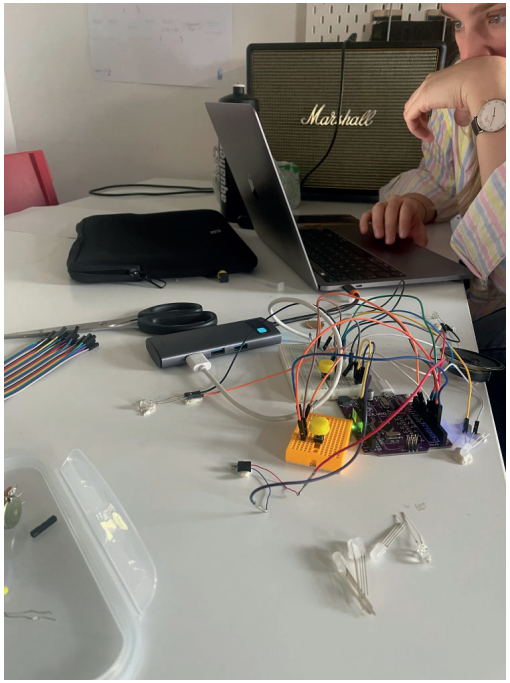
WORST POSSIBLE IDEA

We did the “Worst Possible idea”. This process gave us clear identifiable issues which relate to human privacy, surveillance and annoyance.





Designing the building 3D model.



Coding arduino.

DELIVER

For evaluating the prototype we went with multiple evaluation methods, some of these included users. These included checklists, cognitive walkthroughs and cooperative evaluation. Our focus for the testing was to ensure that the High fidelity prototype was being understood by the users testing it, both from a conceptual and practical perspective.

CHECKLISTS

Our checklist consisted of two parts, a technical check and a principle check, the former ensuring that the prototype functioned from a technical standpoint while the latter was used to ensure that we as designers have done what we could to minimize misunderstanding from the user.

COGNITIVE WALKTHROUGH

We wanted to perform a cognitive walkthrough to clarify what steps we as designers should observe and focus on.

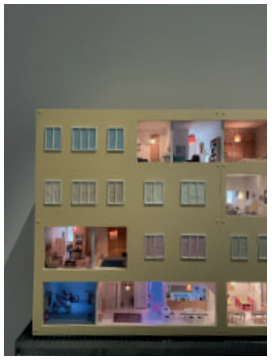
COOPERATIVE EVALUATION

Cooperative evaluations were conducted in order to see how users would interpret and interact with the artifact.

CRAZY EIGHTS & SKETCHING

Early in the development process we made use of both sketching and crazy eights. Sketching included various ideas on what artifact to construct as well as what form, I.E digital or physical etc.

Here the idea for a doll house representing peoples sound and how it affects neighbors spawned.



BRAIN WRITING

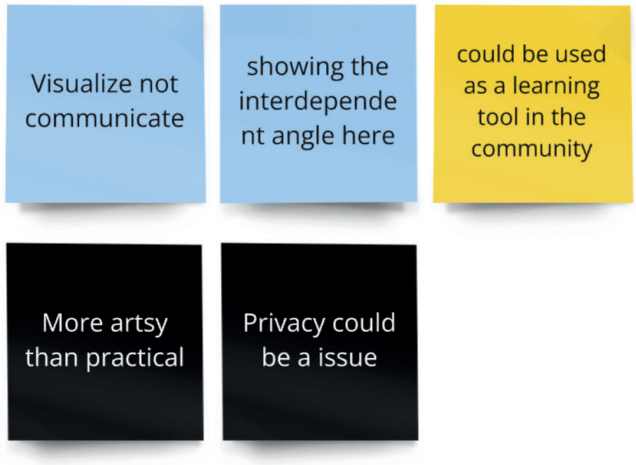
Brain writing was another method during the ideation phase which focused on generating as many ideas as possible without anyone feeling judged. The ideas were generated by each member of the group and then the best ideas were discussed and voted on.

Our reasoning for choosing this method was to broaden our view on the problem statement and consider each group members' perspective.

SIX THINKING HATS

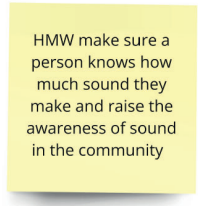
To expand upon these ideas we decided to use the Six thinking hats method. The method consists of six hats where each hat represents a method of thinking.

The following considerations were noticed after doing the six thinking hats:



Afterwards the group discussed and brainstormed further, which ended with the group on creating a phsyical artifact designed to help solve the following problem:

HMW make sure a person knows how much sound they make and raise the awareness in the community



Our How might we statement focuses on making an individual more aware of the sound they make and how it affects their neighbors. This was done by creating a 3d-printed artifact which would react to various user scenarios through the use of led lights. These lights would be color coded to represent the level of sound an activity would make where green would be no noticeable sound and red would be very loud sound.

The 3d-printed artifact would resemble a typical building typically associated with housing associations in which each window would represent a neighbor (with the user having their own marked window). Upon activating a sound scenario the user's light would change color to match the sound level and how it would affect other neighbors. Interactions would be made through a sound sensor mounted within the users apartment.

However for the context of the course a simulation of the sensor mount would be done. This would be done by constructing a miniature apartment where various sound scenarios would be simulated below illustrates the difference between the prototype and its real world.