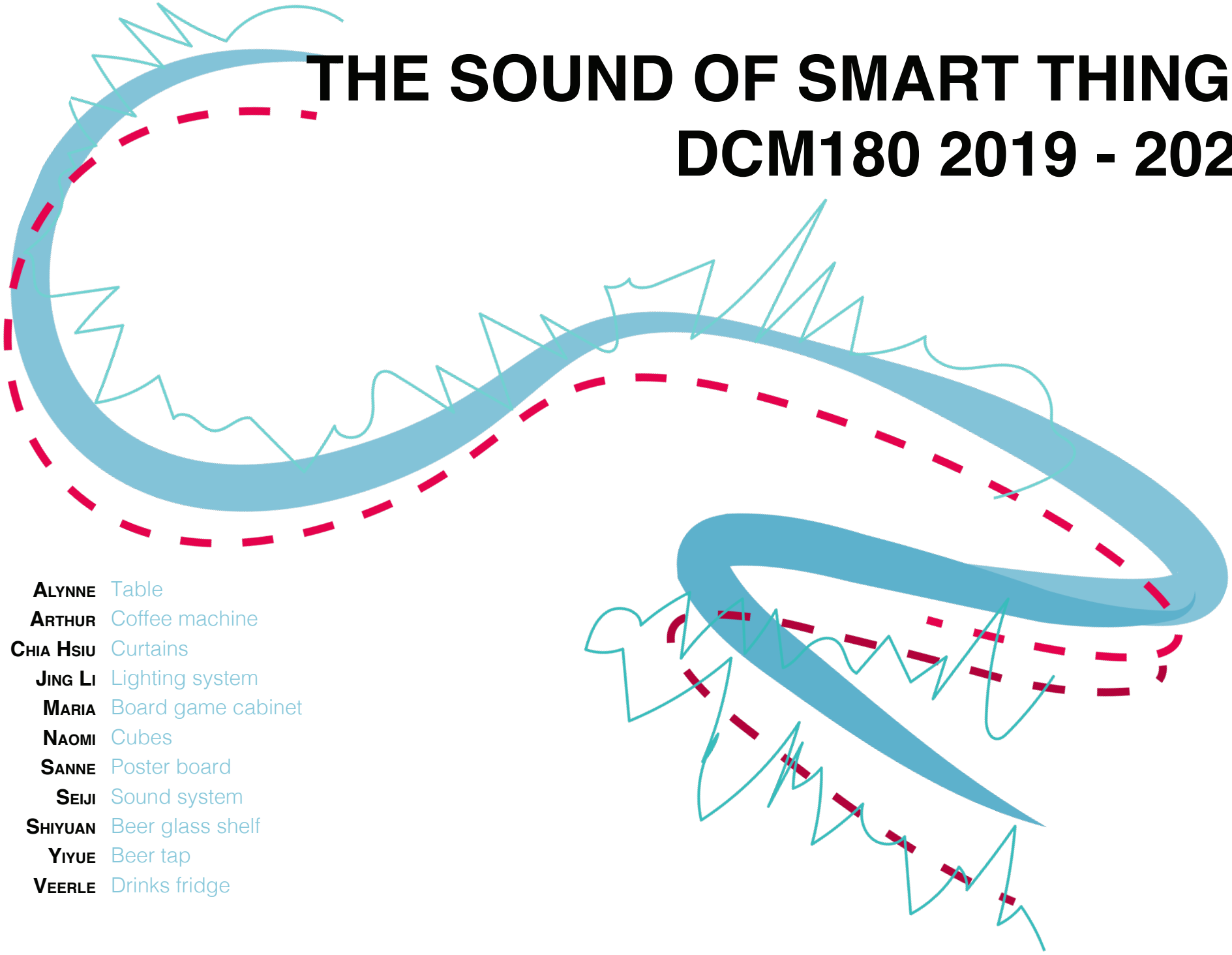
THE SOUND OF SMART THINGS
DCM180 2019 - 2020



Alynne	Table
Arthur	Coffee machine
Chia Hsiu	Curtains
Jing Li	Lighting system
Maria	Board game cabinet
Naomi	Cubes
Sanne	Poster board
Seiji	Sound system
Shiyuan	Beer glass shelf
Yiyue	Beer tap
Veerle	Drinks fridge

INTRODUCTION

This report provides contextual information on the ‘Lucid.Bar 2030’ concept video for the Sound of Smart Things elective. This report describes the design process, which gives insight into the design decisions made on the smart objects’ behaviour and sound output.

SCENARIOS

We defined three scenarios to give ourselves a framework to operate in. The scenarios were based on the most interesting and diverse moments we saw during the diary observations. The first scenario is a lazy Monday morning, where there are some people but not a lot, there is a positive and cozy atmosphere and it is more informal. The second scenario set the stage of a lunch lecture in which there is a presentation, there are a bit more people than during the morning but still it is not busy and there is an inspiring atmosphere while still being more formal than normal. Last is the Thursday drink scenario, in which it is usually crowded and the atmosphere is energetic, lively and informal.

ROLEPLAYING

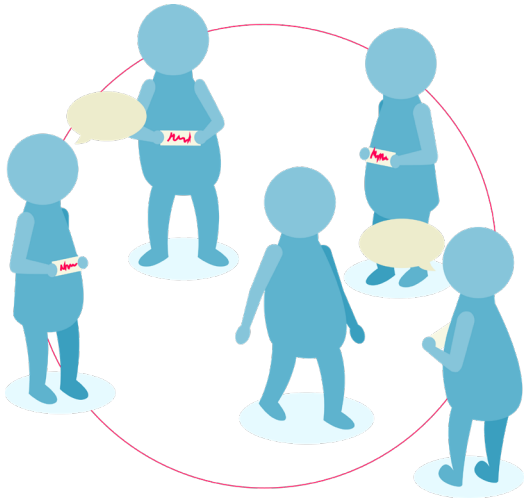
With these scenarios in mind we each picked one rule for each object to act on in one particular scenario. We started with the Thursday drink scenario, two people acted as visitor to the Thursday drink and the rest of the group pretended to be their object. It quickly became clear that some objects should not be active in this scenario and some objects should only communicate with specific objects or people. For example the bar; the first time roleplaying, the bar had a lot of interaction with the user (person visiting for the drink) which required the bar to know a lot, which made it unnecessarily complicated. Therefore, a rule that the bar only communicates with the bartenders and other objects followed. In a similar way all the objects were tested in each scenario to build up the rule set. Each time keeping in mind the appropriateness for the object when to act and when to be inactive. We ended up with about 2-4 rules per object, a list of what all the objects know and a list of who they communicate with. These rules can be found in Lucid.Bar 2030: Smart objects.

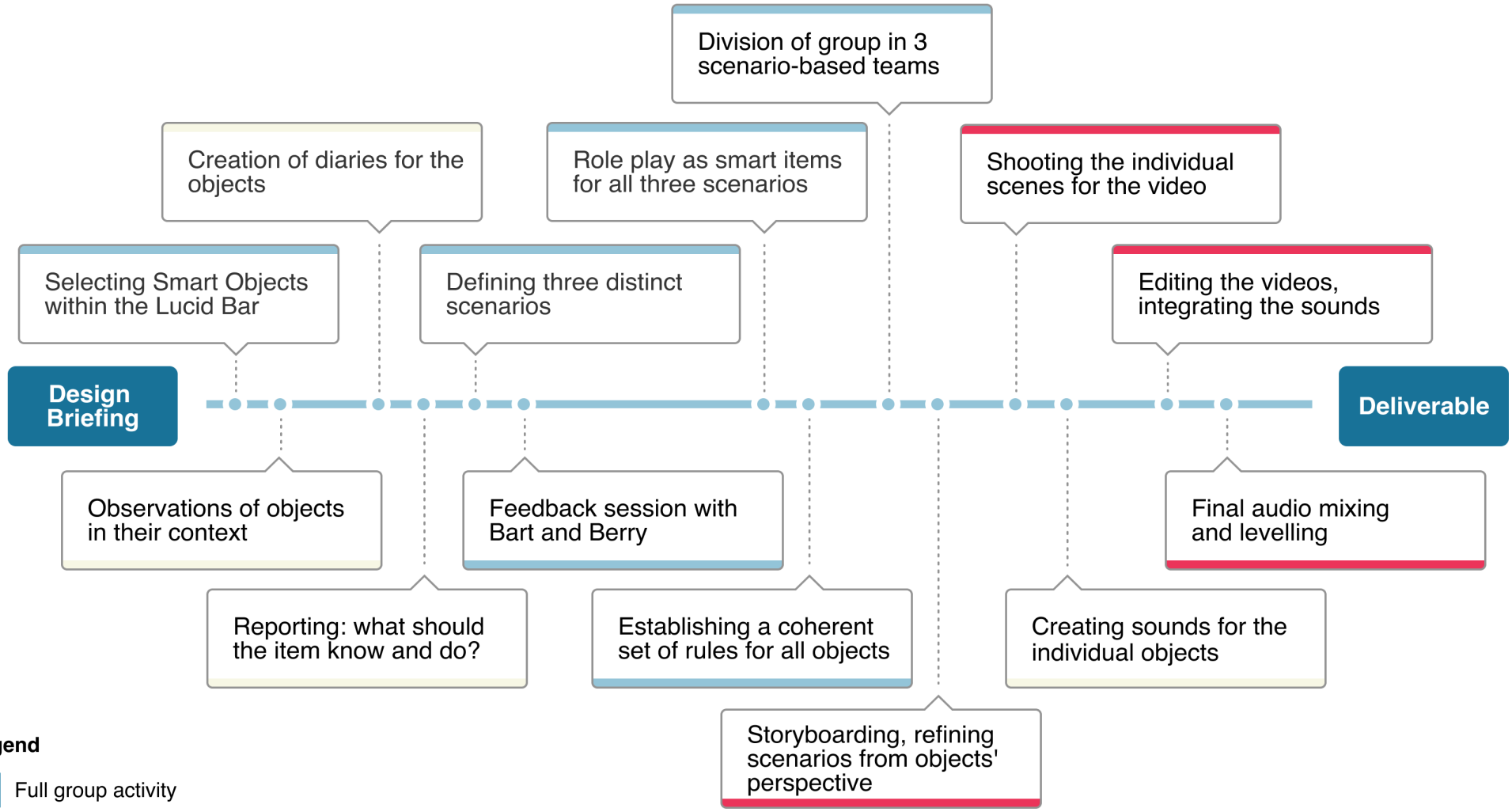
VIDEO CREATION

After the role playing game, we got the basic rulesets for each object. We decided to divide into three groups to film the three scenarios. Each group included 3-4 members, firstly, each group made a detailed storyboard for each scenario; when objects make sounds, and how objects communicate to people as well as how objects respond to each other. The detailed storyboards acted like a script to structure how we shot the videos.

After finishing each storyboard, we filmed the videos for the three scenarios, this step was accomplished in small groups. During the video shooting, one of the decisions we made was to have an overview of all objects which would be shown in the beginning of the video to gain the audience’s attention on these objects during the video playing. Members also played people in the video to response the sounds of smart things and interact with them.

We edited the videos without adding sounds of objects in the first step, then the sounds of objects were added in all scenes when it was a moment to communicate. We also covered the video with background noise to mimic the real environment in Lucid.Bar.




Division of group in 3 scenario-based teams
Creation of diaries for the objects
Role play as smart items for all three scenarios
Shooting the individual scenes for the video
Selecting Smart Objects within the Lucid Bar
Defining three distinct scenarios
Editing the videos, integrating the sounds
Design Briefing
Deliverable
Observations of objects in their context
Feedback session with Bart and Berry
Final audio mixing and levelling
Reporting: what should the item know and do?
Establishing a coherent set of rules for all objects
Creating sounds for the individual objects
Storyboarding, refining scenarios from objects' perspective
Legend
Full group activity
Split groups activity
Individual activity

ITEM DESCRIPTIONS

Beer glass shelf

Rules of action

The beer glass shelf is used to store empty glasses, so it knows the number of beer glasses available for the bartenders. The shelf is only used during the drink and knows this from the poster board.

- The shelf detects the use of glasses. According to this, the shelf could calculate and predict visitor flow and then talks to the atmosphere creators: The light system and the speakers. After that, the light system and the speakers will make some changes to match the atmosphere.
- When the shelf is out of beer glasses, the shelf will remind the bartenders to pick up some empty glasses.
- In the meantime, the shelf will inform all the tables and cubes; the tables/cubes with empty glasses will make sounds. Therefore, the bartender could go to these tables/cubes directly and pick up glasses.

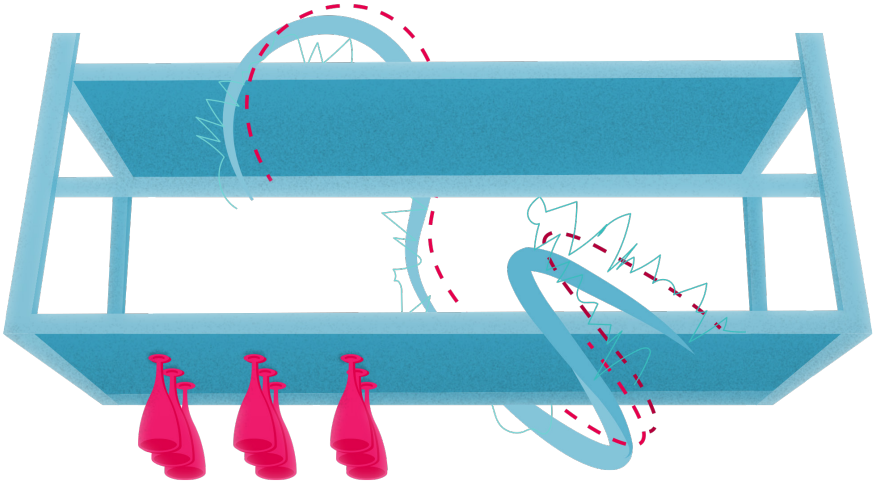
Rationale behind sounds

The beer glass shelf is the center of the smart system. Based on different actions, the shelf has three categories of sound:

The shelf has a natural sound that is produced by people putting the beer glasses inside. The clatter of glass and metal is clear, interactive, and discreet, which formed the tone of the shelf.

When the shelf notifies waiters to pick up empty glasses, it should be recognizable as a sort of announcement. Besides, this sound should be harmonious to people and only recognized by waiters. Therefore, I choose the tinkle of wind chimes as the reminder sound, which is euphonic but noticeable.

When the shelf communicates with other smart things, it is unnecessary to make a real sound. They can use the radio wave as their ‘language’.



BEER TAP

Rules of action

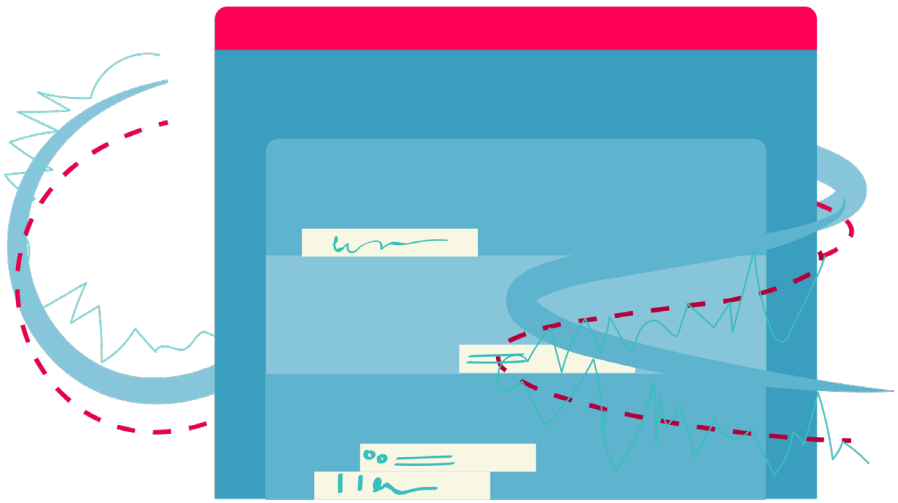
The beer tap is only used in the scenario of Thursday drink. There are three parts of the beer tap, the top is to pour beers, here people can also see what beers are offered. The second part is the panel plate, to collect the spilled drinks. The last part is the bottom, which is used to store beers. When the beer is running out, the bartenders need to refill it. The beer tap has a few simple rules:

- It knows which beer sells fast and therefore what atmosphere there is.
- The beer tap can only talk to the shelf. The shelf will use this information and tells the atmosphere creators; the light system and the speakers. They can change a bit to create an even better atmosphere.
- The beer tap turns on when there is a drink and turns off when the drink is over. It has a turning on sound, and also a turning off sound. It has a sound to tell the shelf what atmosphere should be.

Rationale behind sounds

The smart beer tap in the future should have the function to know which beer is running out and tell the bartenders. The main scenario for the beer tap is the thursday drink. We focus on better drinking experience and collecting empty glasses. The beer tap would know which beer is selling fast, so it can tell the shelf to prepare this type of beer glass. But as we talked about and know from the diary, the shelf would also know what type of beer glass is running out However, it does not know which beer is in it because there are no smart glasses.

So to still have enough information the function was changed to telling the shelf the atmosphere by detecting which beer sells fast. As different types of beers can mean that there is a different atmosphere in the bar. We can detect the mood of the bar and suit the mood better by telling this to the atmosphere creators, the lights and speakers. To let them know that they can change the atmosphere if there are more people ordering a certain kind of beer. In this way, the speakers and lighting systems are connected to the beer tap by the wine shelf.



Board game cabinet

Rules of action

In the Lucid.Bar right when you enter a board game cabinet is placed. The cabinet is quite short, and unless you really look at it, it could be easily missed that the bar is actually supplying this mean of entertainment. A lot of people that comes to lucid and sit on the cubes relaxing or working, right across from the cabinet or at the tables in near proximity, but without interacting with the cabinet.

- People gather around the cabinet to socialise, sporadically looking at its content browsing but rarely play a game. If someone sits on the cube, the cabinet receives information from the it and initiates contact to the people by making a sound to invite them to take a game, as an attempt to make the cabinet noticed and used more.

- In order for the cabinet to not seem like a nuisance, if a game has been retrieved and placed on the cube the cabinet stops initiating contact, as the cubes are closest by. But the cubes are not the only place people can play board games. If the game played is on a table, the cabinet receives information about this from the tables and starts initiating contact to cubes again if people are present, illustrating the importance of communication between the multiple objects.
- In these cases it is important for the cabinet to know where people are hanging out, if any games has been taken and where they are.
- Another important aspect in making the board game cabinet smart is knowing when it is appropriate to make sound and when it is not. Therefore, the cabinet also has to communicate with the postboard. This gives the rule-set of If the poster board says it's a regular weekday or drink time the cabinet turns on, if the poster board says it's time for a lecture, the cabinet turns off, in order to not create unnecessary sounds to disturb.

Rationale behind the sound

The board game cabinet has to different modes of communication within the smart system of Lucid.bar; it communicates to people in close proximity and receives information of devices that are close by. The accompanying auditory cues are all based on sounds that originate from board games and are edited to suit their role. Sounds that are meant for people gram more attention and are louder, while system confirmations are more subtle.

It was deemed important, to not have a too confusing system, that similar actions should have similar types of sound. Therefore, the most prominent sound that comes from the cabinet, the sound it makes to get attention, should be similar to objects like the drinks fridge as they are in close proximity and of the same type of action. The sound chosen for this action is meant to be aimed at grabbing attention, which is why a commonly used sound like a calling whisper followed by the sound of rolling dice is chosen for this action. As described in the section about the drinks fridge, the cabinet follows a similar pattern and audio characteristics in order to better communicate the purpose. The sound of the rolling dice are used in order to connect the sound to the board game cabinet, differentiating it from the drinks fridge.

When receiving information from the tables or the cubes, the cabinet plays an auditory cue of cards being shuffled as a confirmation. This relates to the other sounds of the cabinet. For each object the cabinet communicates with (i.e. table and cubes), it has variations of the shuffling sound to distinguish them from another. Both with an increase in pitch to indicate that the action has been received correctly. A slight reverb has been added in order to communicate the move in space, similar to the sounds from the drinks fridge. When receiving info from the poster board the cabinet either activates or deactivates. When activating there is a very short sound of dice being shuffled in a hand, with an upgoing pitch, just to act as a quick indicator in a confirming matter that the cabinet is active. When deactivating it will use a game buzzer sound that indicates something is wrong, as an indicator that the cabinet is not to be used. These confirming sounds are significantly softer than the attention grabbing cues the cabinet emits.

Coffee Machine

Rules of action

The coffee machine is of great value and utility to patrons of the Lucid.Bar - it fuels their professional - and social activities with coffee and tea at the press of a button, available during the opening hours of the bar. However, the popularity of this machine requires some human supzport to keep things flowing smoothly.

- The coffee machine is one of the first things the board turns on when they open the bar, and one of the last things they turn off when they close it down. To help the board, the coffee machine communicates changes in its state to the sound- and light systems so they can adapt accordingly, saving the board's valuable time.
- Sometimes, the time is not right for coffee or tea, e.g. during drinks or important presentations that also take place in the Lucid. Bar. When the poster board shares these activities happening, the coffee machine turns off.
- The coffee machine has a tray that holds the spent coffee grounds, which fills up over time. The tray needs manual emptying, which is done by members of the Lucid board. However, when

they are doing so, the coffee machine cannot be used, which means that they prefer to do this when the demand for beverages is low. The coffee machine uses historical data to predict when down-times in beverage needs occur, and signal Lucid board members when the time is right to service the machine.

Rationale behind sounds

The coffee machine has a natural sound that is produced by its internal mechanics that is rich in low frequencies, adding to the environment . As this sound is a great source of feedback (i.e. the sound makes those using the machine know when it is dispensing a beverage), it should be retained. Furthermore, it is easier to attribute the sounds to the coffee machine if the sounds are already familiar.

Rather than introducing new sounds, an equalizer was used to embed information in the original sounds. In total, the machine has three sounds which are augmented with the embedded information: 1) ‘power-up’, 2) ‘power-down’, and 3) ‘needs-maintenance’.

(1) The ‘power-up’ sound has an embedded tone that first rises and later drops. This is done by adjusting the High-Cut Frequency and the High Cut Q-Factor of the original sound to create an oscillating pattern.

(2) The ‘power-down’ sound has a similar yet distinct pattern: the embedded tone starts off high and drops over time. This is done by adjusting the Low-Cut Frequency and its Q-Factor.

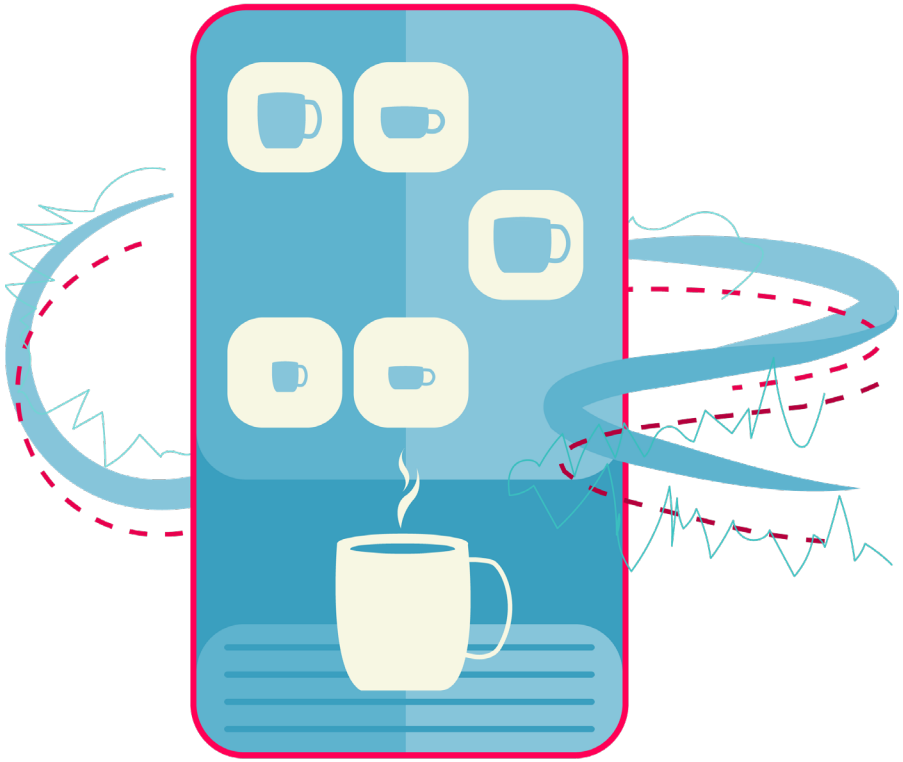
(3) The ‘needs-maintenance’ sound resembles an engine which does not start, which is done by modulating the sound’s pitch downwards in rhythmic patterns.

Cubes

Rules of action

The cubes are used for two main reasons, either to sit on or to use as a table(s). Depending on the kind of event that is happening, which is received from the poster board, the cubes will act accordingly. The cubes mainly communicate with the fridge, game cabinet, and shelf:

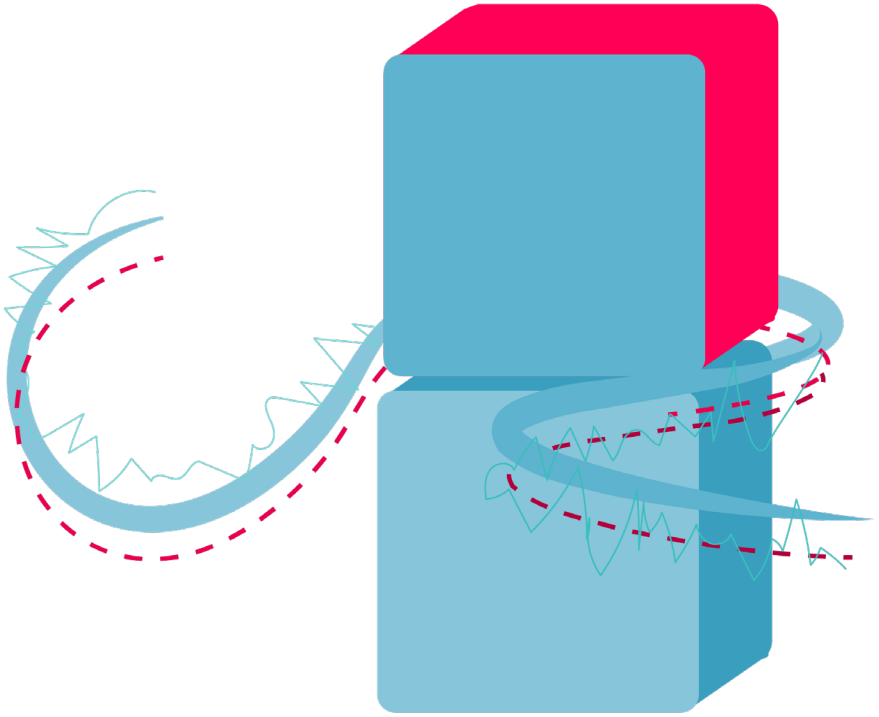
- During the day, stationery items and laptops are usually placed on top of the cubes while students are working. Since the cubes are close to the fridge, they notify the fridge when people are sitting on them so the fridge can invite these people to purchase a drink.
- The cubes will be inactive in case of lunch lectures, as there is no one to communicate with: both the fridge and game cabinet are inactive in that situation.



- Whenever the game cabinet is activated, which is usually during a drink, the cubes will notify the game cabinet when there are people sitting on them so the game cabinet can nudge people to get a game. The cubes also tell the game cabinet if there is a game placed on top of them so the cabinet knows where the games are in the space.
- During a drink, people also use the cubes to place their glasses on. The cubes notify the smart shelf that they have empty glasses which then can be collected by the bartenders.

Rationale behind sounds

Through the fridge, game cabinet, and shelf, the cubes are indirectly heard by people. Especially during a drink for example, their use contains relevant information to create a continuous workflow for the bartenders: to collect empty glasses and know where they are. As the cubes have a difference surface on each of their side, they are flipped at times to serve a certain purpose; but it does not always happen. Sometimes their soft sitting side is used to place glasses on while other times people take the effort to flip it to a more table-like surface. Therefore, they produce a sound that represents that someone or something is placed on top of it, accompanied with a second sound that slightly overlaps the first which helps to identify whether this is a person, a game or are empty glasses. The initial sound is an amplified and slightly echoey sound of sitting on a cube. Whenever there are empty glasses, the second sound simulates the sound of many empty glasses that are panned towards the bar to aid bartenders to identify the location of the empty glasses. Whenever there is a board game on a cube, it plays an ambient pad like sound. This aim of the sound was to not be too present for people around them as it is purely made to communicate with the game cabinet. When the cubes are turned on or off, the second sound they produce is a base sound that is either a note up (on) or down (off) so their state can be felt by the person sitting on it rather than being heard as way to take into account possible sound pollution in the space.



CURTAINS

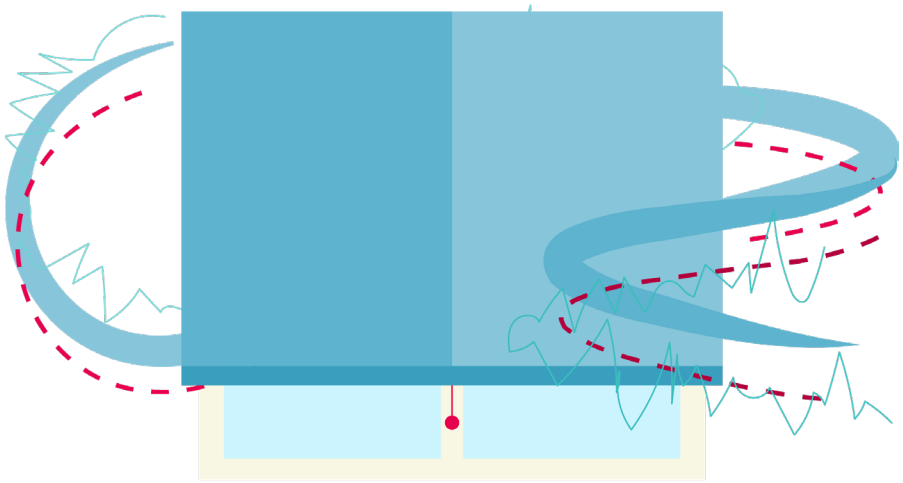
Rules of action

The curtain system in Lucid now is manually controlled. When the up button pressed, all the curtains will lift up together and when the down button is pressed all the curtains go down together. In the Lucid.Bar 2030, the curtain system acts depending on; the events in Lucid, the weather and the users at the tables.

- The different states of the curtain are: fully lifted, half lifted, and fully down.
- Depending on the amount of sunlight the curtain can be moved up or down. Usually in the morning it is nice to leave the curtains open and have the light shine in. However, during the afternoon the angle of the sunlight can be more bothersome for people working in Lucid. So, the smart curtain is lifted up or down automatically depending on the amount of sunlight.
- In addition to that, the curtain communicates with the tables to know if there are any people working or studying at the tables who could be bothered by the sunlight. Based on the information from the tables the curtain will go down halfway to cover the shining sun and improve the ease of use for the computer user.
- In the evening there are many diverse activities where people sometimes use the curtains to decorate the Lucid.Bar. When the poster board announces a special event in the evening the curtain will go down, making the background fully black in the evening. Which will allow the curtain to change color and decoration. The curtain here could be seen as screens.

Rationale behind sounds

Curtains usually play a role of blocking something out. Currently, they are controlled manually. However, they represent the eyes of the buildings. In the Lucid.bar 2030 the smart curtain can detect the amount sun and close the curtain as much as needed. Besides that, they are able to communicate with the tables. The table will tell the curtains what is needed for the users allowing the curtain to act more precise. When the curtains go down, they could play the role of background or a plain wall, which is especially useful during events.



During different events, Lucid requires various atmospheres. The atmosphere can be created by the environment, including the light and the interior color as well as decorations. Therefore, if the smart curtains can communicate with the beer tap, and automatically changes the background according to the atmosphere, which helps improve the whole event.

Since the curtain plays a role which is less aligned with all the other objects, such as chairs and desks; the sounds are designed clearer and a bit more obvious. Also, the sounds are designed for the visitors of Lucid to be able to recognize the direction of the curtains. The sound for the curtain going up is an ascending scale; the sound for when the curtain goes down is descending scale. In addition to that, the sound which plays when curtains change style, is a mix of a high tone notes and plays slowly.

Drinks Fridge

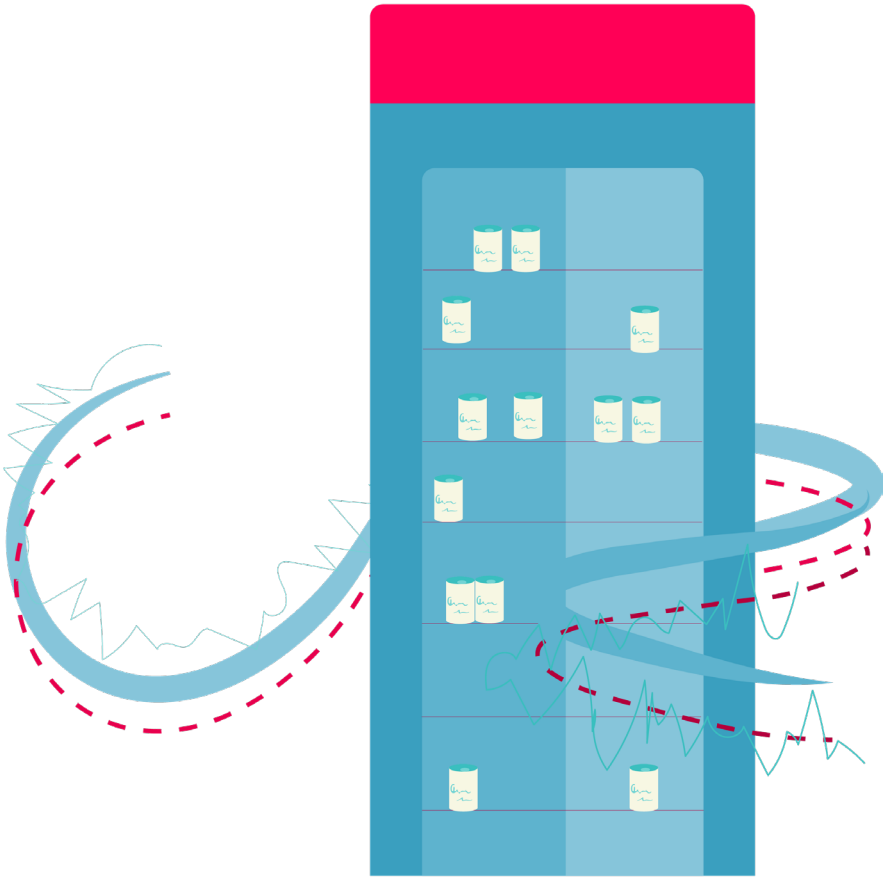
Rules of action

The fridge in the Lucid.Bar holds beverages that can be purchased by anyone. Due to its position many students gather around the drinks fridge to sit, chat and relax on the cubes and sofa nearby. In our scenarios it mainly communicates with the cubes that are placed in front of it, the lights, coffee machine, and people in the space.

- Many people pass the fridge without much thought. Compared to food sales, beverages sales are low. Therefore, the smart drinks fridge will attract attention when the cubes register people sitting on it, close by the fridge.
- All sorts of events are hosted in the Lucid.Bar, which create peak moments of sales. Board members manage the fridge's stock. To support them, the fridge registers events through poster board and will so notify the board members in the bar for a refill on time.
- Next to this the fridge is opened and closed many times, depending on if the shop is open or if events are going on, which says something about the state of the bar. Therefore, the smart drinks fridge will communicate to the light and coffee machine it is (in)active depending on if it is closed or opened.
- Two misuses of the fridge that occur are that students leave the fridge door open for too long and Lucid members put their lunch items in the fridge. To prevent this, fridge will give a "close the door" message to the people holding the door open for too long; and will recognize items others than its own and therefore give an error message to the people that put in items other than drink cans (e.g. sandwich spreads and lunch meals).

Rationale behind the sound

The smart drinks fridge serves as a communicator to the people in the bar and to several other smart objects in his environment (coffee machine, light); receives information from other objects to act upon (cubes); and has communication similar to other smart objects nearby (coffee machine, board games cabinet). For these different roles, the fridge has different sounds, differing in subtlety related to its purpose. It sounds more attention seeking when communicating towards people (attract attention when people nearby; ask for refill; close door sound; unrecognized item sound) and more subtle for communication with other smart objects, including receiving sounds (confirming the cubes message) and sending sounds (send activity time to light and coffee machine). Furthermore, in case its communication activity is similar to that of other smart objects nearby, it will have similar sound qualities and/or pattern as these smart objects. For example, both the smart drinks fridge and boardgames cabinet receive information from smart cubes and so initiate contact with people on cubes. Therefore, their receiving and initiating sounds are similar in time length, volume and pattern (making use of an impact sound of a rolling object on a surface and human whisper to attract attention) but different in sound source used associative to the object (empty can versus dices). Therefore the sound of the smart fridge turning



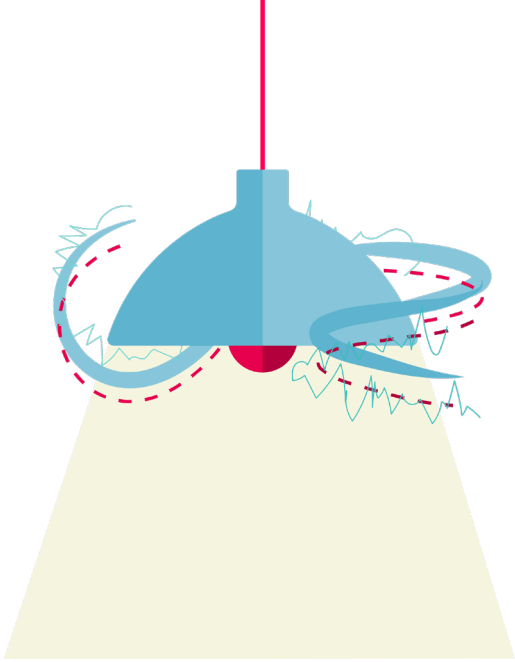
on, increases in pitch reaching maximum and so decreases pitch in the end to indicate the message is transferred, making use of reverb to indicate sound is moved over space in the background, which is similar to the turning-on-sound from the coffee machine. When turning off, the pitch and volume slowly decreases with added reverb, characteristic for activity decrease moving over space in the background, similar to the coffee machine. However, the smart drinks fridge uses a modified version of a sound more associated to a fridge, namely a refrigerator humming sound which is different from the initial coffee machine sound. The sounds of the smart drinks fridge for communicating an open door, refill or unrecognized item to people in the bar are more attention seeking. This in the way their volume is high, sound is monotonous and it is made use of repetition. For example, when the door is opened for too long, the sound of filled shaking cans is played repetitively, symbolic for feeling cold, with increased intensity by time stretching of this audio sample, decreasing duration, increasing the volume and reverb in the end to indicate the door is closed at that point reflecting its sound within the fridge.

LIGHTING SYSTEM

Rules of action

The lights in our envisioned bar can be operated as a whole or separately. The main roles for the lighting system are providing enough light to the environment and creating the mood and ambiance depends on the needs.

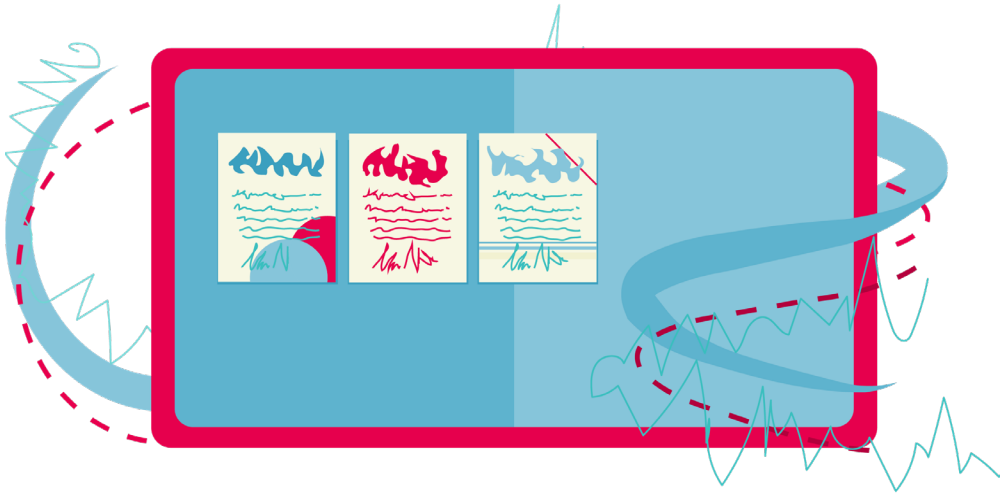
- When the board enters in the morning, the lights turn on. When no activities are announced on the poster board and it is closing time, the lights turn off.
- Together with the curtains, the lighting system manage the environmental light. When the curtains communicate they go down, the lights glow brighter and vice versa.
- The lighting system changes to its modes for different events which are informed by the poster board about the date and time. For example, when it is Thursday drink at Lucid.Bar, the lighting system switches to party mode.
- The system can be overruled by users. They would be able to adjust the brightness of individual bulbs, for example when they need more light to work at a table.



Rationale behind the sound

Lights are most important but less noticeable because they are highly integrated with the room environment without making any sound at most of the time. The sound of light for most people is staying the stage of incandescent light which makes noise sometimes. Nowadays, the lights have been accepted without specific sound when they are working. In our case, the lighting system works individually at most of the time since it is roomlight-oriented. The sounds of it are mainly for informing people, in other words, the lighting system talks to people for transferring information or notification.

Taking into account the rational mentioned above, the lighting system is endowed with the basic, noticeable, and symbolistic sounds to tell its action. The sounds of rotating a button indicates turning on the lights, and a power off sound indicates dimming the lights. These sounds give people more direct sense about “on” and “off”. When the lights are turned down, the sound of electricity with a decreasing pitch informs people and vice versa.



Poster Board

Rules of action

The poster board is used to display upcoming events from both Lucid and other parties. Most posters are from Lucid itself, for upcoming events, lunch lectures, information sessions or subscription dates. The poster board is sometimes used for decorative purposes, especially during the holiday season.

In the Lucid.Bar 2030 the function of the poster board would be to announce if there is an event and what kind of event there would be. Besides that the poster board is very much a background character, it will not ask for anyone's attention when there are no events planned. The rules for the poster board are:

- If there is an event at the Lucid.Bar communicate it and communicate what kind of event it is (Drink, (Lunch) lecture/ information session or other).
- If there is no event communicate it once at the startup.

Rationale behind sounds

The poster board has two categories of sound 1) the start-up-no-event sound and 2) the announcement of event sounds.

The interaction with the poster board is more often than not an interaction in which there is no touch, thus no sound involved. So drawing from the natural sounds of the object was not really an option. The poster board only makes sounds when it wants to announce something to the other objects and people in the bar. Therefore it should be recognizable as a sort of announcement sound while still not being too distracting and intrusive.

Bell sounds generally announce something, think about church bells or the doorbell. However, these are quite loud and can be a bit much if heard from up-close. Also, slow bells can be associated with sadness and loss.

For the sounds of the poster board, Tibetan singing bowls were used as a basis, the sounds were layered and slowed down. A distortion effect was used to make the sound less “holy” and more fitting to the modern context of the Lucid.Bar.

The star-up-no-event sound and the announcement sounds differed in tone and type of distortion but still sound very similar to keep it clear that the sounds are coming from the poster board. For the announcement sounds an extra bell was added in the sound to distinguish from the no-event sound and to distinguish between different kinds of events.

Sound system

Rules of action

The sound system installed in lucid can be connected to a computer to play music, a microphone and a presentation screen. Different channels can be controlled with a mixer. In our scenario they mainly communicate with the coffee machine, poster board or beer tap.

- Currently, when the board opens the Lucid.Bar in the morning, one of the first things they do is turn of the coffee machine. It is one of the last things they do when they close up the room. Throughout the day they play relaxed music. Therefore, the sound system would turn on and off if the coffee machine turns on or off and play appropriate music.

- Music is usually turned off during the day if there is some sort of a presentation. Because the room is long and narrow, it's hard to hear presentations in the back, so a microphone is advisable. The smart speaker recognises the use of a microphone, signals to the users it is active and over which speakers it is broadcasted after muting the music.
- Evening activities fluctuate in intensity (e.g. language cafe or a drink). These activities are announced via social media and the poster boards. Therefore, the smart speaker checks with the smart poster board what activity is scheduled and changes appropriate music.
- The amount of beers that are drafted can be counted by the beer tap. This is communicated to the sound system so it can make adjustments accordingly, taking the type of event in account.

Rationale behind sounds

Speakers are usually used to play music. Preferably with as little optrutions as possible. Therefore, it should play sound on as least instances as possible. Information that is important for users to know is if (all) the right speakers are connected, what other devices are connected and which output is being played. Announcing a change in style, volume or others is unnecessary as the result is immediately noticeable and it breaks the continuity of the music, sound or microphone output that is being played. Therefore, audio cues are only played when the system boots up or shuts down and use of the mic is initiated or ended.

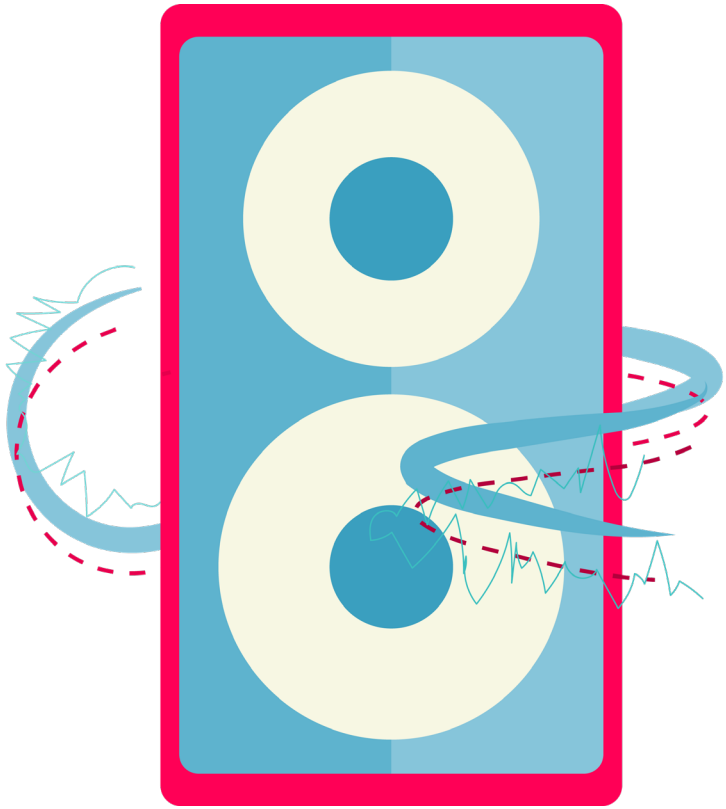
A sequence was created that addressed each speaker, almost like it "moves" through the room. The volume decreases and the reverb increases, much like how sound would behave in a large enclosed space. Users of the system can become accustomed to the travel of the sound and easily recognise if any speaker is faulty or what device is connected (i.e. the microphone).

Although turning the system off or disconnecting the microphone have a different audio cue, in both a decrease in pitch indicates that the mic is no longer in use or that the sound system has turned off. Decrease in pitch is often associated with, cancelling, disconnecting or turning something off. A morphed microphone feedback sound was used to create the sounds for the connection of the microphone, to carry some semantic meaning.

Table

Rules of action

During the day the tables in the Lucid.Bar, are used in multiple ways. People for example eat their lunch their, chat with friends, or do homework. During the drinks at lucid these tables are still used in a social context, now often containing beer glasses. The table will receive information from the posterboard, in order to know if there is a drink or a lecture;



- During the normal day time the table will send information towards the game cabinet, if it detects a new game.
- Furthermore, when an open laptop is detected on one of the tables, the table will send this information to the curtains, so these can act accordingly.
- During lecture time, the table will have the same functionalities as during the normal day time.
- During a drink the table will have an extra rule, that is switched off at other times during the day. The table will report to the shelf, how many empty glasses are on it. This will help the bartender locate all the missing glasses more easily.

Rationale behind sounds

The sounds that are designed are all inspired from the ‘knocking’ on a wooden table sound. This sound was chosen, because it seemed to be the most intuitive sound one could give a table. The rhythmic aspect was chosen, both to display a sense of urgency and because knocking usually happens more often than once. Giving all the sounds a variation on this ‘knocking’ idea should make it more clear that it all comes from the wooded tables

The sound to report the empty glasses, is a knocking sound that is quite quick. As to express urgency towards the shelf and the bartender. This urgency seems to be needed during busier times in the Lucid.Bar.

The sound that reports the games, is a variation on the knocking that is more playful and arbitrary, in order to express the playfulness that surrounds the games from the gaming cabinet. The sound is not very loud, but can clearly be distinguished from other sounds, if there is a bit more of a crowd.

The sound that illustrates the open laptop, is a slow and soft variation on the ‘knocking’ sound. In this case the person using the laptop is often doing homework. Therefore, the sound is not intrusive, in order to keep a calm atmosphere.