D T I P A R T 4 | D E L I V E R

GROUP 1 | TEAM ELEVATED | MEGAN CHEN | GOH JET WEI | RUSSELL TEOH | SU KEMING | GAN XIAO TONG

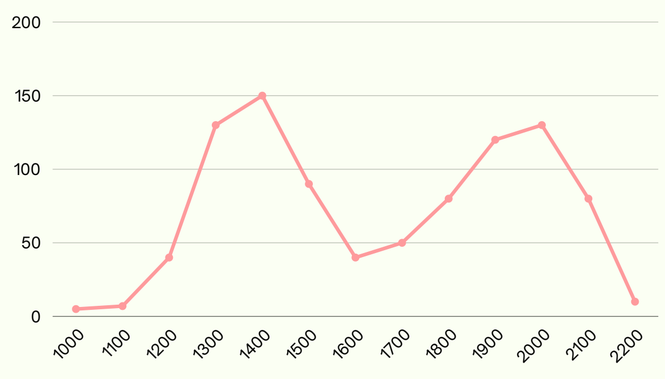
"How might we alleviate **uneasiness** caused due to dilemmas arised by **lack of information** for passengers waiting outside the lift?"

3D rendering of site

Site analysis

We chose the lifts at Eastpoint Mall as it is one of the nearby malls with lift lobbies that has consistent crowdedness and peak periods over the weekend.

Graph of people taking the lift



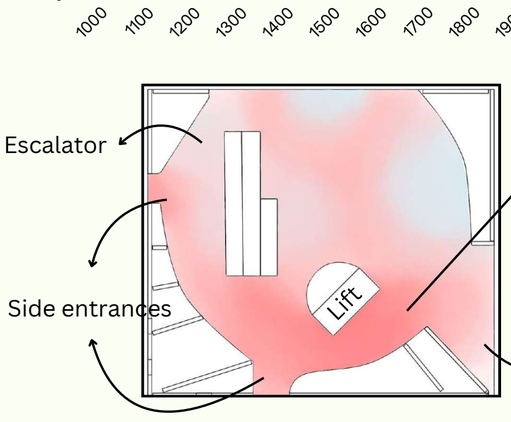


Fig 1.1 Top down view of level 1's foot density

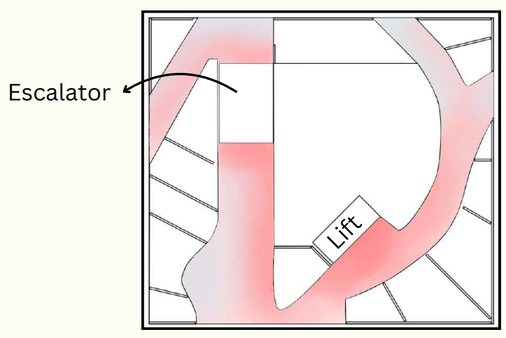


Fig 1.2 Top down view of level 2's foot density

Legend:

Low foot density — High foot density

User testing & is it worth it

The experience of taking the lift may be short, but the large volume of people taking the lift on a daily basis.

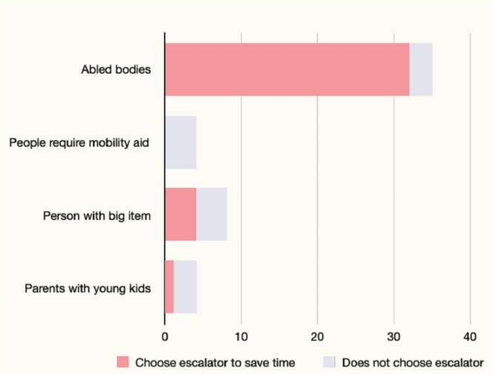
Conclusion drawn from user testing

Problem: uneasiness due to lack of information for passengers waiting outside the lift.

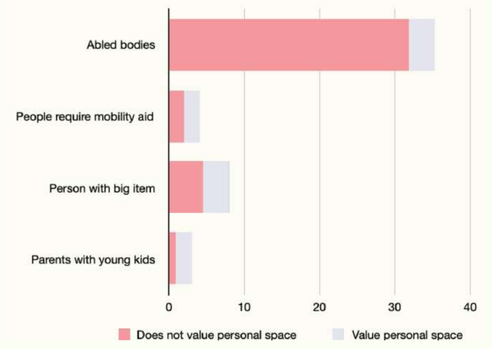
Target groups :

1. Crowded periods: everyone who is willing to take the escalator over the lift in the case that taking the escalator is faster
2. Lull periods: People who who greatly value their personal space over the convenience of taking the lift rather than the escalator

Would choose escalator over lift if it helps to save time



Think that the information displayed is intuitive



Some feedback we have gathered:

-changing the display after a period of time; gather art drawn by public to further engage users
- the visuals might not be very intuitive for first time users so having a legend would help

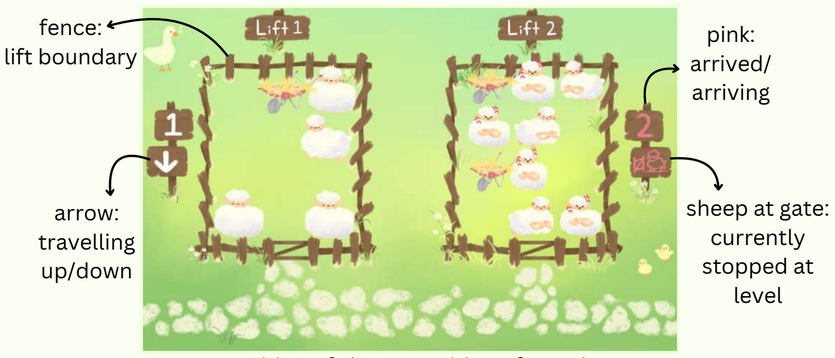
Solution

A system which detects position of passengers and objects in the lift and displays it as visual representation, facilitating the conveyance of information from people in the lift to outside the lift.

Design Goal & Legend

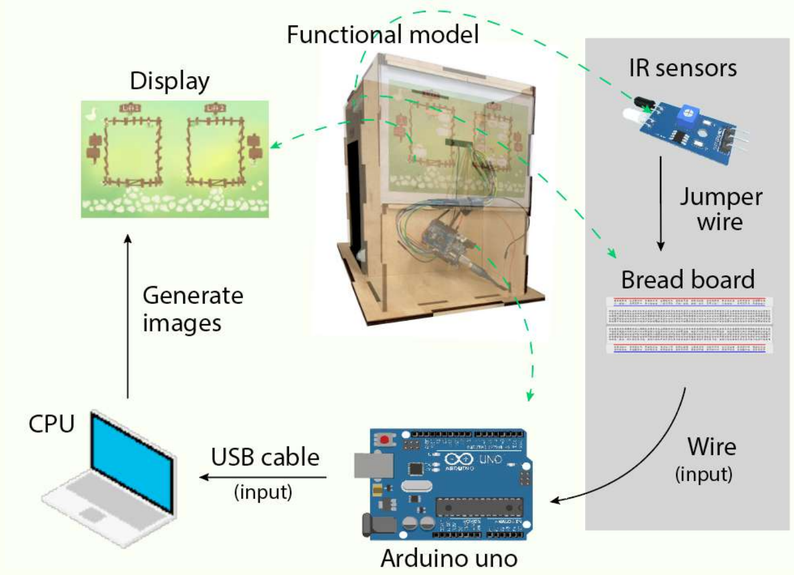
Fun variations in display design to attract attention and provide entertainment.

User with bulky item — 1-4 pax (happy) — 5-9 (neutral) — 9-12 (annoyed)



Position of sheep: position of people

Electrical components



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“How might we alleviate **uneasiness** caused due to dilemmas arised by **lack of information** for passengers waiting outside the lift?”

Site analysis

We chose the lifts at Eastpoint Mall as it is one of the nearby malls with lift lobbies that has consistent crowdedness and peak periods over the weekend.

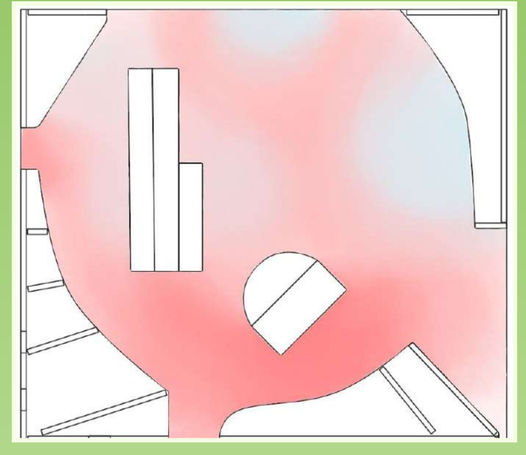


Fig 1.1 Top down view of level 1's foot density

Due to the position of the lift- a very busy common pathway and it being close to the main entrance of the wall as well as several other side entrances, it gets very congested at peak timings.

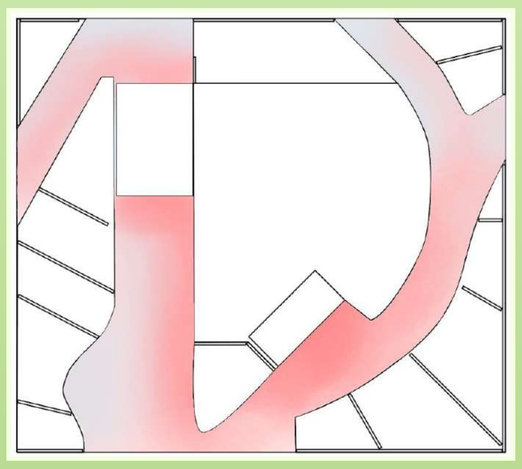


Fig 1.2 Top down view of level 2's foot density

The lay-out of the shops around it differs slightly from that of level 1, allowing for different interactions among users.

Legend:

Low foot density — High foot density

Why is this worth solving?

The experience of taking the lift may be short, but the large volume of people taking the lift on a daily basis.

Our solution is a digital display of the interior of the lift. We designed a system to detect the user and items in the lift, and turning it into a visual representation to enhance the lift-taking experience.

Design elements

There are a few variations of sheep: 3 different types of emotions, 2 different angles and one extra item to suggest the capacity of the lift and to provide visual interest.

User testing

Two main target groups

- General group - everyone who is willing to take the escalator over the lift in the case that taking the escalator is faster
- Those who greatly value their personal space over the convenience of taking the lift rather than the escalator - when it is less crowded

2/5 of young adults value their personal space greatly when taking the lift.

4/5 of young adults are willing to take the escalator if it is a faster alternative.

Some feedback we have gathered:

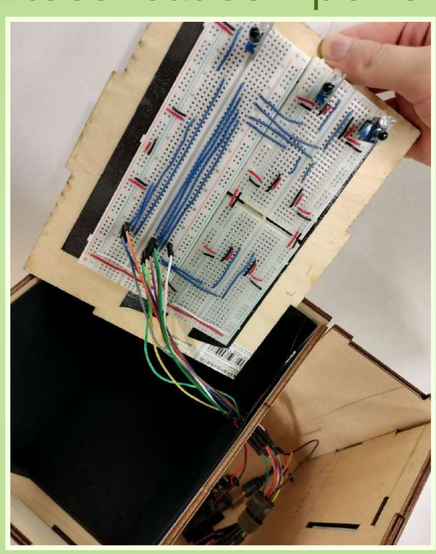
+ cute visuals; informative

- the visuals might not be very intuitive for first time users so having a legend would help

Functional model

We superimposed our functional model on a picture of the Eastpoint Mall. The opacity for the walls of our model is reduced so as to show the internal electrical components of our system.

Electrical components:



The Infrared (IR) sensors are placed in a grid like arrange-ment, where each is used to detect a region in the lift. The screen display would then change depending on the readings from the sensors grid

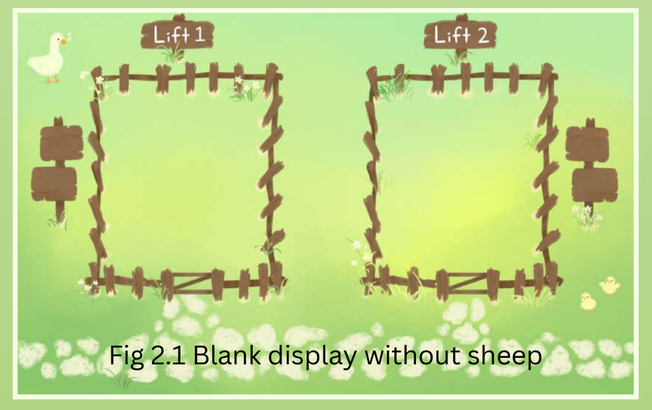


Fig 2.1 Blank display without sheep

Fig 2.2 Example of what might be displayed

The pink color means that the lift has reached the current level.

Story board

These are how users with different needs might use our solution - aid users to decide whether they should wait to take the lift or to take the escalator depending on their situations and preferences.

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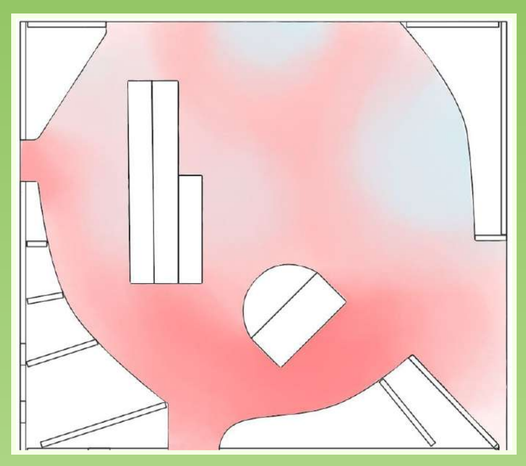


Fig 1.1 Top down view of level 1's foot density

Due to the position of the lift landing at level one being situated at a very busy common pathway and it being close to the main entrance of the wall as well as several other side entrances, the lobby gets very congested peak timings with some people waiting for the lift, checking if the lift is arriving to decide between taking it or taking the elevator and simply trying to walk past.
In addition, it is open at both ends, providing interesting insights as to how the different users interact with other lift users and also passerbys.

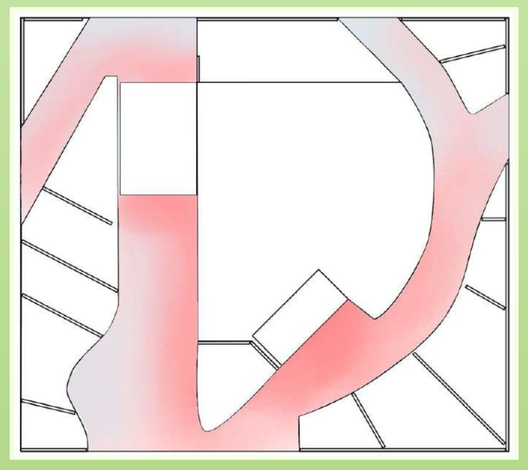


Fig 1.2 Top down view of level 2's foot density

The lift landing on level 2 is also open on both ends but the lay-out of the shops around it differs slightly from that of level 1, allowing for different interactions among users.

Legend:

Low foot density — High foot density

Why is this worth solving?

The experience of taking the lift may be short, but the large volume of people taking the lift on a daily basis and experiences this awkwardness. Many also visit the mall to relax and unwind so we want to reduce any areas that may cause frustration or awkwardness.

Our solution is a digital display of the interior of the lift. We designed a system to detect the user and items in the lift, and turning it into a visual representation to enhance the lift-taking experience.
To respect the users’ privacy and appeal to younger users, we decided to turn represent them as sheep due to their peace-loving nature and semblance to a person’s top down view.

Design elements

Display at lift lobby strategically facing open areas where lift takers are likely to walk by to display a cute animated distribution of passengers inside the lift

There are a few variations of sheep: 3 different types of emotions, 2 different angles and one extra item to suggest the capacity of the lift and to provide visual interest.

User testing

A person takes the lift 8-12 times on average each day, and average time taken for each trip is 2-3 minutes.

We came up with two main target groups.

- During crowded timings, we are able to focus on a more general group which includes everyone who is willing to take the escalator over the lift in the case that taking the escalator is faster
- During timings that may not be as crowded, we aim for our solution to still be useful to help those who greatly value their personal space over the convenience of taking the lift rather than the escalator.

2/5 of young adults value their personal space greatly when taking the lift.

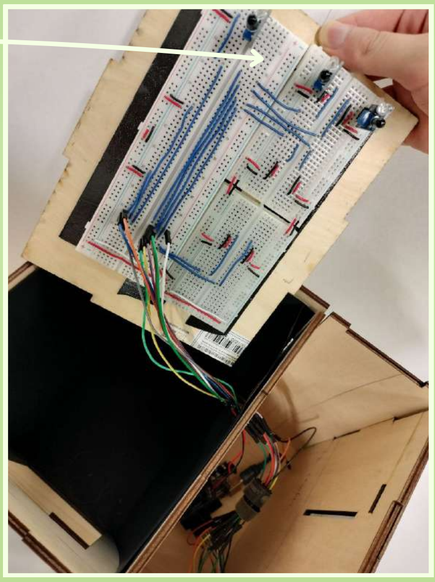
4/5 of young adults are willing to take the escalator if it is a faster alternative.

Some feedback we have gathered:
+ cute visuals
+ informative; helps with decision making
- change the design once in a while to keep it fresh
- take public-submitted drawings to engage users more
- the visuals might not be very intuitive for first time users so having a legend would help

Functional model

Figure 2.0
We superimposed our functional model on a picture of the Eastpoint Mall. The opacity for the walls of our model is reduced so as to show the internal electrical components of our system.

Electrical components



The Infrared (IR) sensors are placed in a grid like arrangement, where each IR Sensor is used to detect a specific region in the lift.

The microcontroller takes in the readings from each sensor and process them, compiling the information as a command to change the screen display

The screen display would then change depending on the readings from the sensors grid

For our functional model, we attached infrared sensors to detect fixed regions: for the real implementation, a LiDAR sensor will be used for more accurate sensing in the lift
Information from the sensors are conveyed to the CPU generate the footage on the screen. This reduces the AWKWARD feeling of being monitored by outsiders while still being able to communicate essential information to others.

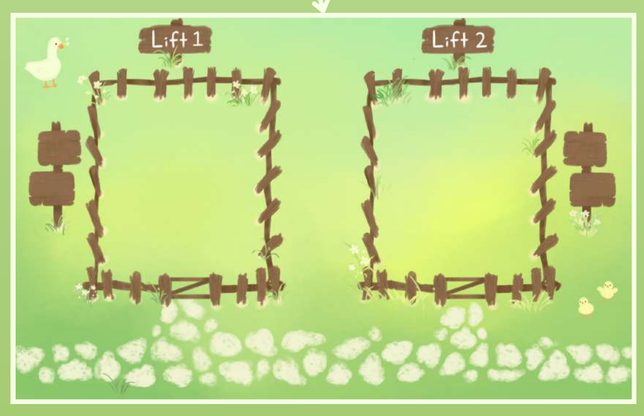


Fig 2.1 Blank display without sheep

Fig 2.2 Example of what might be displayed

The pink color means that the lift has reached the current level -we chose pink as it is able to stand out against the more muted background.

Story board

These are how users with different needs might use our solution.

Our solution will aid users to decide whether they should wait to take the lift - the more convenient choice - or to take the escalator depending on their situations and preferences.

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Site analysis

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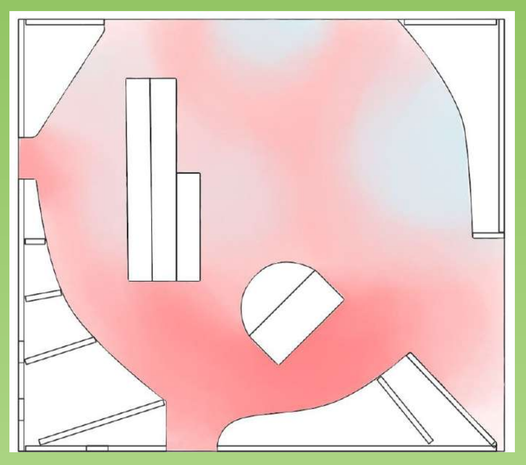

Fig 1.1 Top down view of level 1's foot density

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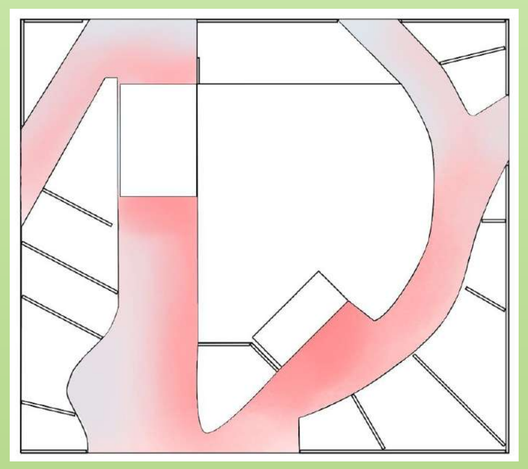

Fig 1.2 Top down view of level 2's foot density

The lift landing on level 2 is also open on both ends but the lay-out of the shops around it differs slightly from that of level 1, allowing for different interactions among users.

Legend:

Low density High density

Why is this worth solving?

The experience of taking the lift may be short, but the large volume of people taking the lift on a daily basis and experiences this awkwardness. Many also visit the mall to relax and unwind so we want to reduce any areas that may cause frustration or awkwardness.

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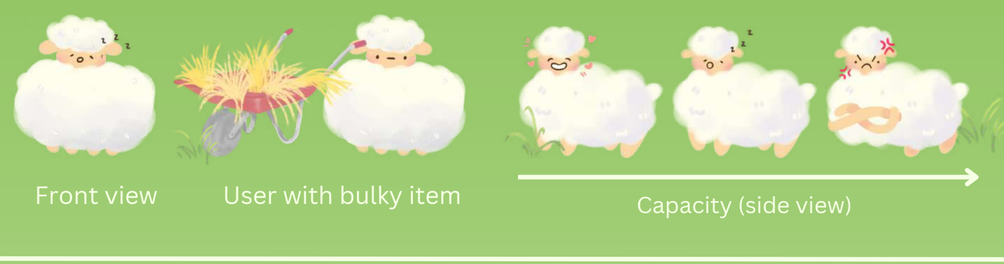
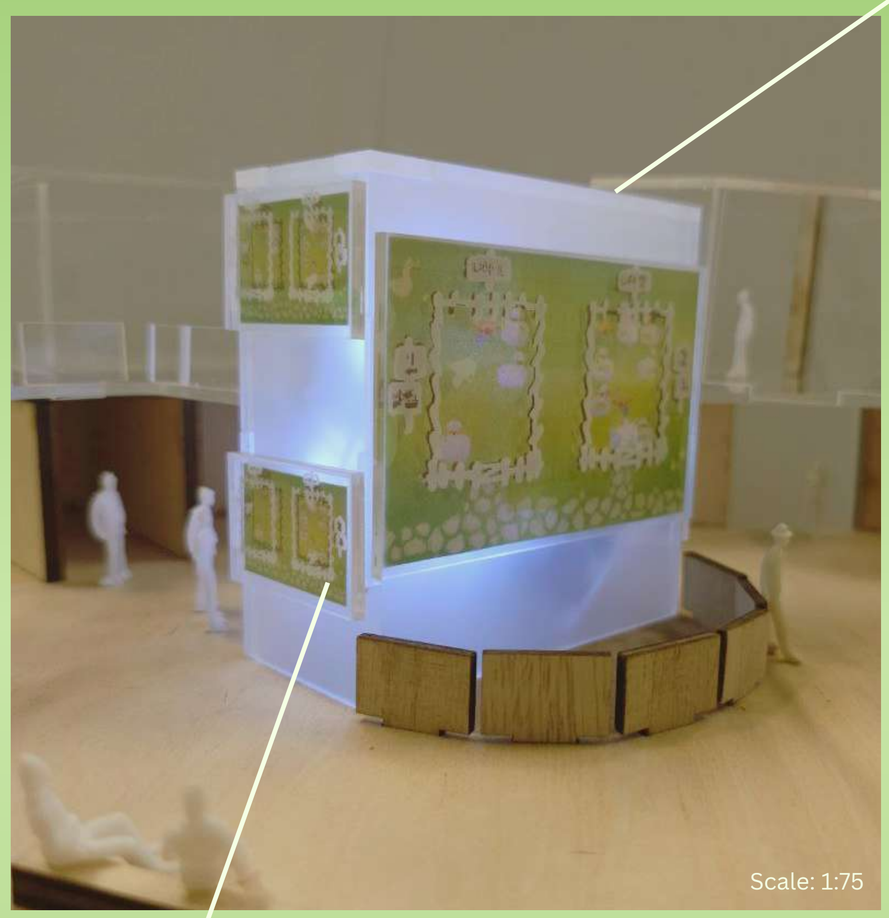
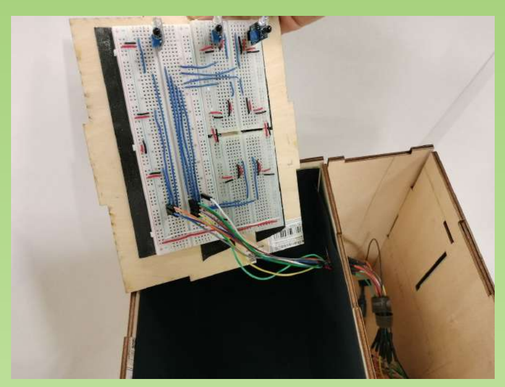


Front view User with bulky item Capacity (side view)

Functional model



Electrical components



The microcontroller (e.g. arduino uno used) take in the sensors’ readings and process them, and further sends the processed information to control display on the screen.

For our functional model, we attached infrared sensors to detect fixed regions: for the real implementation, we will use a camera with computer vision.

Information from the sensors are conveyed to the CPU generate the footage on the screen. This reduces the AWKWARD feeling of being monitored by outsiders while still being able to communicate essential information to others.

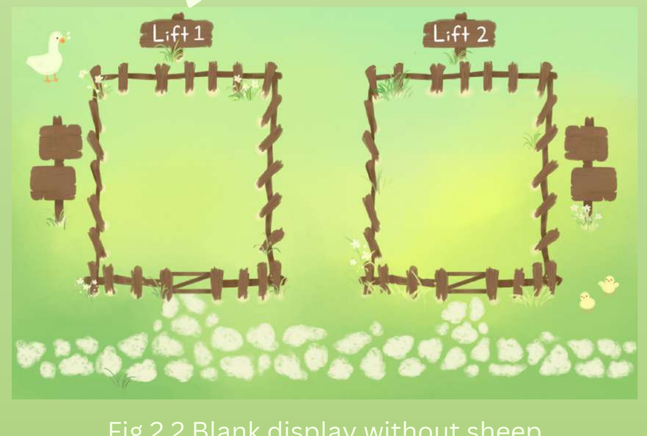


Fig 2.2 Blank display without sheep

Fig 2.3 Example of what might be displayed

The pink color means that the lift has reached the current level -we chose pink as it is able to stand out against the more muted background.

User testing

We have 2 main concerns when it comes to taking the lift - personal space and time spent. Of course, there are also other factors such as additional baggage, number of pax and number of levels the users are travelling to.

4/5 users value their personal space greatly when taking the lift.

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Story board

These are how users with different needs might use our solution.
Our solution will aid users to decide whether they should wait to take the lift - the more convenient choice - or to take the escalator depending on their situations and preferences.

Mood Board