BEE

Leave your phone to BEE

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PROJECT DIRECTION

Project Plan
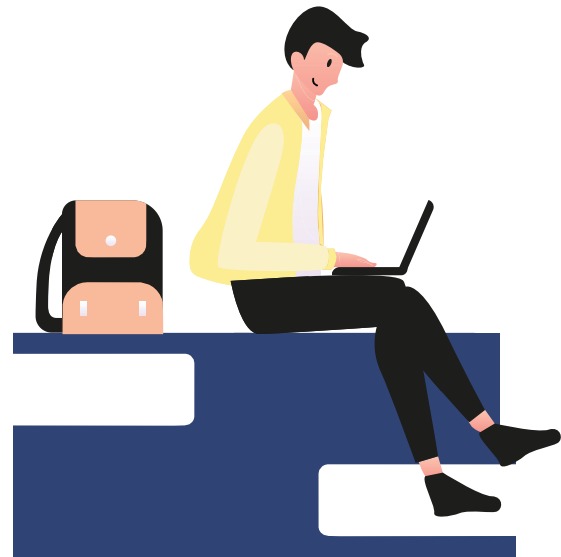
Project Brief

What & Who

Phone thieves are increasingly targeting international students as they are unfamiliar with London's norms and believe it is safe to leave their belongings unattended in public.

When & Where ?

Student-friendly public areas. For instance: libraires, university campus, coffee shops and restaurants.
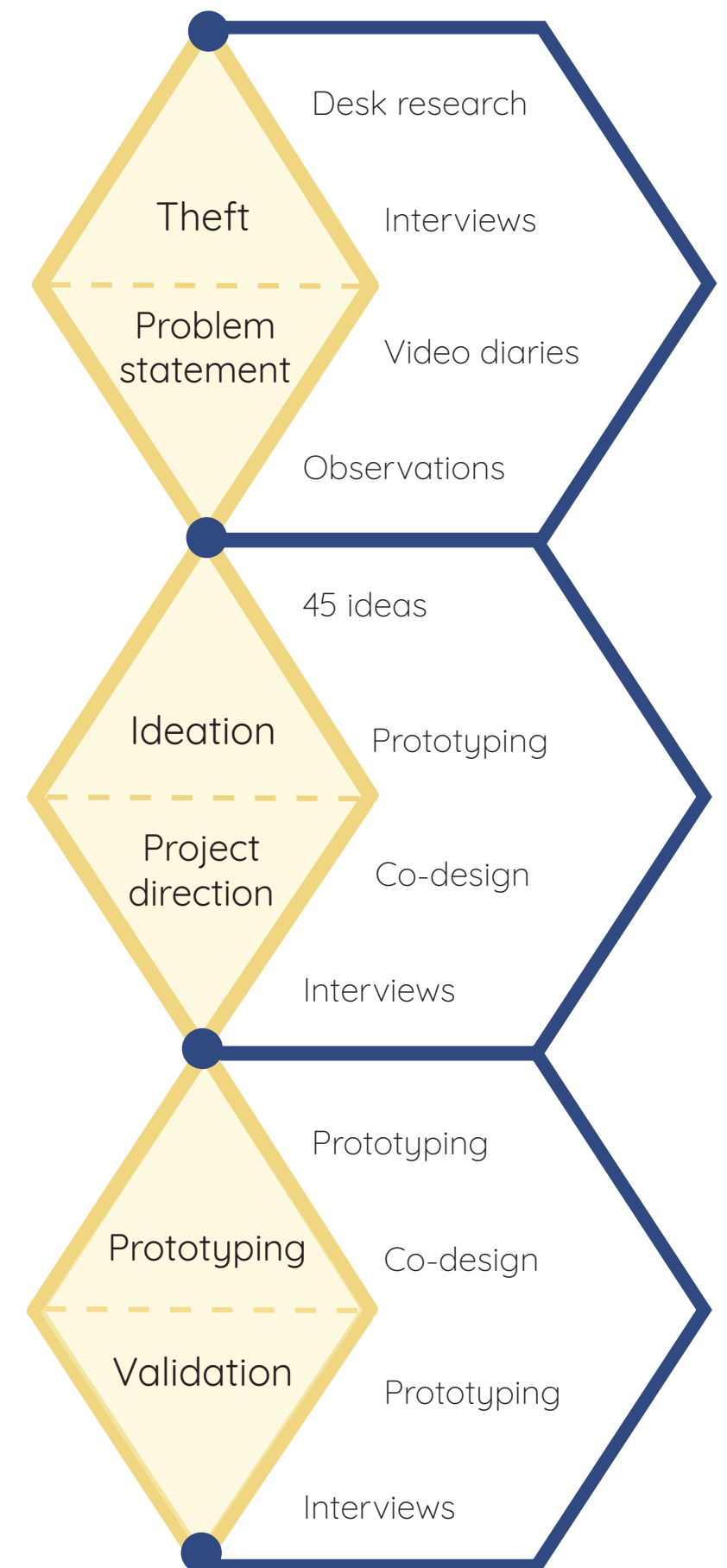
Why

The culture differences and the lack of knowledge about the rules in the new country.

How

Helping protect their phones while they adjust to to the new culture.

30%
Of all HE students in London are international (1)

60,000
Smart phones are stolen every year in London (2)

5%
Of all international students are victims of theft (3)

How might we help prevent phone theft from international students?

Project Plan flow

- Theft
- Problem statement
  - Desk research
  - Interviews
  - Video diaries
  - Observations
- Ideation
- Project direction
  - 45 ideas
  - Prototyping
  - Co-design
  - Interviews
- Prototyping
- Validation
  - Prototyping
  - Co-design
  - Prototyping
  - Interviews

USER RESEARCH

Charging... 51

Behaviour:
International students leave their phones unattended. This happens mostly when it's left to be charged.

Why:
1. Cultural deferences
2. Get distracted in the moment

Consequence:
Thieves target international students and come to places where students spend time to steal their phones.

Why phones?

We asked 5 students to keep a video diary of how they protect themselves from theft in an average day and then had an interview with them.

1 Fear of theft causes most anxiety

"My life relies on my phone I can't even imagine a day without it." Mia- 18
"My sense of security and identity as an international student is stored on my phone. I can't afford to lose it." Ryu-18

2 Used for navigation

"When I first came to London I relied on my phone to get everywhere." Alex- 23
"I get really worried when my phone is about to run out of charge and I need to find my way back home." Aishwarya- 18

3 Relied on for emergency contact

"It is scary to think about being in a new country and not being able to call and get help." Izma-19

4 Contact with family

"A couple of my friends had their phones stolen in Westfield recently and they had trouble contacting their parents in a different country." Ryu- 18

5 Used to make payments

"I don't carry cash or cards. I just use apple pay." Aishwarya- 18

Field research

To get more insights into existing public charging products and better understand their user experiences we visited Costa and Mac Donald.

Free wireless charging in Mac Donald:
Pros:
It's easy to understand how to use.
Cons:
High theft risk because users to leave their phone on it.

Power bank share in Costa:
Pros:
Can be carried and not limited to a specific place.
Cons:
Need to scan a QR code and pay.
Need to remember to bring it back.

Expert opinion

To get more insights into theft on university campus and how it could be prevented we had a discussion with the Deputy head of security at Imperial.

Nigel Ward- Deputy head of security at Imperial College London

"The most common crimes reported by students relate to the theft of phones and laptops." Nigel Ward

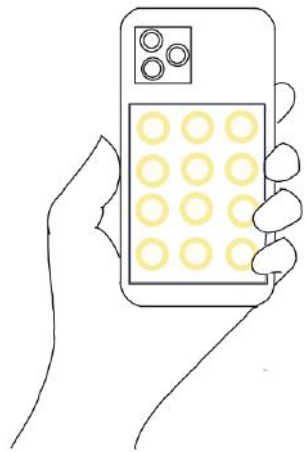"Thieves are looking for an opportunity when something is just left in the open." Nigel Ward

"Thieves know what to steel and what we can do is to put enough barriers and push them away from us. " Nigel Ward
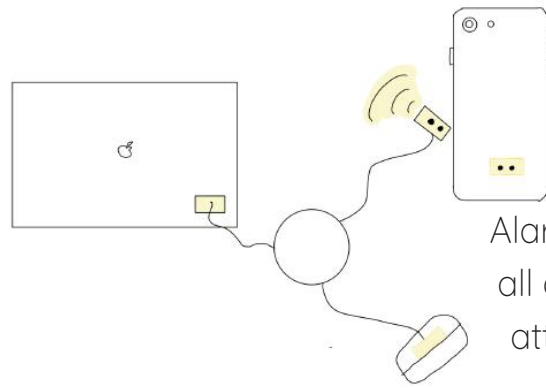
INITIAL IDEATION

We came up with 45 ideas and over multiple Co-Design sessions and works like prototypes we found the top 3 favourite concepts by users.
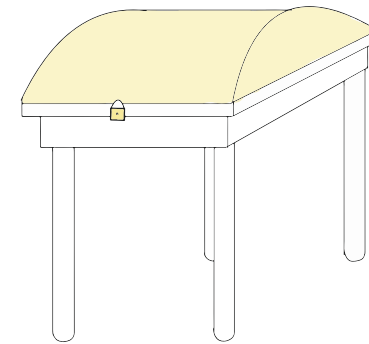
Concept 1

Suction cups attached to a phone case so it sticks to table

Concept 2

Alarm connected to all devices which is attached to table

Concept 3

Storage over library desk to protect unattended belonging

Key takeaway from initial ideation:

1. Users are generaly not interested in changing their habits
2. Users prefer using safety products that are more discreet
3. Users show less interest in products they have to carry around

"My bag is quiet heavy, I prefer it if the device is provided in public places so I don't have to carry chargers." Avyay-19

"I sometimes leave my bag and nothing has ever happend. I don't think it's unsafe." Avyay-19

"I don't want to be reminded of theft everytime I see the product." Aishwarya-18

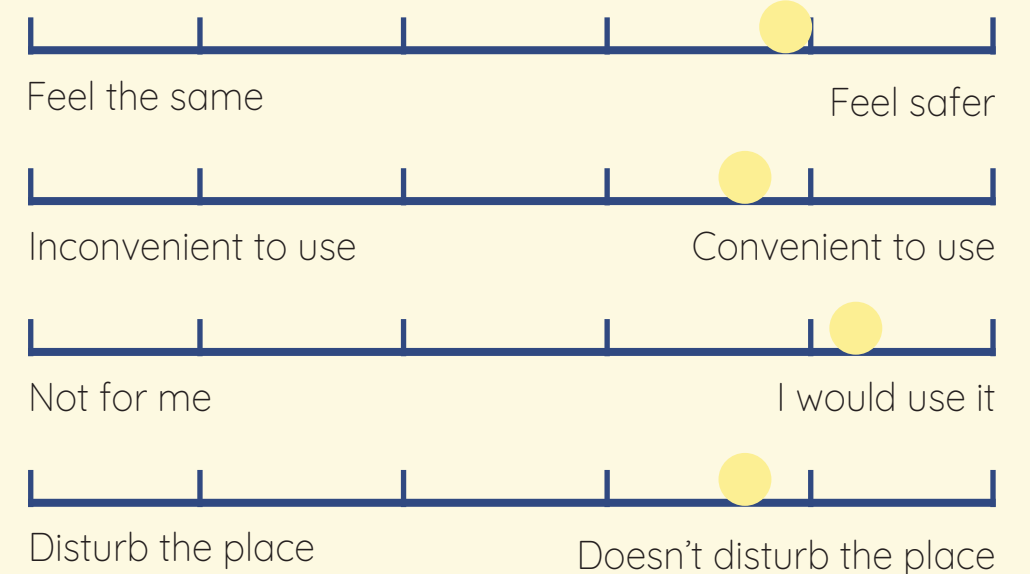"I like to be safe but extra caution causes me anxiety. I rather not think about it." Serena-21

Project direction
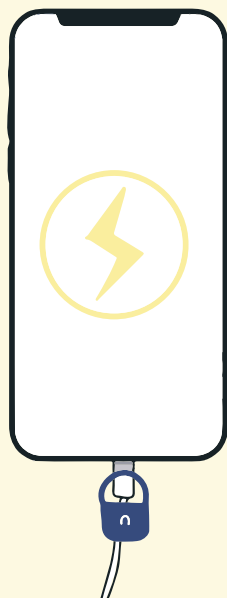
Based on the previous user feedback we combined and revised our ideas to a device provided in public places that allow students to charge their phones while protecting it from theft. We asked 4 users for feedback about how they feel about this concept.

"Using this device would definietly make me feel safer compared to using a normal charger ." Serena -21

"I find it really convenient that the charger is provided and I don't need to remember to bring anything with me." Emily-20

Feel the same — Feel safer

Inconvenient to use — Convenient to use

Not for me — I would use it

Disturb the place — Doesn't disturb the place

WORKS LIKE PROTOTYPE

Do users feel safer when there is visible protection on their phone?

In a Co-Design session we asked 5 users to choose a protection method between the options bellow they like to use when their phone is getting charged.
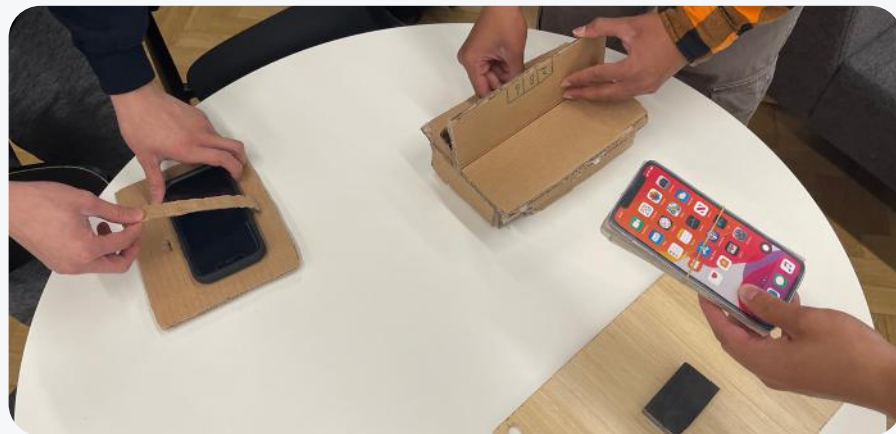

"I like to be able to quickly check my notifications and I feel like it's too much effort to open the box." Avyay- 19

"Putting to much effort into protecting your belonging in a place like a coffee shop or library just signals distrust. I like spending time in these places because I feel like strangers have my back." Justin-18

Outcome

Our initial assumption was that feeling of safety would come from a visual sense of protection. In this experiment we found out our users care more about the convenience and access to their phone.

Storage box   Protection belt
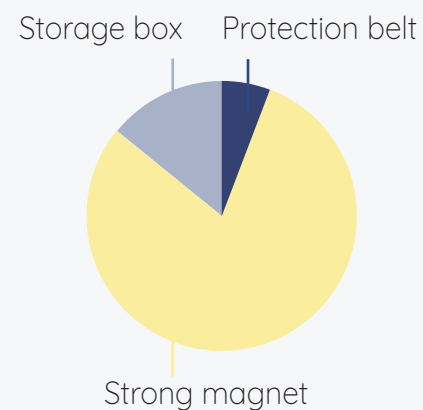
Strong magnet

How do users feel about having magnets around their phone?

In a Co-Design session we asked 4 users to tell us how they feel about magnets and suctions as a protection method and how much they trust them.


"I don't know how I feel about having strong magnets near my phone. I feel like suction seems more promising to keep my phone safe." Adi-18

"Mag safe devices like the wallet all have magnets in them and they are safe. I don't mind using it to protect my phone." Emily-20
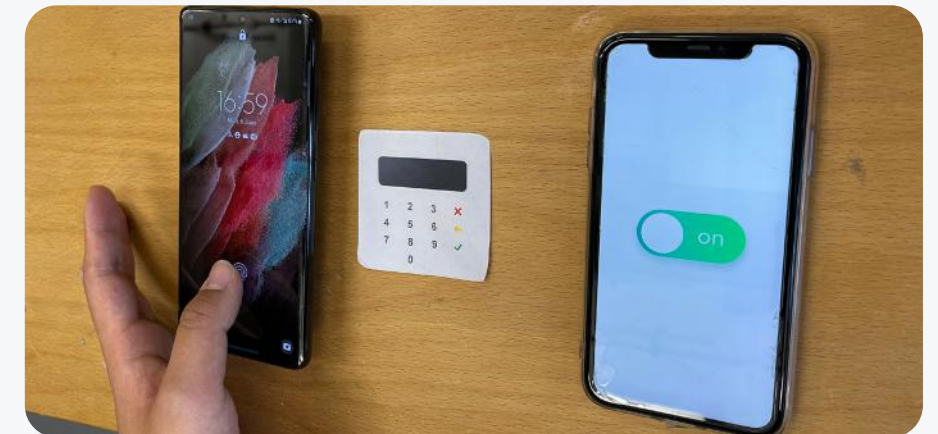
Outcome

Based on this experiment we decided to choose suction as the protecting method since the majority of students trusted it more than the magnet.

Strong Magnet

Strong suction
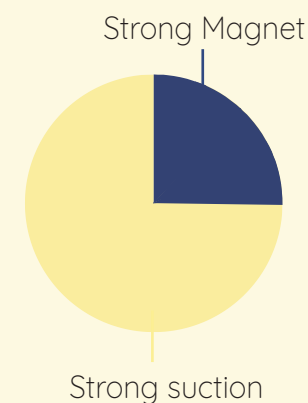
How do users prefer to turn off the safety system?

In a Co-Design session 5 users were asked to try using these three unlocking methods and tell us how they feel about them.


"I already know I am going to forget the pin code." Emily-20

"Being able to turn the device off by only unlocking your phone is kind of cool." Avyay-19

"With face id I can unlock my phone by just looking at it. It makes the experience of using this device is really smooth." Adi-18

Outcome

In this experiment we found out that our users prefer to unlock their phone as a method to turn off the protection system. Because they think it's faster and more convenient to use.

Pin code   App

Biometrics/Phone password
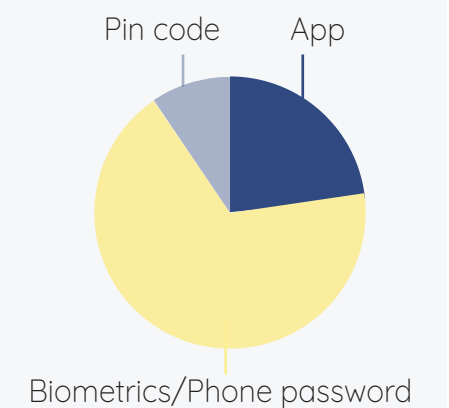
WORKS LIKE PROTOTYPE

What is the best way to create a strong enough suction?

Method 1

Using suction cup strips attached to a phone case we found out that the stickiness is dependent on the surface finish.

Method 2

We tried to create suction using a vacuum cleaner but it wasn't strong enough and made a lot of noise.

Method 3

We experimented with different sizes of suction cups attached together to improve the stickiness qualities.

Method 4

We created a vacuum behind a suction cup. This resulted in the strongest suction that could be trusted to protect an average phone.

Final works like prototype

To get user feedback for the validation of our concept, we automated the syringe and suction cup to be able to turn on and off using an app. This prototype helped create a more accurate visulasation of the concept for users.

A linear actuator creates motion in a straight line. This motion is used for pushing and pulling the plunger of the syringe, which results in force to suck the phone with minimized noise and energy.
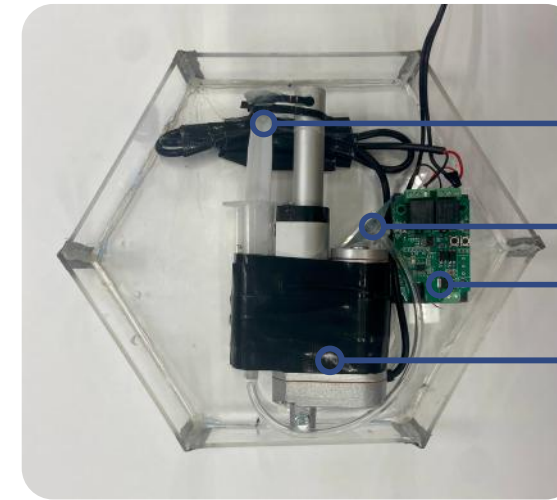
- Syringe
- Suction cup
- Relay Module
- Linear actuator
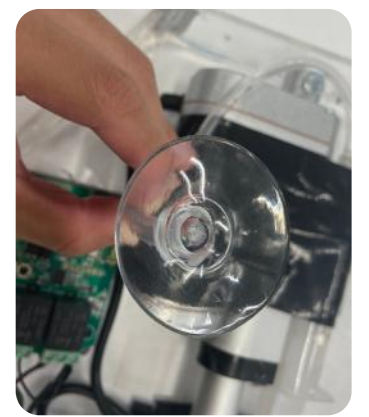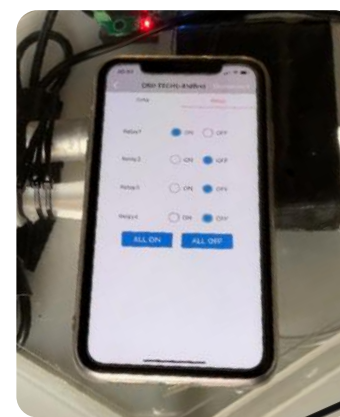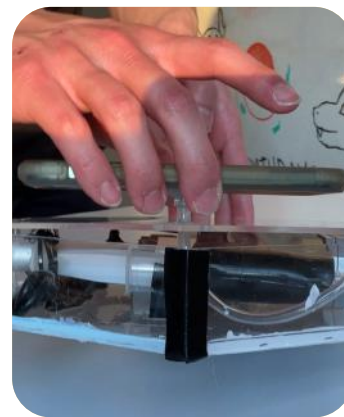
Once the phone is placed onto the suction cup, using the application the bluetooth realy module can be controlled to retract the linear actuator.


"The suction feels really strong. I feel safe and comfortable leaving my phone on it to charge." James-18

"I find that my phone is easily accessible and I like how fast it can be turned on and off" Tenny-19

LOOKS LIKE PROTOTYPE

How do users feel about different shapes for the device?

In a Co-Design session we showed 5 users four different shapes for our device and asked them to tell us how each shape makes them feel.
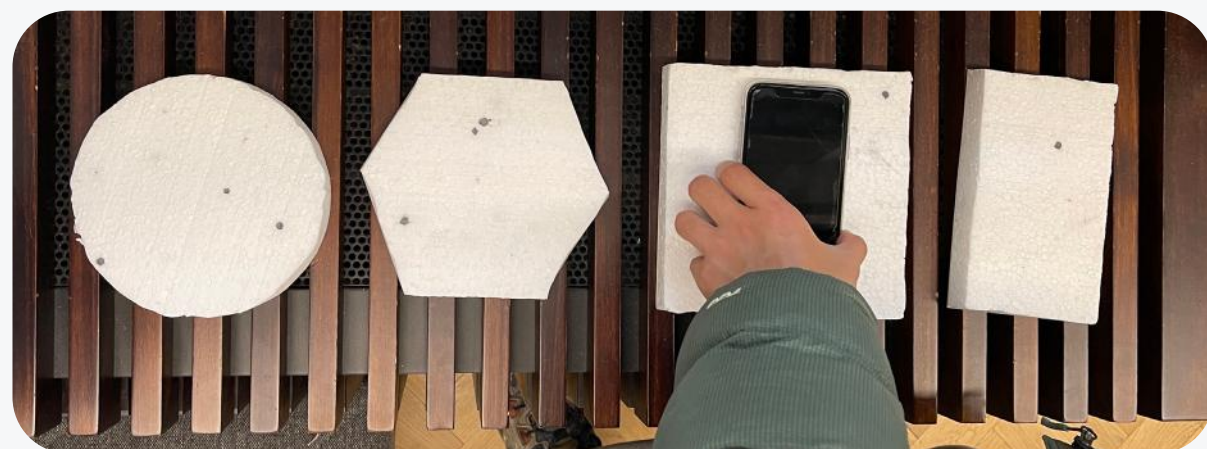
"The circle shape reminds me of a normal wireless charging device. I feel like I wouldn't even notice the safety aspect." Avyay- 19

"I prefer a symmetrical shape the rectangle looks like a brick to me." Justin-18

"You don't often see hexagon shape devices. From a distance it makes me want to know what it does." Emily- 20
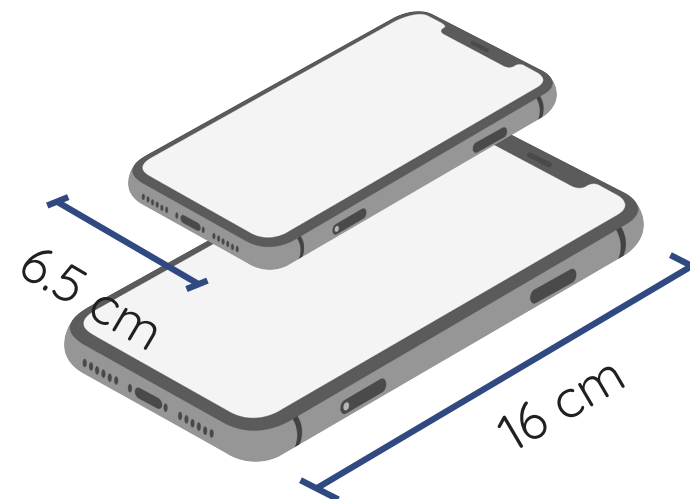
"The hexagon instantly stood out to me. It looks unique and I feel like I can trust it more." Aishwarya-18

Outcome

Based on the user feedback we decided to choose hexagon as the shape of our device. Users found hexagon shape more unique and expressed more curiosity to use it.
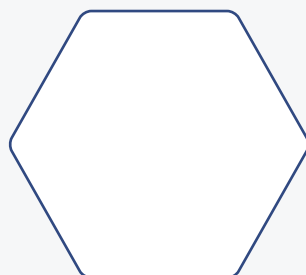
Device dimensions

6.5 cm

16 cm

The length of the most popular large phone in the market has the length of 16 cm (4).
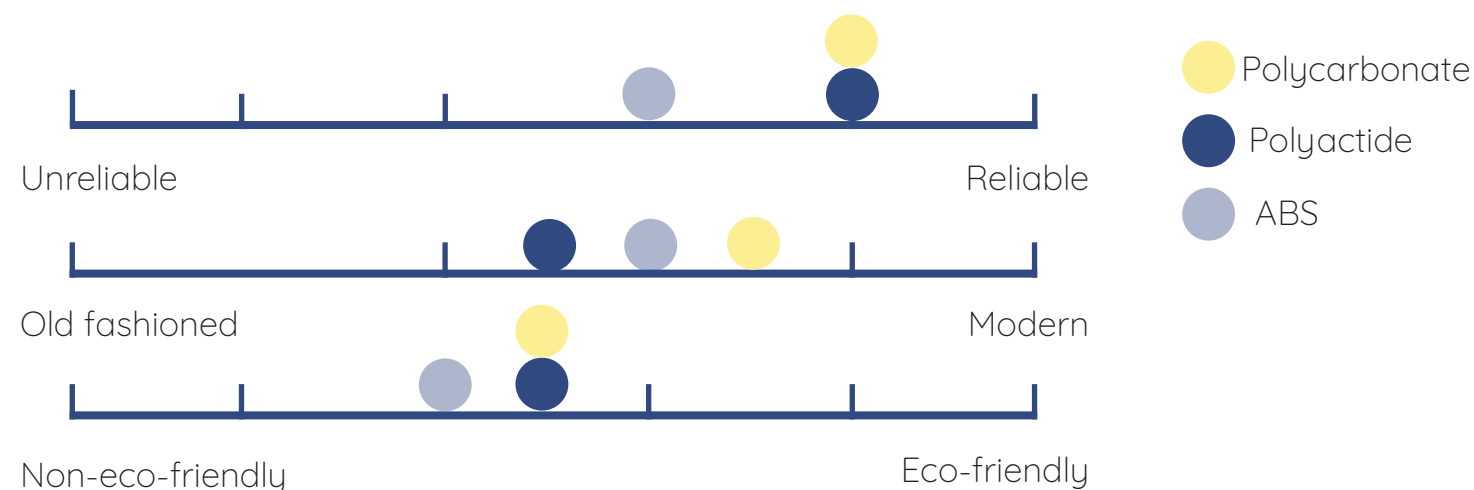
The diameter of the device should be 17 cm

The width of the small phone has the width of 6.5 cm (4).

The diameter of the suction determined to be 4.5 cm

Material selection

We found the top three material suitable for the casing of our device using an Ashby plot. We then showed the materials to 5 users and asked them to rate it based on the 3 attributes below. Polycarbonate was chosen because it had the best user perception.

(5)

Unreliable — Reliable

Old fashioned — Modern

Non-eco-friendly — Eco-friendly

- Polycarbonate
- Polyactide
- ABS

BEE
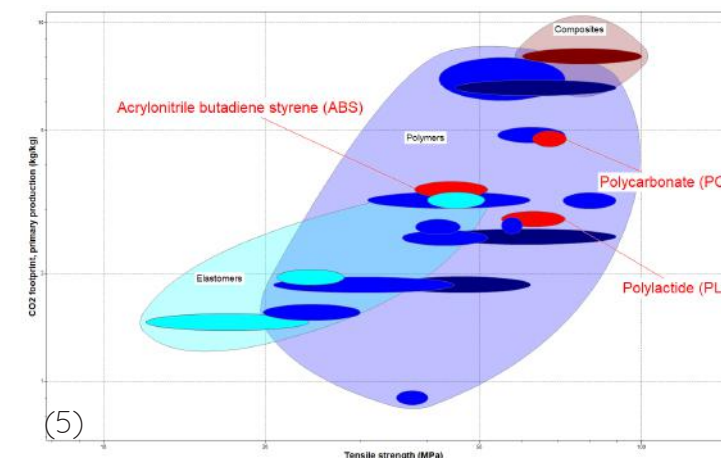
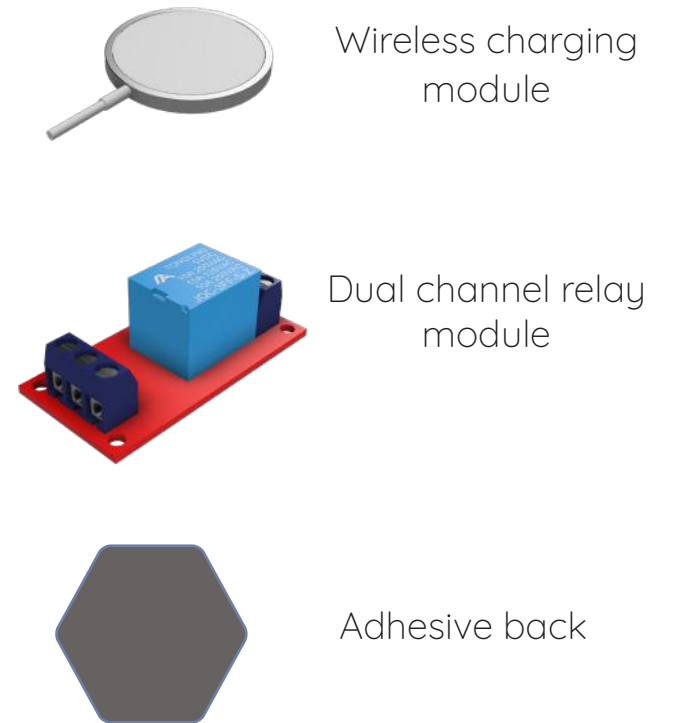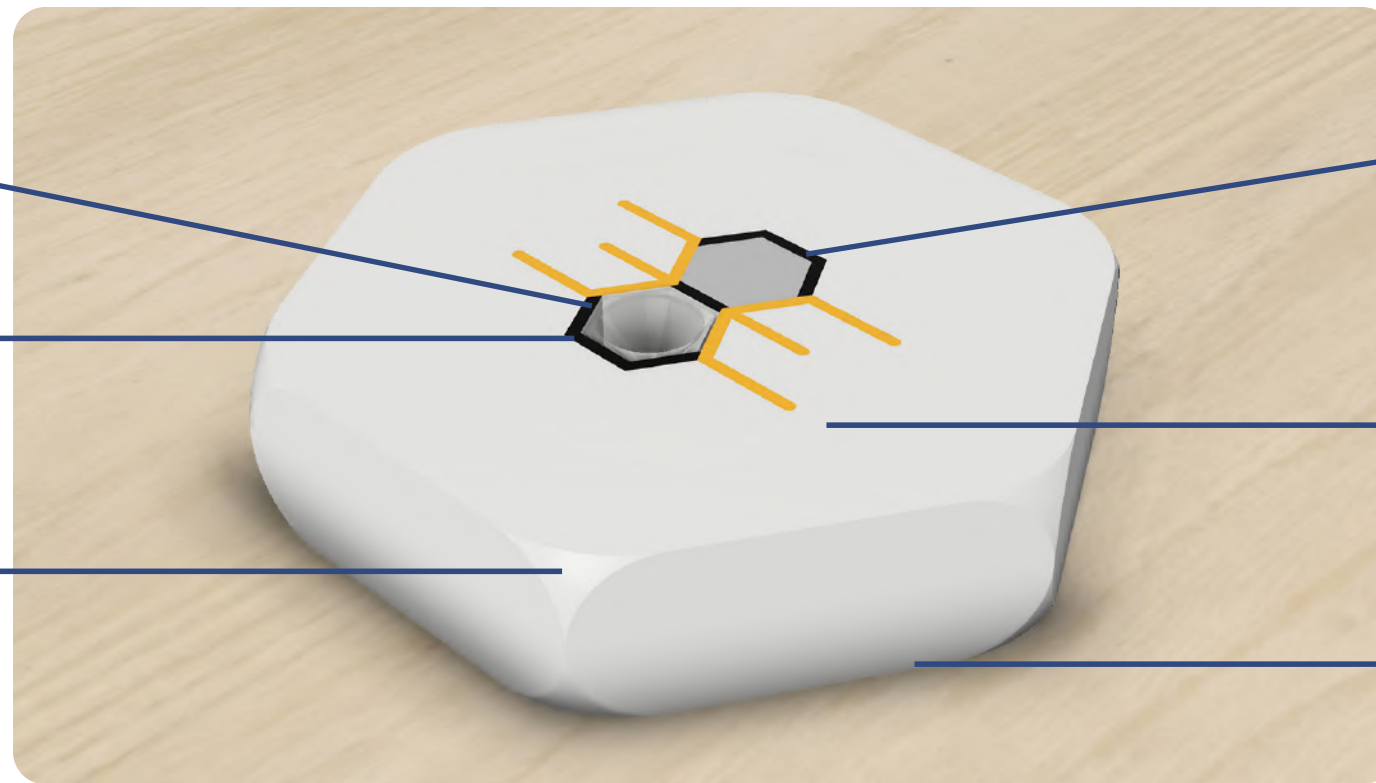## Leave your phone to BEE

Brand values

⬡ Create feeling like home

⬡ Safety without extra steps

⬡ Advocate living in the moment
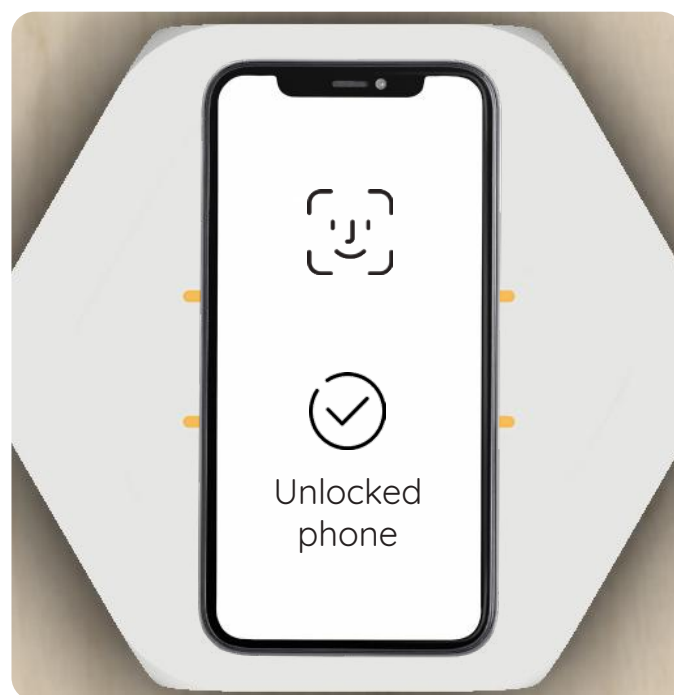
⬡ Encourage spontaneity

PRODUCT FEATURES

Suction cup

Syringe

Linear actuator

Wireless charging module

Dual channel relay module

Adhesive back

Place the phone

Suction cup   Wireless charger

Unlock the phone

Users can turn off the device by unlocking their phone

Unlocked phone

You Said We Did

"My bag is quiet heavy, I prefer it if the device is provided in public places so I don't have to carry chargers." Avyay-19

"I don't want to be reminded of theft everytime I see the product." Aishwarya-18

"I like to be able to quickly check my notifications and I feel like it's too much effort to open the box." Avyay- 19

"It would be so sick to see the product can also charge my phone " Justin-19

"I'm not intrested in downloading another app on my phone for this." Serena-21

"I already know I am going to forget the pin code." Emily-20

VALIDATION

User validation

We asked 5 users to try using our works like prototype and have a look at our looks like prototype and tell us how it makes them feel.

Feeling of safety

Feel the same — Feel safer

"It feels so good to know something has your back without you even knowing. This feeling is rare to come by when you are away from your family and home." Aishwarya-18

Convenience

Inconvenient to use — Convenient to use

"I like that I have easy access to my phone and I can easily check my notification while it's being charged." Site-18

"Could it get any more convenient than this? I would love to see this device around campus." Avyay-23

User perception

Disturb the place — Improve the place

"I love how smooth the experience is. Most of safety devices make me anxious but this makes me feel pampered." Aishwarya-18

"The device makes me feel so happy because I get to charge my phone in an efficient and safe way. I really like how the design is so cute. I think it would attract people to use the product." Yasmin-18

Usefulness

Not for me — Would use it

"I find this device really useful especially when spontaneous things happen and I get distracted from my phone." Justin-18

"From a distance the hive shape and the logo reminds me of the sweetness of honey and the stickiness. Which makes it such a clever branding. It instantly makes you want to know what it is." Avyay-23

Validation from Samsung worker

We conducted a validation session in Samsung KX and the workers there got interested and asked us how the device works and then gave us some feedback.

"We value the experience visitors have here and I think this device would be a great way to show students we care about them."

"I really like the minimalistic look and that there isn't a big indicator about theft protection because we obviously don't want students to worry and think it is unsafe to come here."

Validation from Costa worker

We showed our looks like and works like prototype to a Costa Coffee shop worker and asked them to give us feedback on the product and how they would feel about installing the device in their store.

"We offer wireless charging here to people but our biggest concern is how easy it is for phones to get stolen. I feel like installing this device could even prevent thieves from coming here."

"It would be a great investment to install this device if it's going to attract students to come here and feel safe to stay. "

APENDIX

References

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(3) British Council. CREATING CONFIDENCE, International student safety survey.https://www.britishcouncil.org/sites/default/files/ h009_07_creating_confidence_survey_ a5_web.pdf [Accessed 7th February 2022]
(4) Nimarwaterhousings.com. https://www.nimarwaterhousings.com/img/cms/SMARTPHONE/Smartphone_Compatibilty_List. pdf [Accessed 14 June 2022]
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Meeting minutes

https://group23.notion.site/HCDE-project-group-23-b0d416416c204f34998ef2eec81a29e0