

PORT - FOLIO

■ Period 2018-2020

PAWCARE

2020

Personal project

Interactive design + Product design

Design for stray animals

Those homeless animals, which suffered from hunger and disease, are bringing potential safety problems to human society.

To solve this issue, the App that I designed named PAWCARE together with a robot pet can help them to be housed properly, achieving the ultimate goal of reducing the population of homeless animals in a sustainable way.



Background

Strays number

WSPA

According to incomplete statistics

There are approximately **500,000,000**

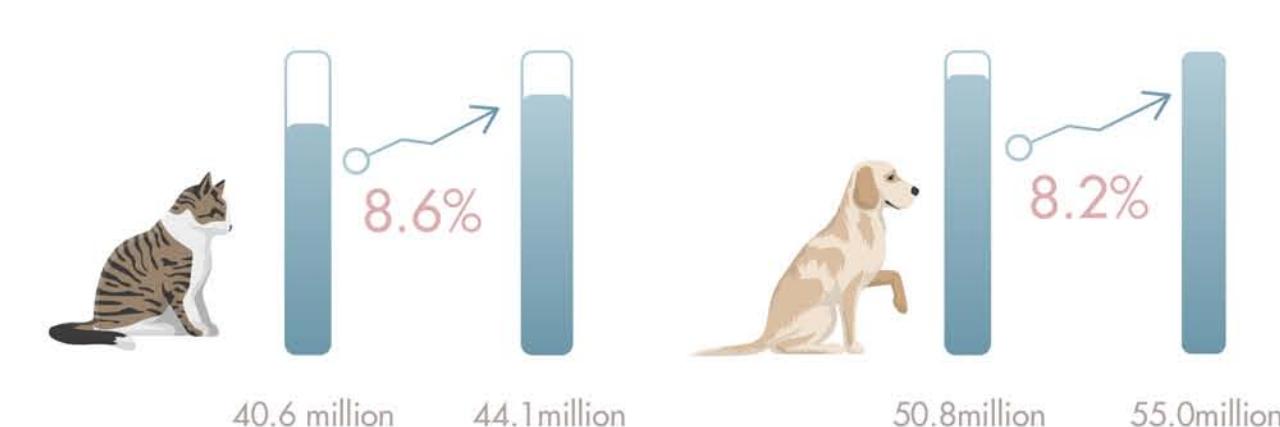
stray dogs and cats in the world,

and particularly **40,000,000** stray dogs

and **53,000,000** stray cats in China.

Pets number

2019
Chinese Pet Industry White Paper



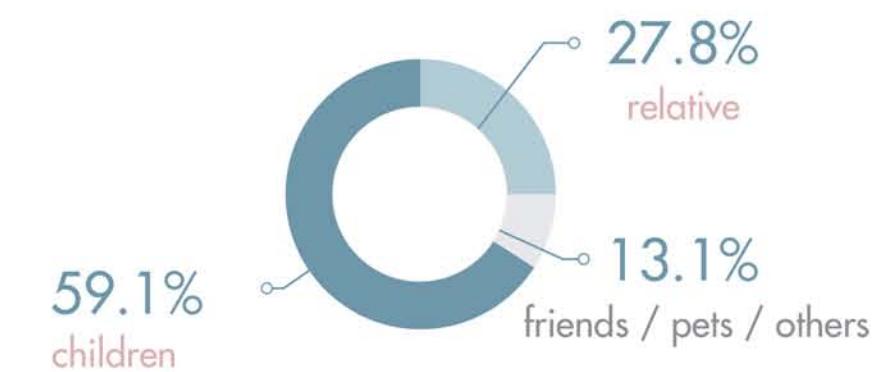
Pet Cats & Pet Dogs number from 2018 to 2019

Strays' number is increasing every year.

Percentage of increase is **8.4%** Total number is **7,700,000**

Adoption percentage

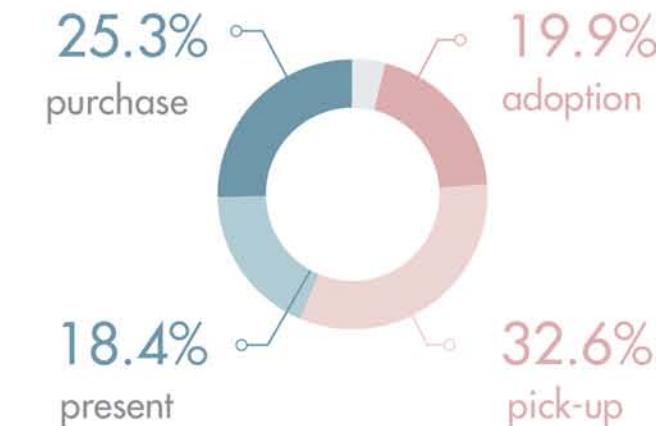
2018
Chinese Pet Industry White Paper



Family status of pets



Access to pet dogs



Access to pet cats

23.1% pet dogs were picked up or adopted

Increase the rate of adoption in lieu of purchase to get pet dogs or cats may be a key

Primary Research

I visited two animal shelters in Guangdong province, China.



Shenzhen Stray Animals Adopting Center

It is a private funded shelter with about 60-70 cats living in a small flat and about 80 dogs living in a farm on the outskirts. They get relatively good cares but only a very few of them can be adopted.



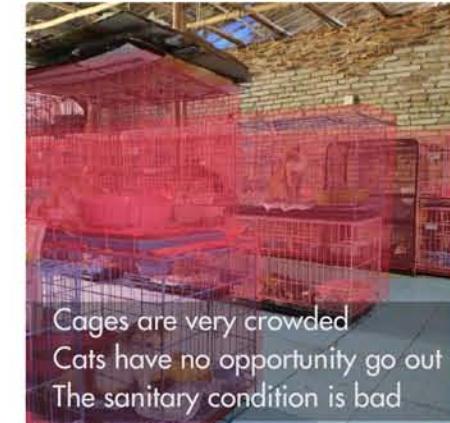
Shanchonghui Stray Pets Placement Center

It is located in Foshan, China. There are 117 cats and approximately 80 dogs in this center with only 2 staff members. All of the cats are kept in the folded cages. All of the animals are poorly taking care of and it might takes a long time for the staff members to notice or realize if any of them were sick.

Here, we found some common problems in those two animal shelters.

Observation

Environment



Cages are very crowded
Cats have no opportunity go out
The sanitary condition is bad



They cannot get separated
because of the lack of space



Dogs are free-ranging
The sanitary condition is not good



Some cats fight and they cannot
be isolated for lack of space



There are too many animals for
staffs to take care of



Most of the cat literes are dirty
and smelly



Cages are very dirty



Cages were not clean for a
long time

Animals condition



This cat caught stomatitis and
lost all teeth after treatment



This cat lost one of the eyes



This cats got FHV-1



This dog caught skin disease
and is in bad temper

Pain Point

- Both shelters are crowded and that may lead to many problems for animals.
- Sanitary condition is bad for those animal shelters.
- The proportion of staff versus animals is remarkably unhealthy so that animals cannot be taking care of. Plus, the point is particular worse in Shanchonghui Stray Pets Placement Center .
- Because of the poor conditions, most of the animals got sick (**emesis, stomatitis, FHV-1**) and a part of them suffered for sequelae.
- Many animals are getting too old to be adopted, which leads to retention.

Current Solution

Animal Shelter

Animal shelter is a place that stray, lost, or abandoned animals, are kept and rehabilitated.



ASPCA

RSPCA

Positive

- Reduce the number of stray animals in cities
- Find adopters for some stray cats and dogs
- Treat diseases for stray dogs and cats

TNR

Catch stray animals and release them after sterilization to slow down the reproduction of stray



ASPCA

Positive

- Effectively reduce the number of newborn stray animals

Placing-out

Put stray dogs and cats in temporary homes or pet hospitals until they find adopters



Positive

- Find adopters through website could let more people know them

Conclusion

- Two solution (Animal shelter & Placing-out) are common in China but it usually comes out with low adoption rate.
- TNR can steady the increase of homeless animals but those in the outside still have bad influence to the environment.

Interview

To make it more clear about the pain point about adoption dogs & cats I interview 7 people related to the issue

Two of them are **volunteer or staff of animal shelter**, two of them **used to adopted cats**, three **wants to adopt cats or dogs**



Miss S

staff of animal shelter

Q: What kind of animals do you adopt?

A: We or friends encountered or **heavy injury animals have priority to rescue**.

Q: What is the animal's physical condition?

A: Dogs are old, cats often have some diseases, and some cannot be adopted because of **sequelae**.

Q: How many people adopt animals?

A: Not many. will **pay lots of time to know adopter** from lots of aspects and it still couldn't avoid **some people return pets**.

Q: What are the conditions for adopting an animal?

A: First, window need to be locked when adopt a cat. We will visit your house. In addition, we will charge a deposit to ensure the animal's health



Mr He

owner of a stray cat

Q: Why adopted your cat?

A: I met my cat in winter and felt sorry for him, and I love animals, so I adopted him.

Q: Will you adopted one more pet from stray animals adoption center?

A: When my financial condition is better, I will definitely keep a dog, because I like them. Love cannot stop when it come. I will consider the adoption information of stray dogs through second-hand trading software or pet chat groups.

Q: What kind of problem do you meet after adopted your cat ?

A: There is a gap between pets and the Internet, my pet is always naughty, and dealing with feces is annoying. I had thought about give when I graduated, but didn't. So I don't recommend it to students because the stability is too low.



Lily

housewife
mother

A: I want to **keep another cat to company my current cat**. I will consider adopting, buying, or reproducing from a friend's cats. I think to like a cat is to accept all his shortcomings, and **the cat also has different personality**, different people suit for different cats .



Mr Lin

student

I want to keep a dog, because I like dogs. I want a black, obedient dog. I've talked to adoption agencies, and I think they are **doing a great job**, and I'd prefer to adopt instead of buy, because it helps reduce stray animals, and dogs get free vaccines.



Robert

volunteer of Helloapaw

Q: What kind of animals will you help?

A: We can receive spread many **people's help information on the Internet**. We encourage and provide help to someone who would like to help them. Plus, we will pick up some to our rescue centers.

Q: What is the animal's physical condition?

A: Some are healthy, some are injured and some couldn't live through a few more days.

Q: Is it difficult to find adopter?

A: It's true to some animals, so our place are always full of them, we show them on the Internet every day and **organize activities to let more people know them and adopt them**.



Miss Qin

owner of a stray cat
& viewer of adopter

Q: Why adopted your cat?

A: It was a coincidence and I thought it was cute and pathetic to be abandoned. Plus, my boyfriend actually loves Siam very much

Q: Will you adopted one more pet from stray animals adoption center?

A: It is depend, if I like a cat the first sight I see, I will want to give it a home. Won't go to an adoption agency toget one. But I am more like to buy a Muppet when I am rich.

Q: What kind of adopter do you prefer?

A: It is complicated, depend on cat's personality, cat foods, famliy and their responsibility.



Miss Li

designer

A: I want a seven or eight months cat keep me company because it is **too lonely to live alone**. I would consider adopting in a different place but animal shelter are too far from me. I would seal the window for him, but I don't really know how to keep a cat.

Problem

In adopter

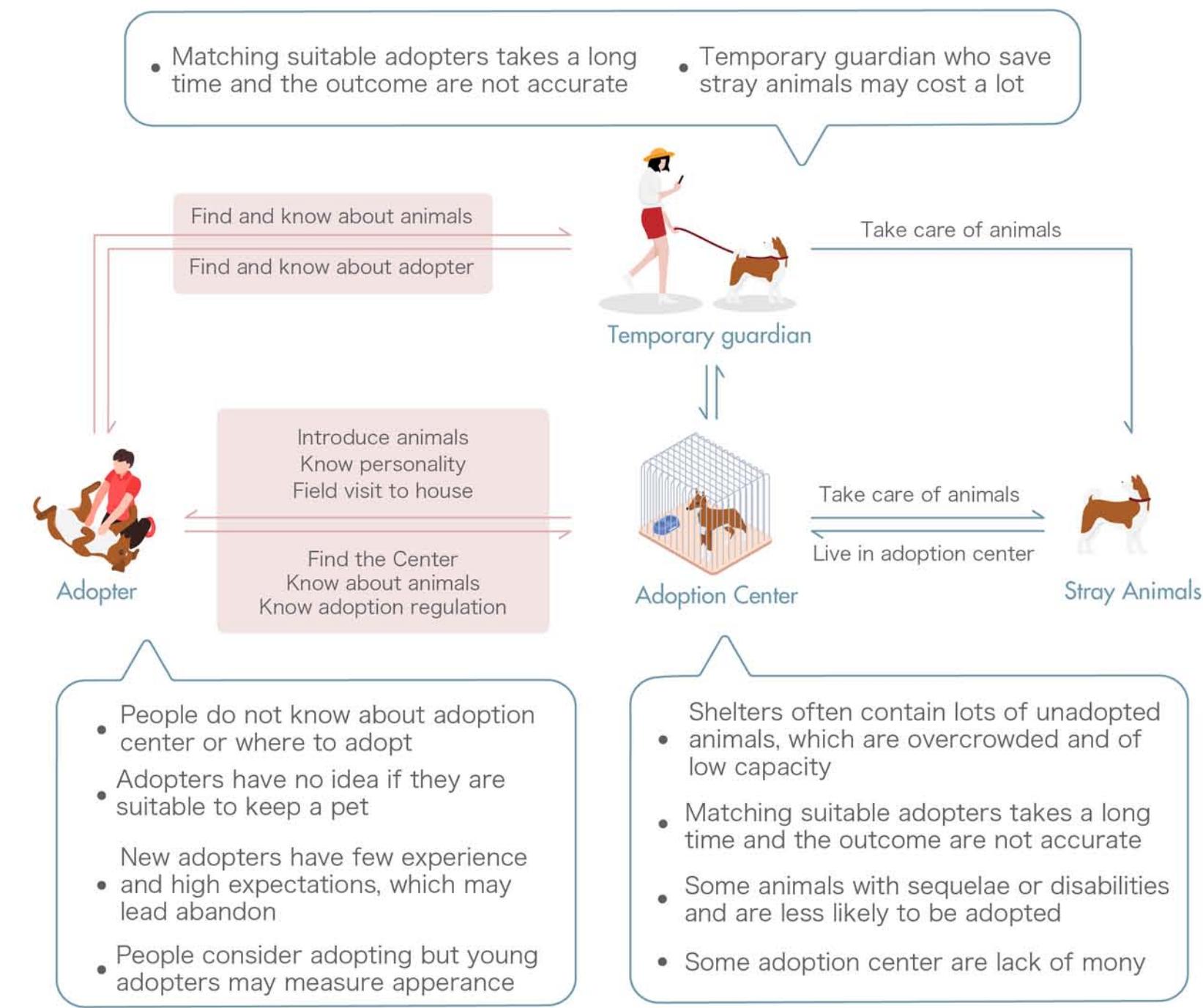
- Adopters consider adopting instead of buying, but younger adopters will think more about the appearance of pets.
- **New adopters have insufficient experience and high expectations, which makes them more likely to abandon adopted pets.**
- People with unstable work and life, such as students, are more likely to abandon their pets.

In adoption agency

- **Matching suitable adopters takes a long time, but abandonment still occurs.**
- Shelters often contain large numbers of unadopted animals, which are overcrowded and of low capacity.
- Some of the stray animals rescued by the charity organizations have sequelae or disabilities and are less likely to be adopted.
- In some locations, there are no adoption agencies around to select stray animals as pets. There are few channels of communication for the adoption of animals.

Analysis

From the research I did, I find out gap among adopters, adoption center, temporary guardian and stray animals



Persona



"I feed stray cats but I wanna adopt a cat of my own to company me"

Age: 24

Income: 6000/month

Technogy:

Diet knowledge

Time for pet



Expectation:

I want to select my pet in somewhere not far and I want medical support after I adopted it.

Painpoint:

- Lack of experience
- Adoption process is complex
- Too far to visit cats
- Not sure for keep pet



"I have a cat and I want another dog because my husband like dogs"

Age: 29

Income: 13000/month

Technogy:



Expectation:

I want to adopt a beautiful dog in a natural way and I hope my cat will like the new friend.

Painpoint:

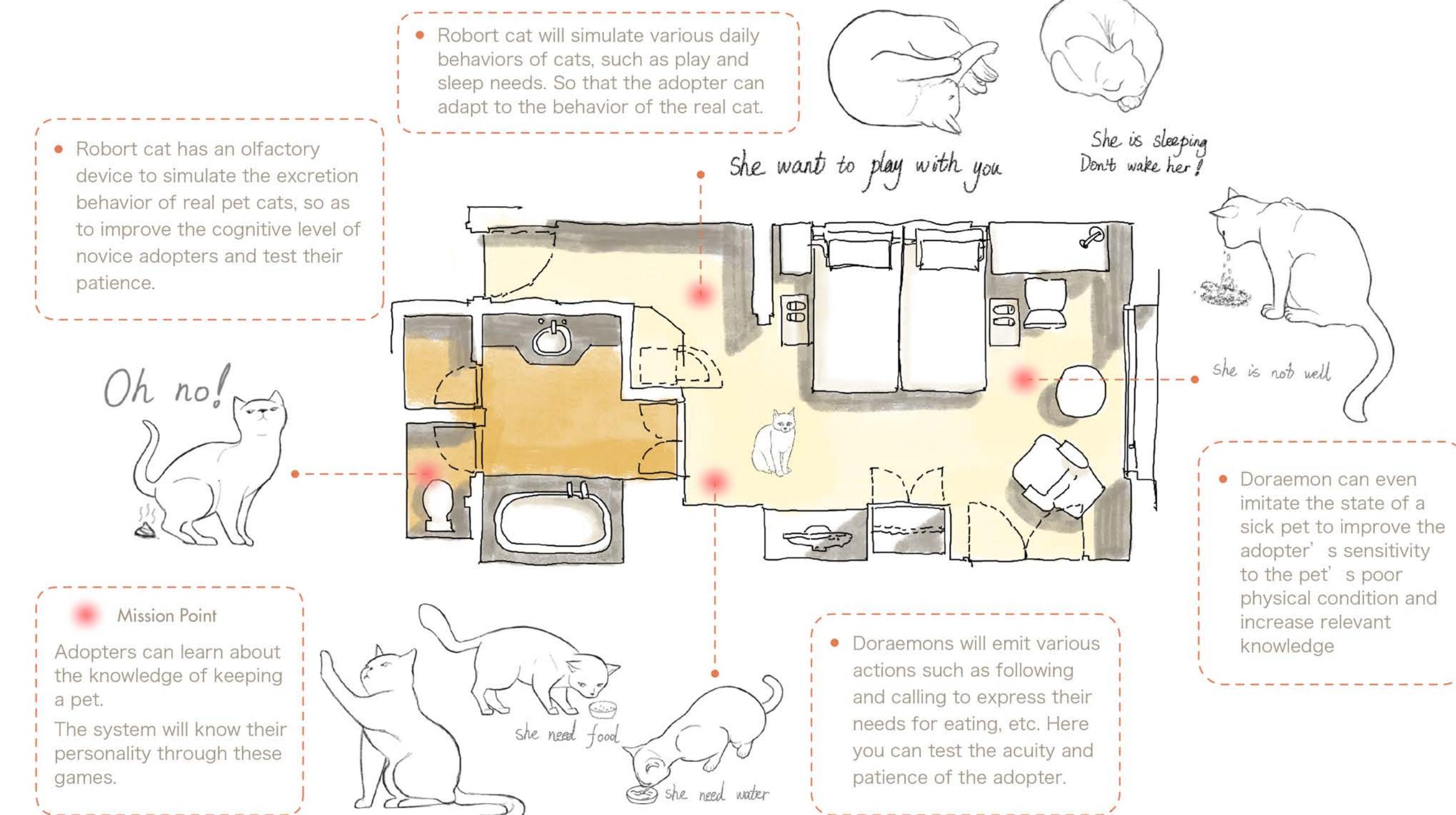
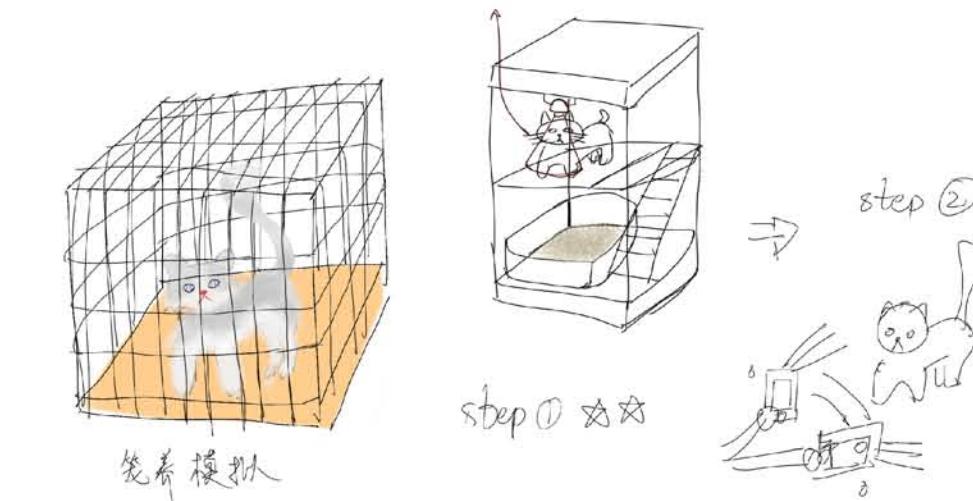
- Too far to visit dogs
- Adoption process is complex
- Too many to select
- Need acceptance of existing pet

Idea inspiration

A. This solution uses VR projection technology. Users can enter the location of the animals to be adopted in an illusory state by wearing glasses, interacting with them to better understand and select pets.

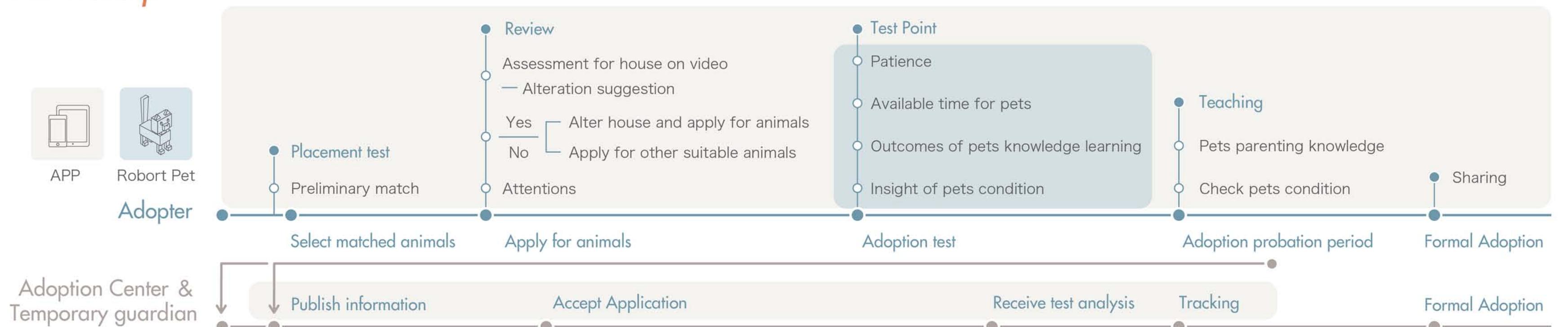


B. This solution uses the holographic projection AR technology, which can bring a projected pet to the home, interact with him and learn about pet knowledge.



C. This solution provides the adopter with a sample link before adopting a real pet, using the combination of APP and its pet. Let robot pets show some behaviors that real animals will appear in order to achieve better purpose of keeping pets than adopters, and at the same time. The system will analyze the user's behavioral eligibility and give an analysis and recommendations to the adopter for their evaluation.

Flow Map



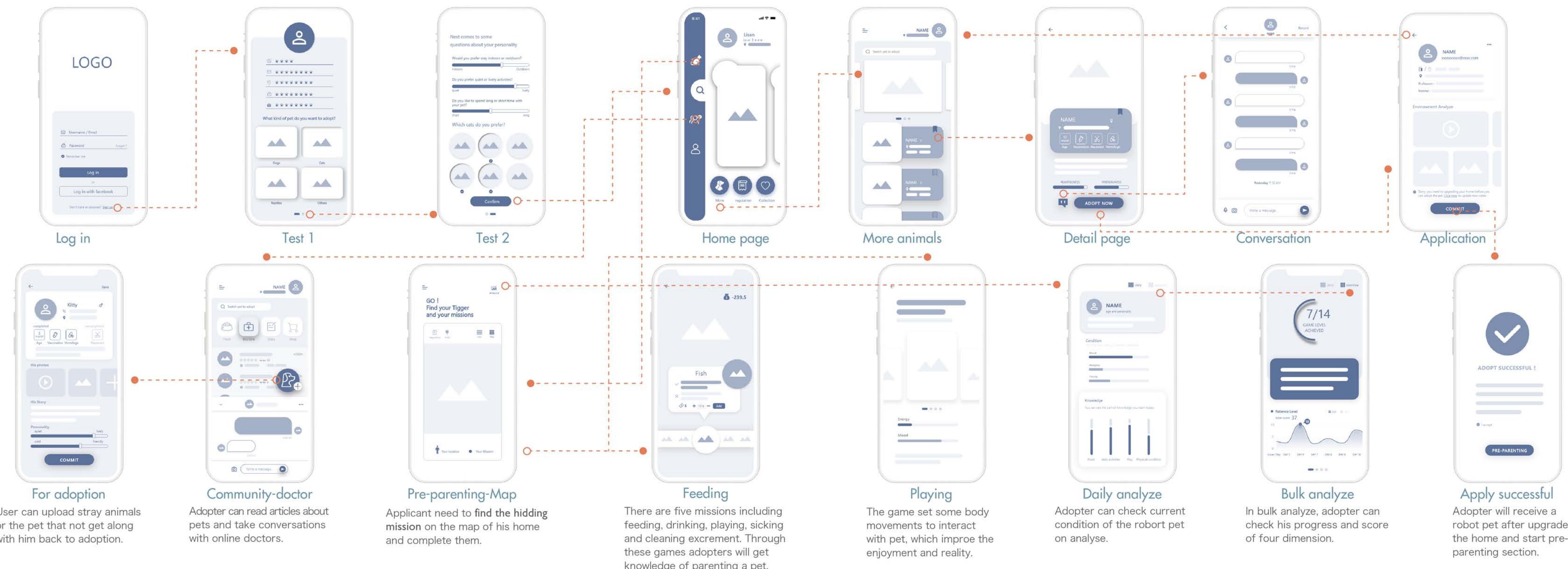
This project will increase the interest of the adopter and analyze the ability of the adopter intelligently.

The system of APP will recommend pets based on the adopter's personality and preferences, and it will intelligently analyze the living environment.

The robot pet and system will collaborate to examine the four abilities of the adopter. Real pets will be released after the test passes.

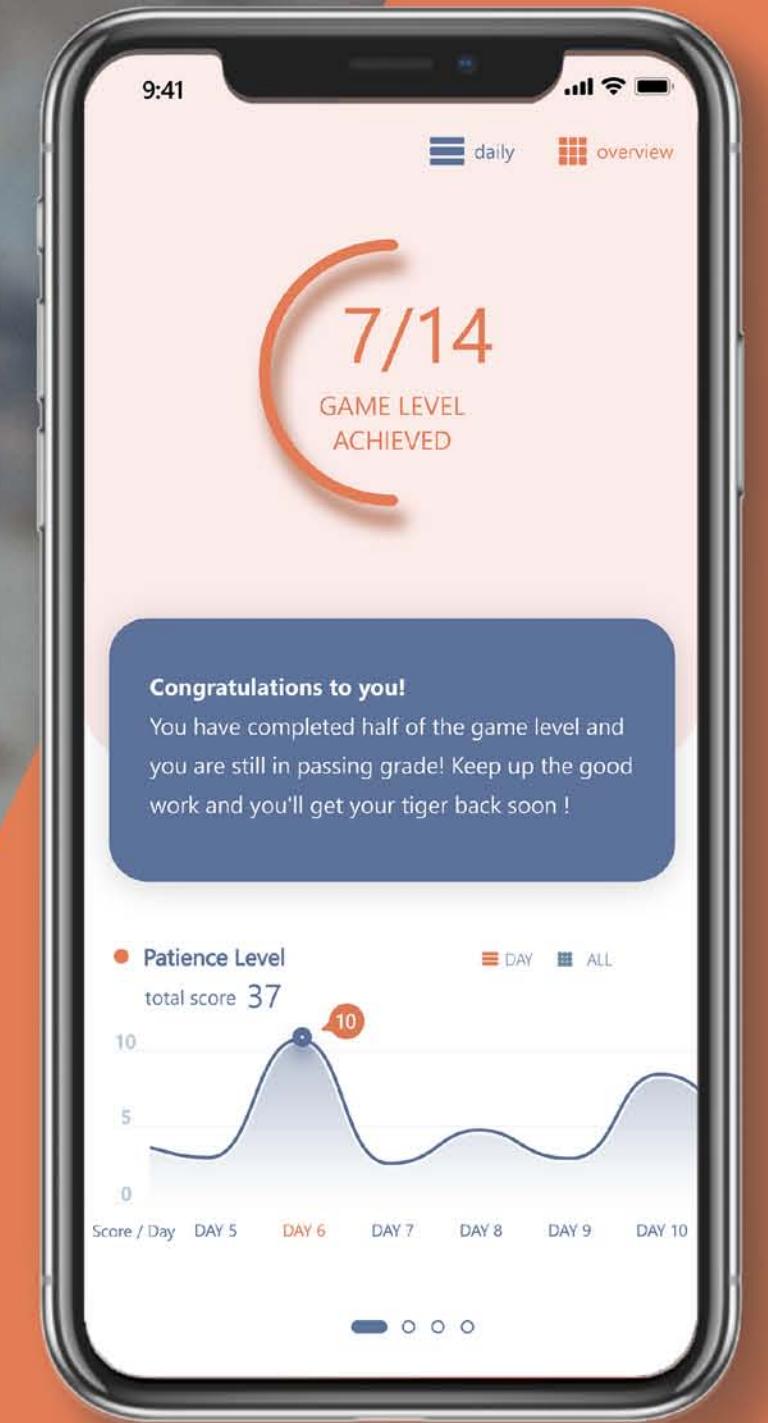
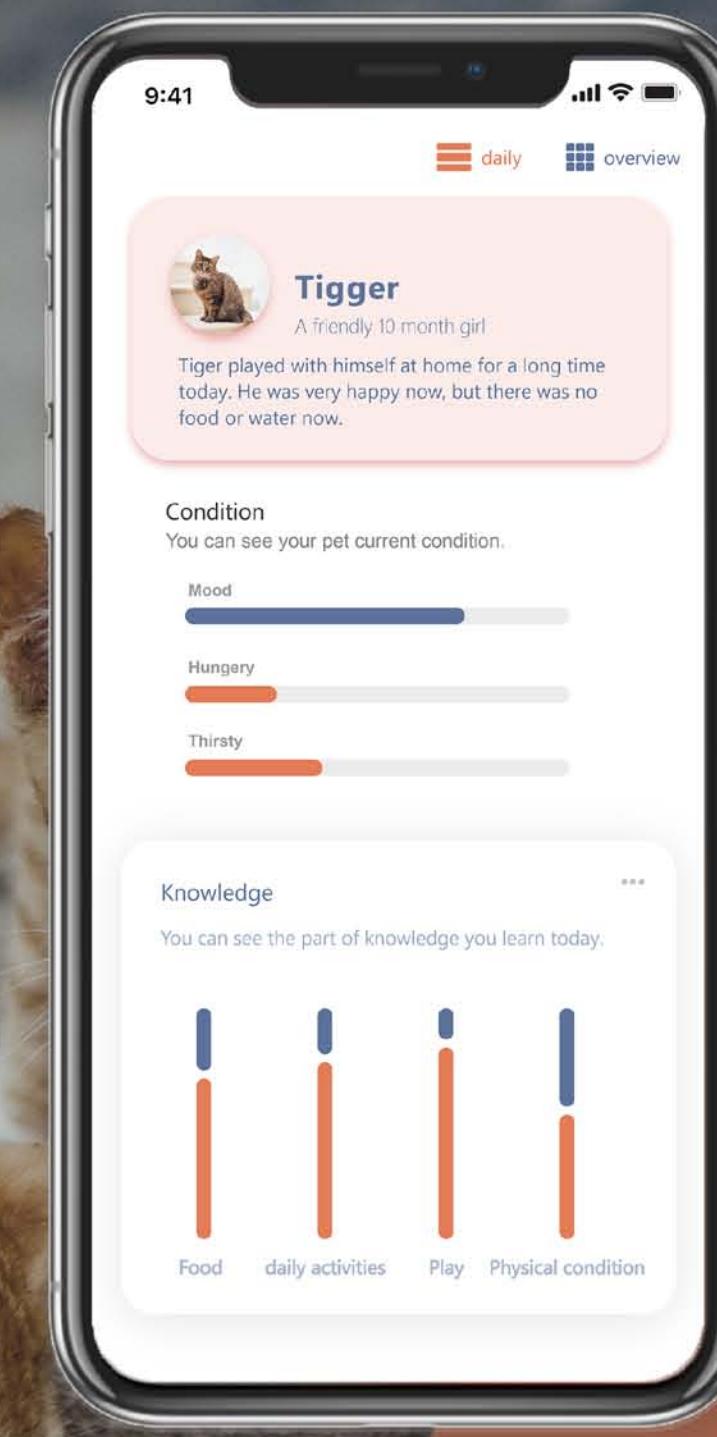
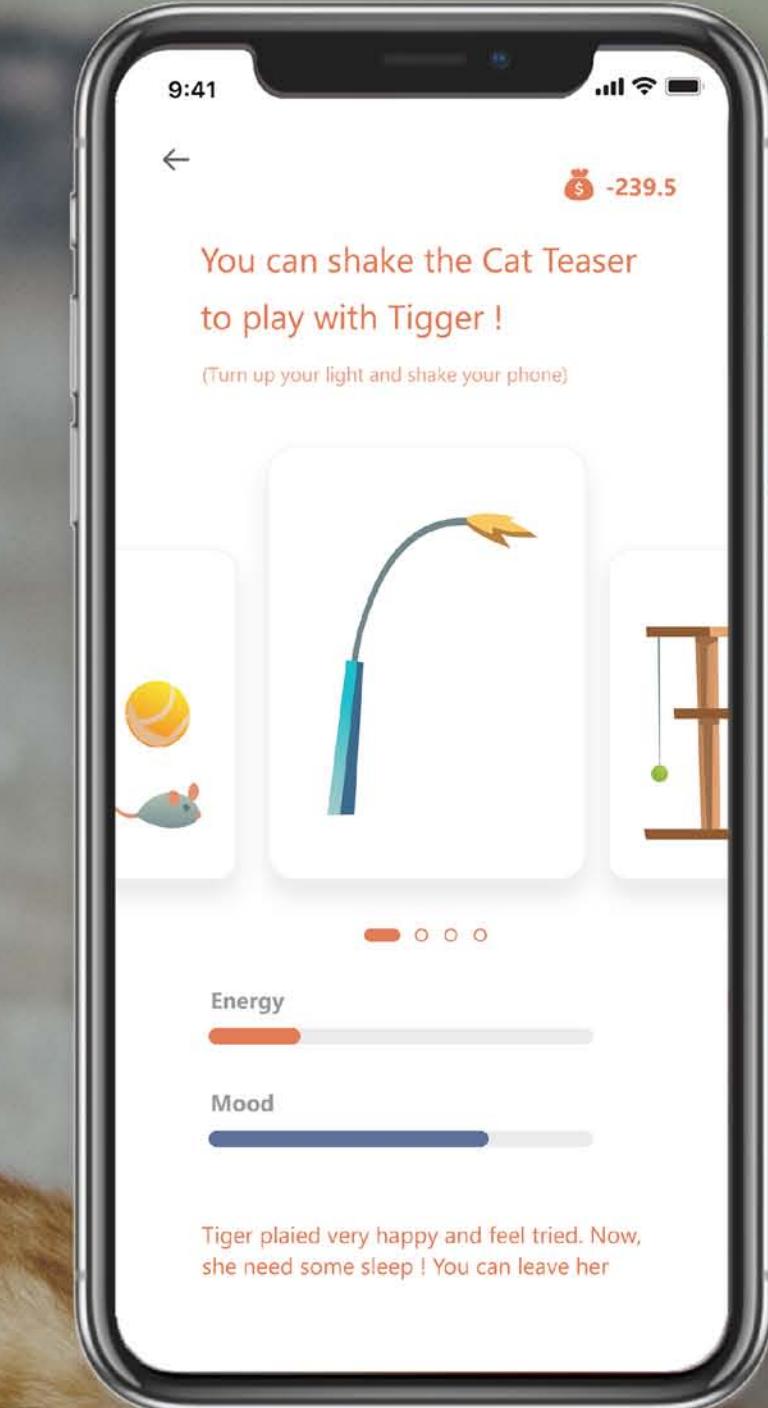
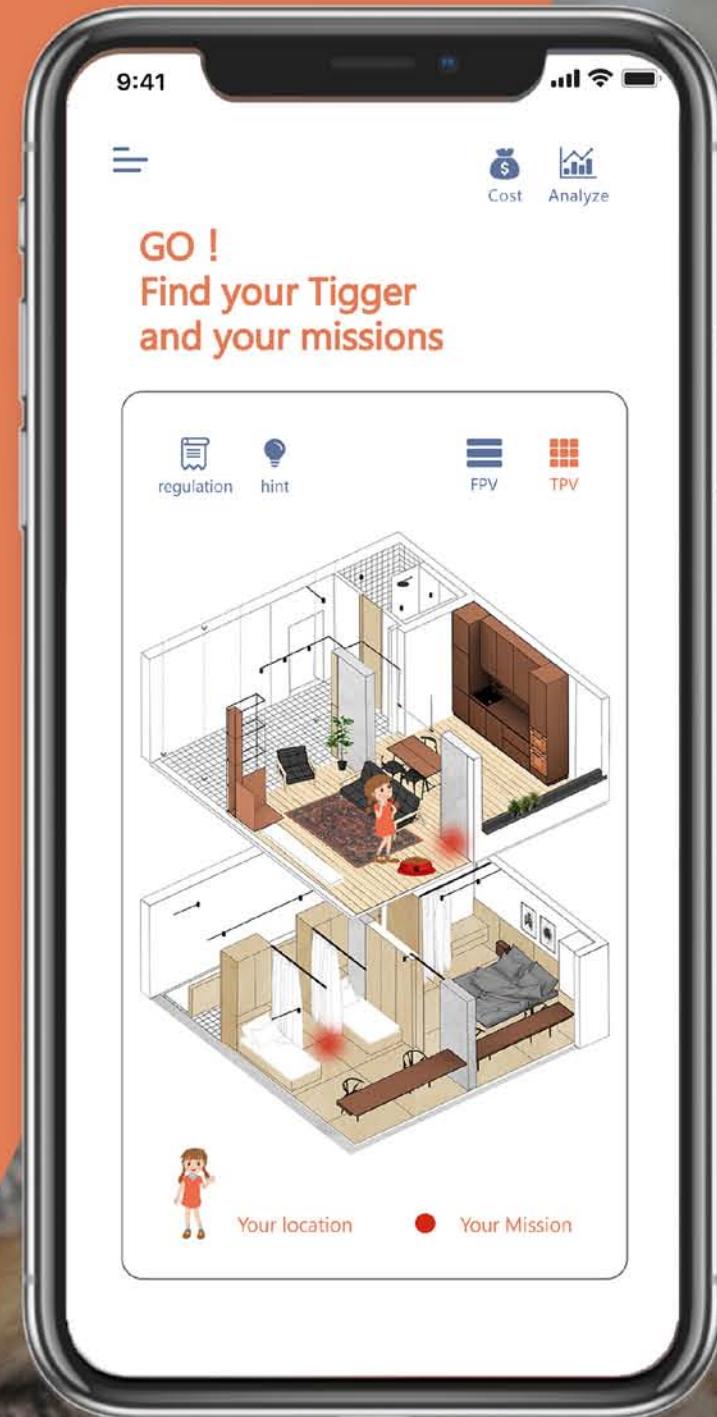
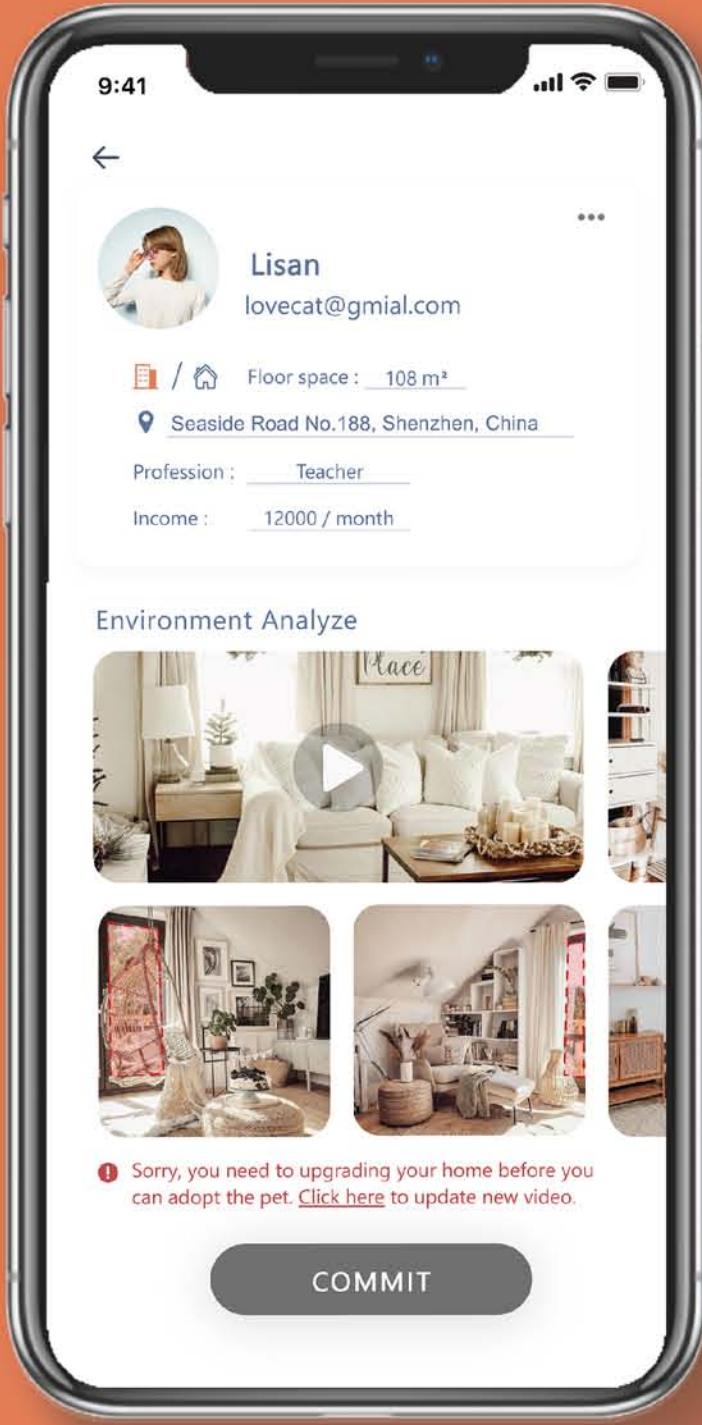
User can also put animals for adoption in this APP.

Wirefirm



Pre-parenting Function

Map is made up from the environment of applicant's home. Applicant need to find the hidding mission and complete them. There are five parts of pre-parenting section, including feeding, drinking, playing, cleaning excrement and sicking. Through these games adopters will know the skill and knowledge of parenting a pet.



Application

In this part, adopter upload a video of his home.

Map

According to the video, the system make a map. It can show the location of user and hidden mission after use the hint.

Playing

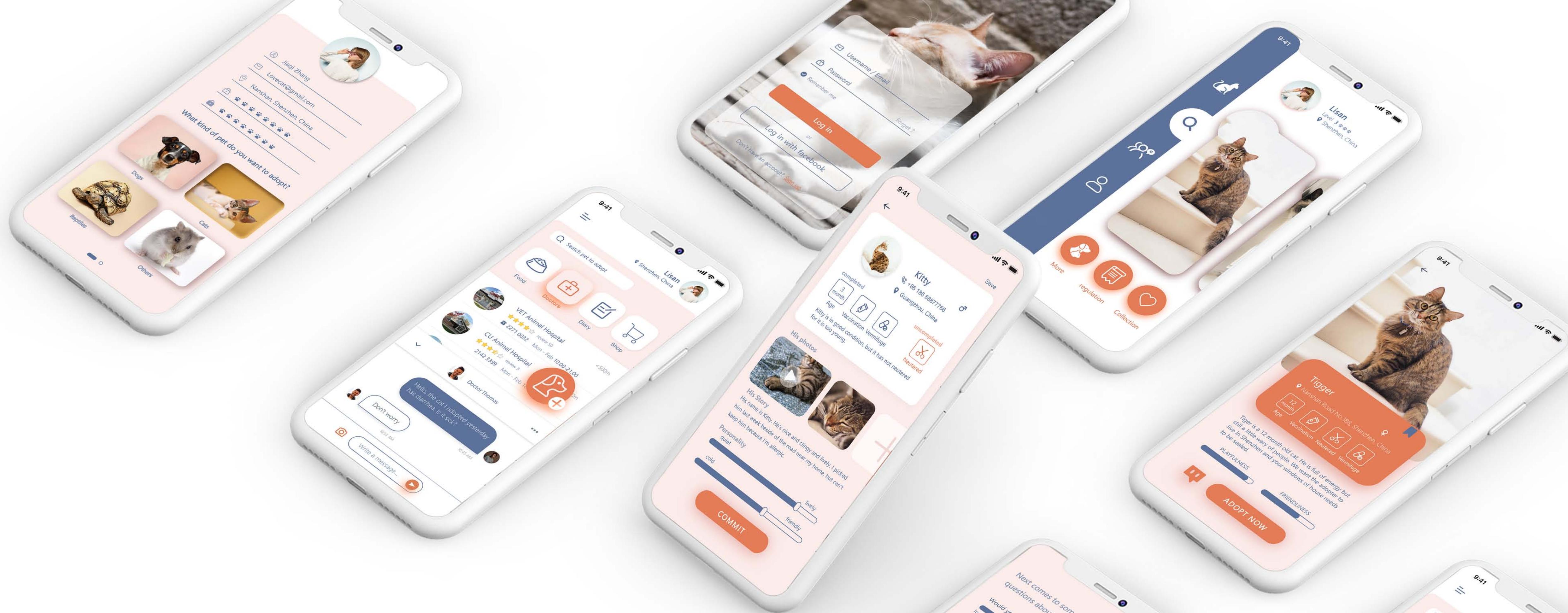
Playing is one of the mission, user need to wave the phone to play with the pet. Other four parts includes pre-parenting section, feeding, drinking playing, cleaning excrement and sicking.

Daily Analyze

Adopter can check current condition of the robot pet on daily analyse. User can check the knowledge of daily mission.

Buly Analyze

Adopter can check his progress and score of four dimension, including patience, accompany time, knowledge and insight.



Primary Colour



fbebe9

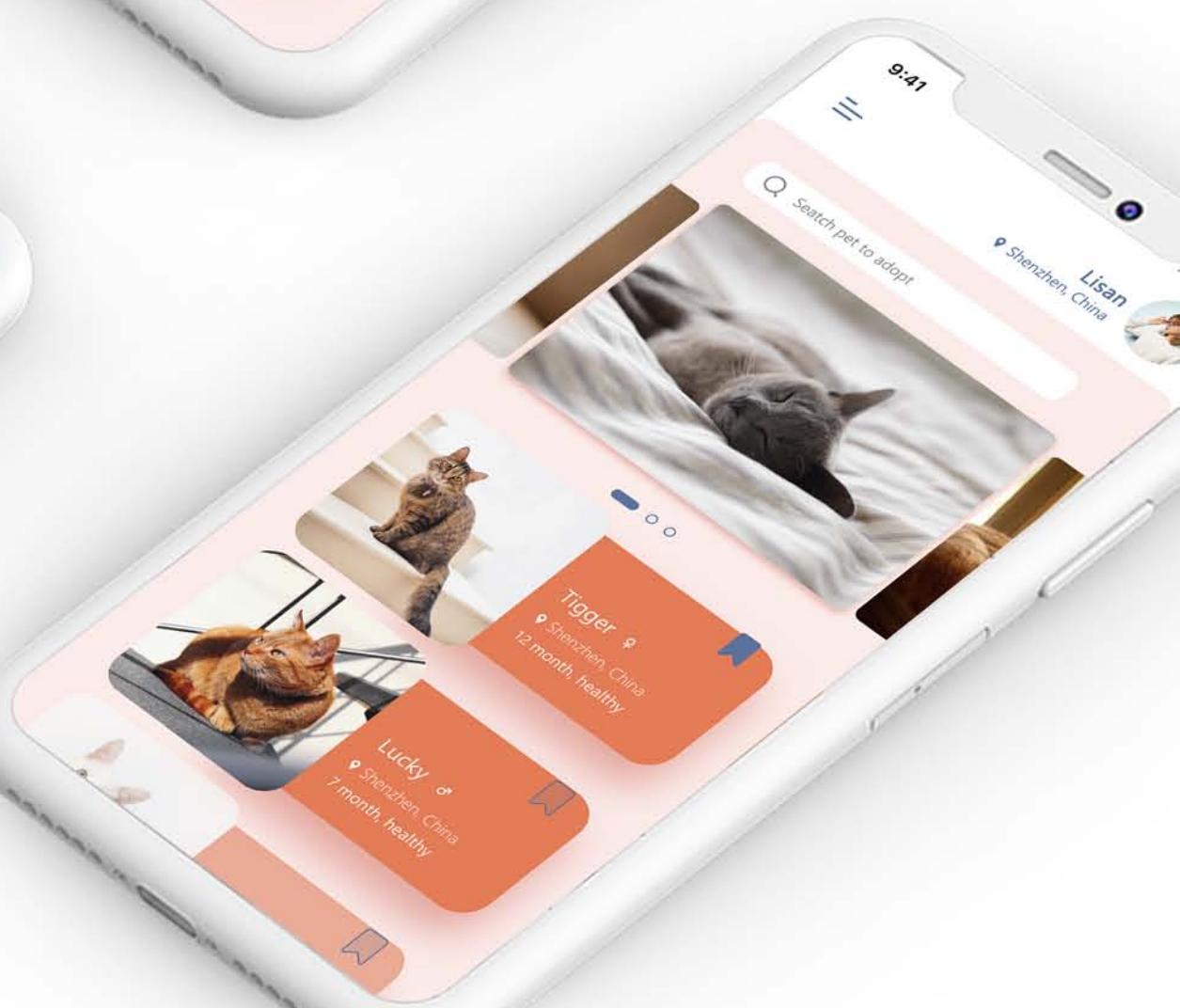
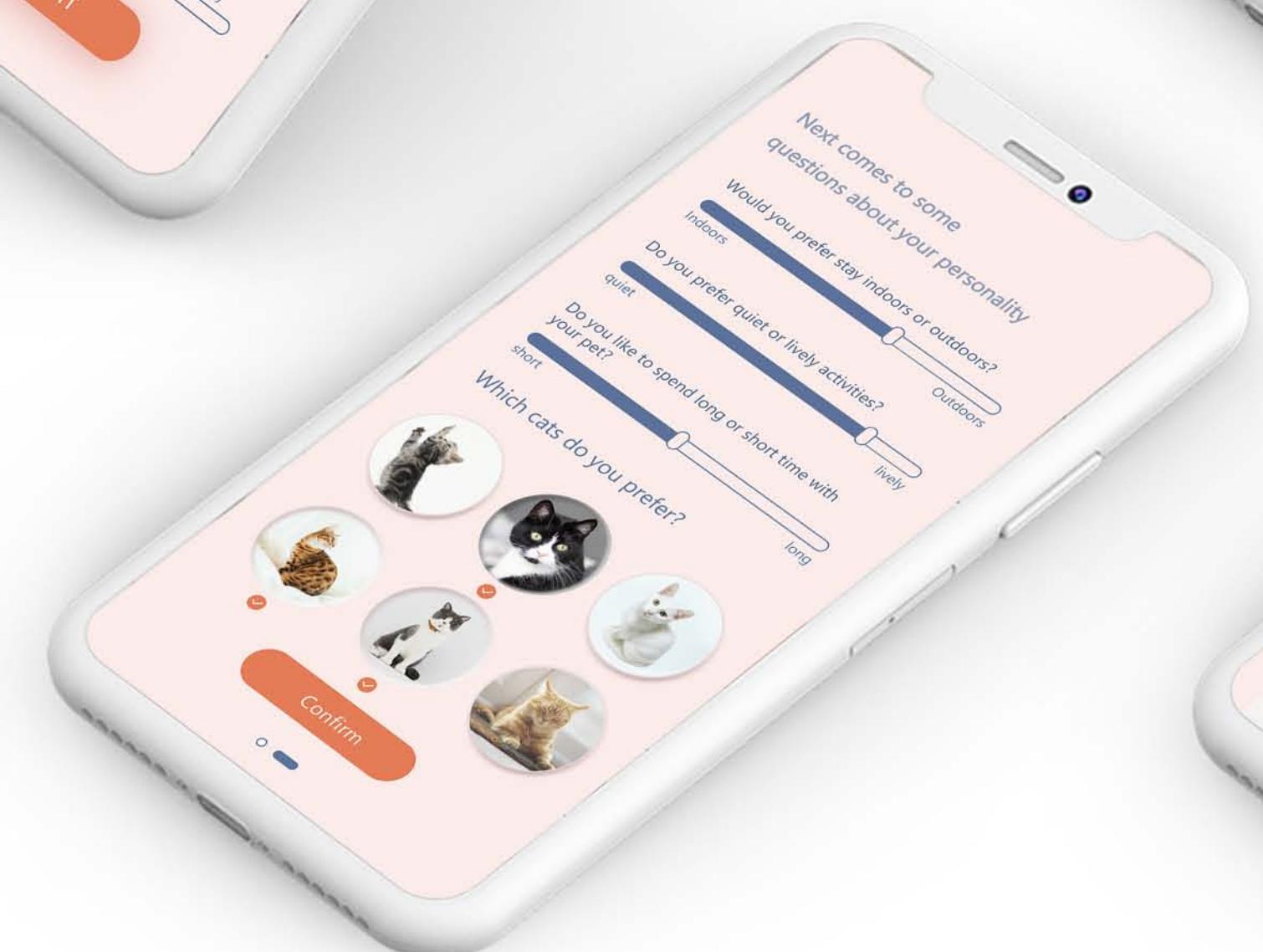


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Icons



FUTU-LIBRARY

2020

Personal project

Spatial interaction design

Design for public library in future

Libraries are leading promoters and providers of free access to all types of information to all citizens. There are always some unsatisfactory parts of public libraries in current cities, which cause a certain degree of trouble to the user experience process.

Based on the existing problems of modern city libraries and the emerging technologies of science and technology, I imagined the library of the future, redesigned the experience process of the library and re-divided the functional areas of the library.



Background

A library is an organization, or part of an organization, and the main aim of which is to facilitate the use of such information resources, services and facilities to meet the informational, research, educational, cultural or recreational needs of its users.



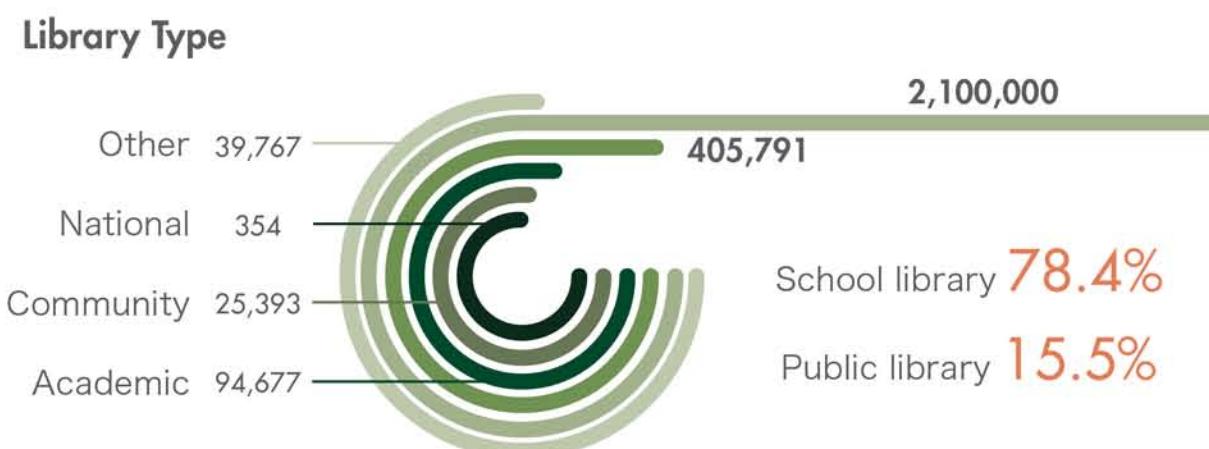
Library covered most of land around the world in 2019

Libraries	Libraries with Internet Access	Physical Loans	Electronic Loans
2,6M	381,021	9,342.2M	13,083.4M
Full-time Staff 1,6M	Volunteers 846,003	1,115.9M	6,298.0M

There are totally **2,6 million libraries** in the world

a quarter of people have registered in a library

82.9% people visited a library



National library

- country repository of information
- rarely allow citizens to borrow
- include valuable works

Academic library

- higher education institution and general research libraries
- cover the information needs of learning and research

Public library

- Open to the public
- Generally supported by taxes
- Provide basic services without charge

Community library

- provides library services to local or regional community
- funded by community groups, charities, NGOs and others

School library

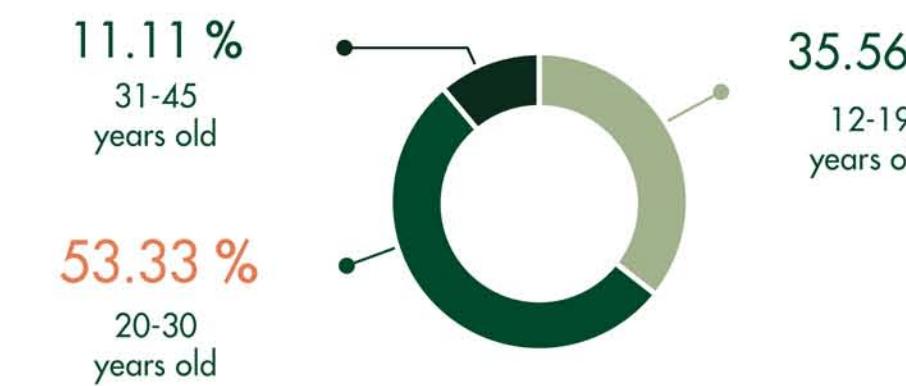
- Serve the pupils and teachers of school
- Support, extend, and individualize the school's curriculum
- Often contain media center

Other

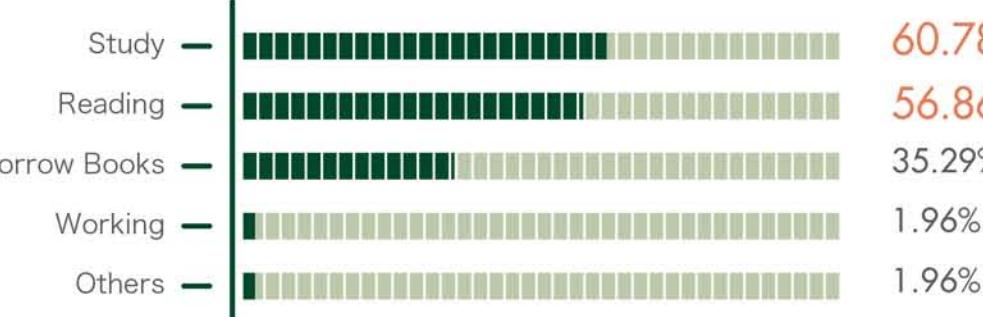
- all other libraries (national, academic, public, community and school libraries)

Questionnaire Survey

I went to the biggest library in our city and asked some people who visited the library to fill in the questionnaire. Here is the outcome of the questionnaire survey.

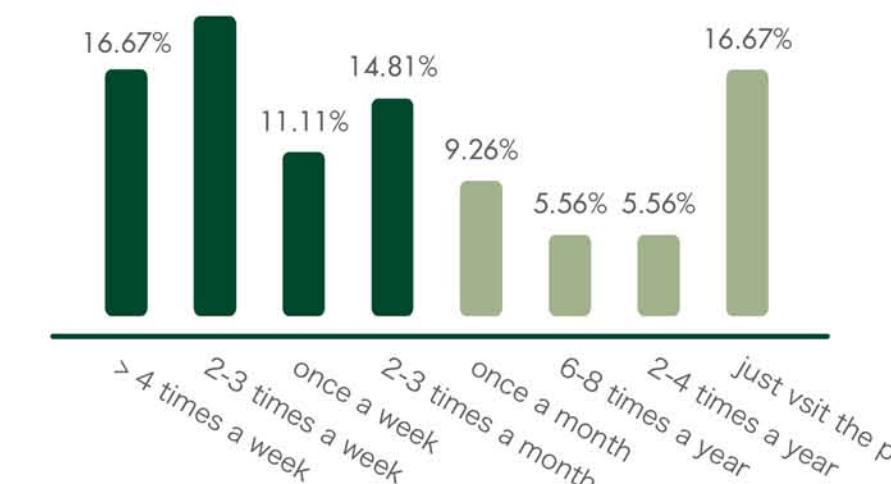


Age distribution of visitor



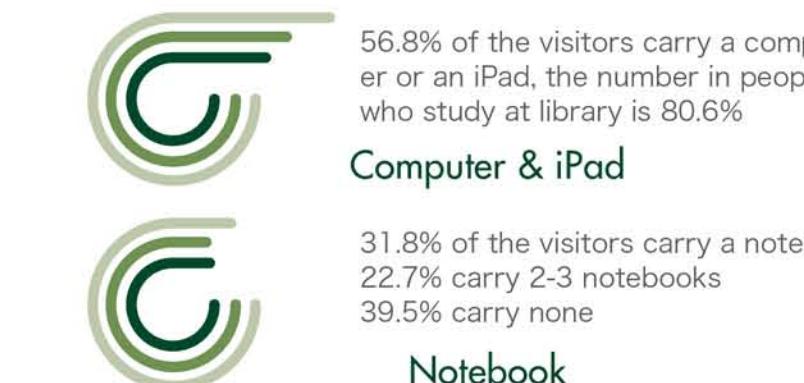
59% visiter read or borrow books while study at library

Purpose of visitors come to the library



63% people visited the library more than twice a month.

The frequency of visitors come to the library



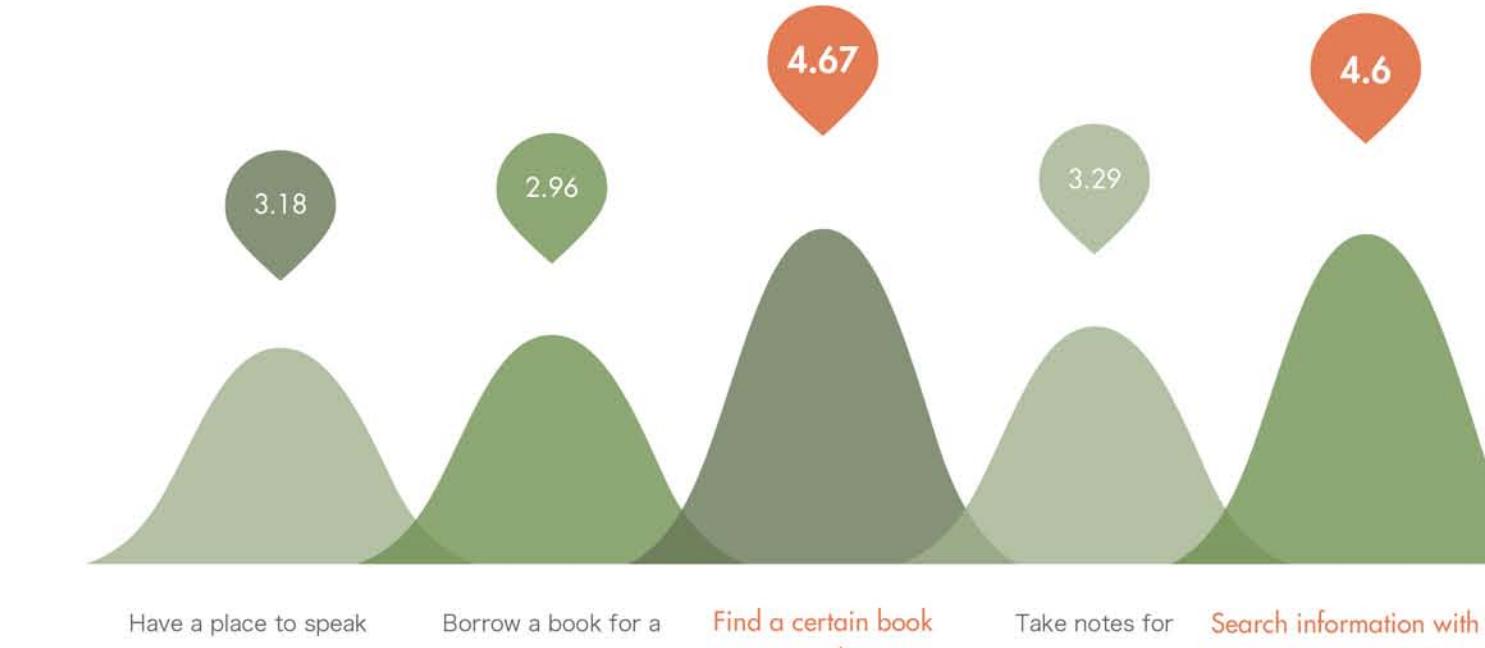
Visitors who study at library may take lots of things to library

80.6% of them take computer or iPad

74% take more than 2 piece of paper material

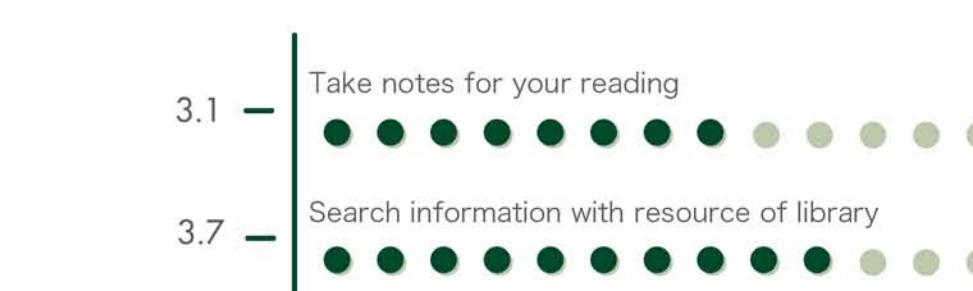
87% take notebooks

Carry-on things that visitors take



People thought these functions are necessary

Necessary of some function in library



People thought the two functions are convenience

Convenience of some behaviors

60.42%

I just want to stay myself and read.

14.58%

I want to share my feeling on the internet.



AEIOU Analysis

-- Studying

Activities

- Line up
- Scan QR code
- Swipe a card of reader
- Complete the security check

1



Painpoint

- Visitor need to spend lots of time to wait checking and enter the library.
- Staff can hardly check visitor's information while keep the order.
- Few effective action can stop illegal behavior.

Enter library

Environment

- Outside the library. Lots of people are standing in line and waiting. Few equipment used to keep order.

Interaction

- Enter the library according the time of arriving.
- Show safety to staff.
- Reserve a place before enter.

Object

- Paperboard of QR code
- Security inspection machine
- Identification system

Activities

- Take out carrying
- Charge for computer
- Study by oneself
- Find the answer for some question

3



Painpoint

- People with different needs are not separated and functional area are mixed.
- Few people use the books in the library to study but always takes lots of books themselves.

Study

Environment

- Quiet and big but some place don't have light and electricity and the temperature is low.

Interaction

- Use computer or iPad to play some video about knowledge to study.
- Find answer through web site or discuss with friends.

Object

- Take out books to take notes.
- Finish homework on paper.
- Table
- Books
- Light
- Stocks
- Computer & iPad

Activities

- Choose a floor
- Find available seat
- Put down bag

2



Painpoint

- Visitor who arrived not early could not get a seat with table.
- Function area were mixed together. Seats with stocks or not are mix together and are hard to find out at once.
- There is no way to know available seats when someone just entered.

4

Have lunch

Activities

- Pick up things
- Buy a meal
- Eat it outside
- Back in 40 minites



Object

- Steps outside the library
- Convience store
- Mobile phone

Environment

- There is no chair in both convenience store and outside the library and lots of people and cars are passing by.

Environment

- The library is quiet and big and sets lots of books and seats but without indicator for seats.

Interaction

- Find a suitable place to study in such a big place. Maybe need light and electricity.

Object

- Four floors
- Lots of seats
- Light
- Electricity

Painpoint

- It is not safety to leave computer and other things in library.
- Visiter couldn't find a clean and comfortable to have a lunch in 40 minites (reader couldn't leave over 40 minites or they couldn't be back).

AEIOU Analysis

— Reading

Activities

1

Enter library



Environment

- Outside the library.
- Some people are confused and is a little disorder.

Interaction

- Register for a library card.
- Show safety to staff.
- Reserve a place before enter.

Object

- Paperboard of QR code
- Security inspection machine
- Identity card
- Electronic thermometers

Activities

2

Search books



Activities

- Find computer
- typing
- Browse information
- Take photo

Painpoint

- Some books were not collected in the library.
- The information of books were messed (could not see the cover of some books and the location of books are fuzzy.)

Environment

- Some computer is in the inquire table. The system were old and few people used them.

Interaction

- Search books through the system of library.

Object

- Computer
- Keyboard
- Mouse
- Mobilephone

Activities

3

Find books



Environment

- There are many floor and lots of shelf and have codes in each shelf.
- The shelf are very high and cotain many books.

Object

- Computer
- Books
- Mobile phone

Interaction

- Find the area the book may stay and try to find it.
- Try to find more information from the photos.

- Get help from the staff to find the book.
- Find useful information on computer and get books.

Painpoint

- It is difficult to find the exact information that the user needs.**
- Some information could not be view from the system and cannot help user know some detail of books.**
- The shelf are too high to get books for some people.
- Some big books are lay on the shelf and the name were hidden which make user hard to find them.

4

Read books



Activities

- Find sofa and sit
- Put down bag
- Look through the book

Environment

- Hard to find seat because there are too many people.
- Somebody sleep in the table.
- Sunlight are strong in some place.

Object

- Books
- Sofa
- Umbilla

Painpoint

- Most of books are old.
- Few seats are available.
- Some pages are missing and even were cut by someone.

5

Borrow books



Activities

- Find the machine
- Place the books
- Recognize the ID card
- Enter the password
- Put away thethings

Environment

- The machines are scattered around the library and are easy to find. The instruction is clear too.

Object

- The machine
- ID card / Library card
- Mobile phone

Pain point

- The machine could only recognize actual card but not QR code which make users troublesome.
- There is no place for people put away things.

Interview

After collecting questionnaire and analysis, I choose few people and interviewed with them to collect more painpoint.

Staff of Library
28



Q: How do I find the book I want ?
A: You can find address on the computer about the floor, bookcase and the number of the shelf.

Q: How do I get a seat ?
A: The current reservation system does not have this function. People who have a seat come to **wait about 8:30 to 9 o'clock in the morning before the library open on 9:30.**

College Student
22



Q: Is it difficult to carry lots of paper materials to study ? Have you considered electronic materials ?
A: I am studying medicine. **E-books are not so popular yet, and taking notes is not easy.** The weight is still acceptable if take two or three books to study at a time.

Q: How do you solve difficult problem ?
A: Medical profession has its own search network cable, **but some problem need to pay to get answer.**

High School Student
17



Q: Do you meet difficulties in the library?
A: There is often **no obvious division in the same category of books.** As a result, it takes more time to select a book. At the same time, **misclassification occurs**, which I think may be related to librarians' unfamiliarity with books or subject types.

Visitor
57

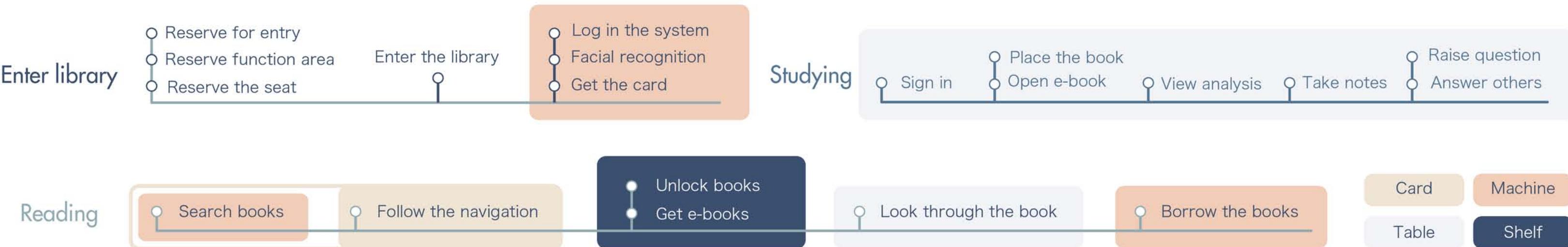


Q: How do you borrow books ?
A: I don't borrow books in this library because there is a **book lending machine** nearby my home. I just need to submit an application of the book I want and it will be send to the machine in a few days.

What should the library of the future look like?

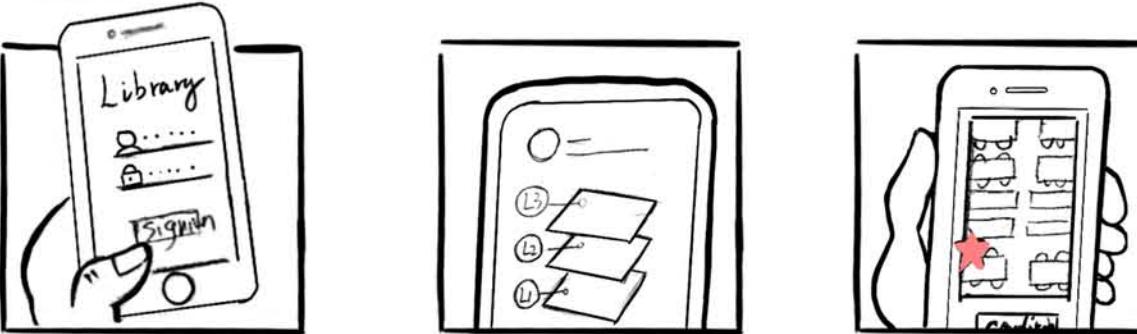
Journey map

According to my survey, I redesign the process of people using the library.



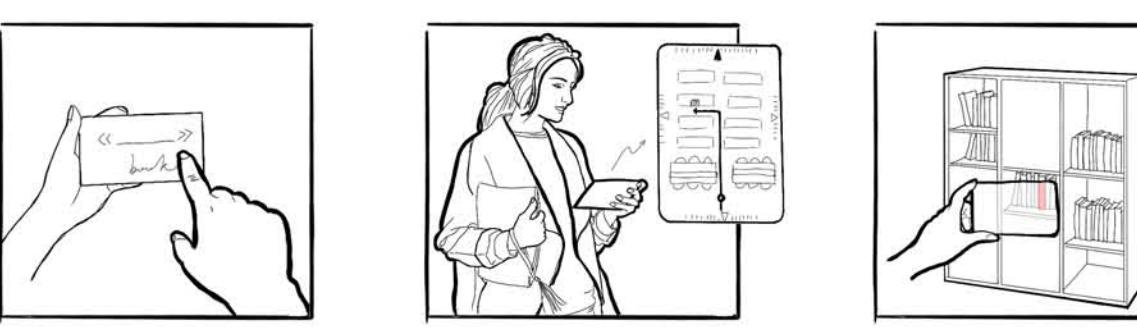
Concept Ideas

1. APP



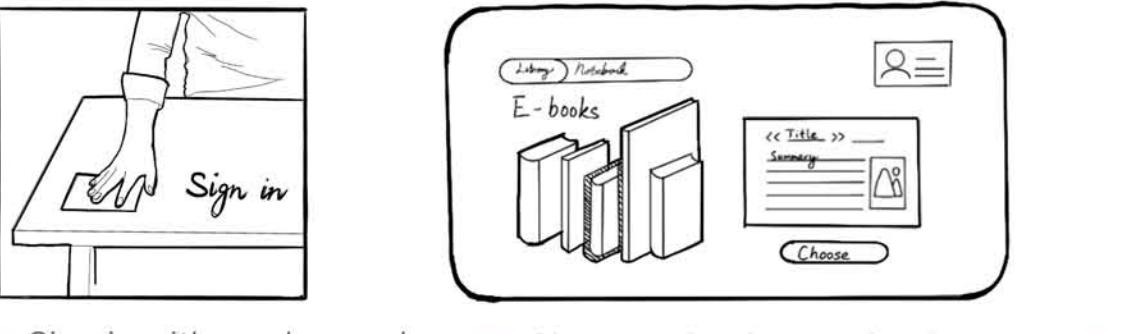
- User need to reserve function area and seat they want .

3.Reader card



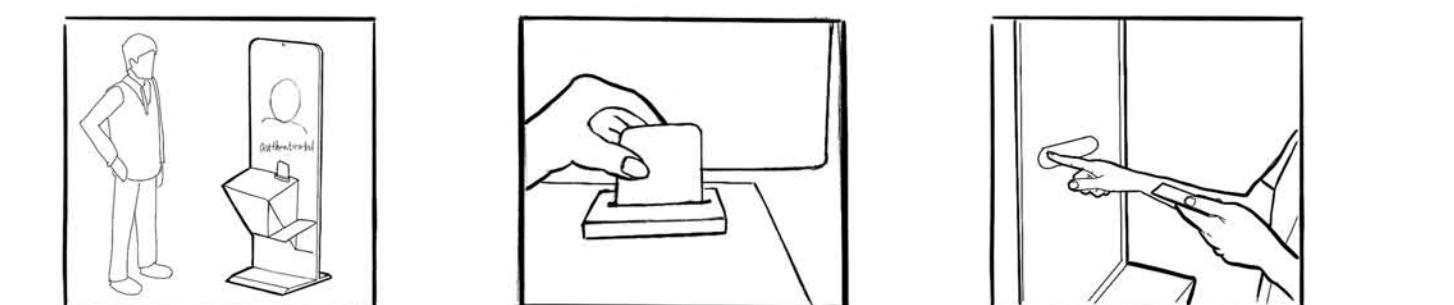
- Search books
- Route navigation
- Locate books on the shelf.

5. Smart table



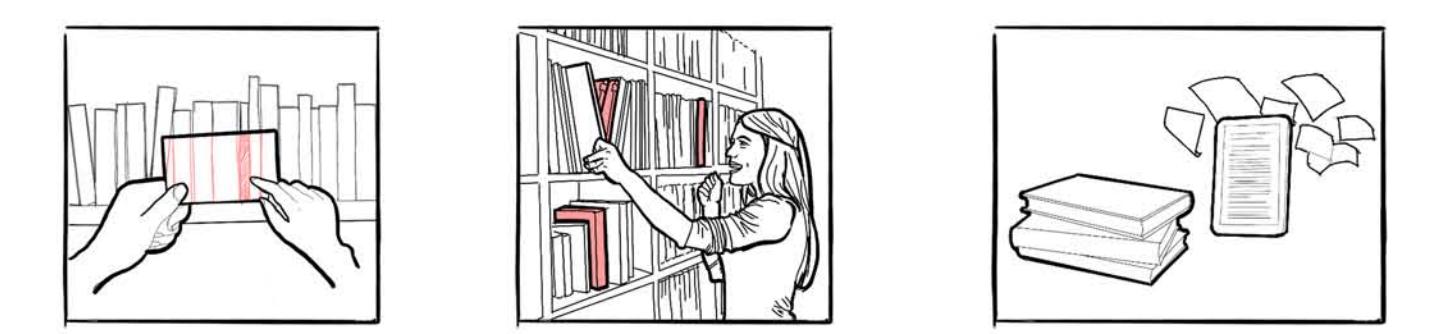
- Sign in with reader card
- Choose a books or e-book.
- Show analysis (picture/video/3D model)
- Show 3D model

2. Self-service Machine



- Facial identification
- Active reader card

4. Book shelf



- Unlock books
- Show related books
- Get e-books or real books

Outcoming

APP

The APP of the library contains the functions of **reservation**, **community** and **personal information**. After logging in, users can make an appointment according to their needs. In the community function, people can discuss what they think of the book with other readers, discuss questions, earn points for answering questions, and later redeem seats and discussion areas.

Log in

After log into reader accounts, users can perform a variety of functions, including reservation of functional areas and seat selection.

Choose seat

After reserving the study area, users can select specific seats. A small number of seats are exchanged for credits, and a small map in the upper right corner shows where you are in the function area.



Reserve function area

In the library map, you can see the functional areas of each floor and their description. Users need to reserve the functional areas at a fixed time every day.



Self-service Machine

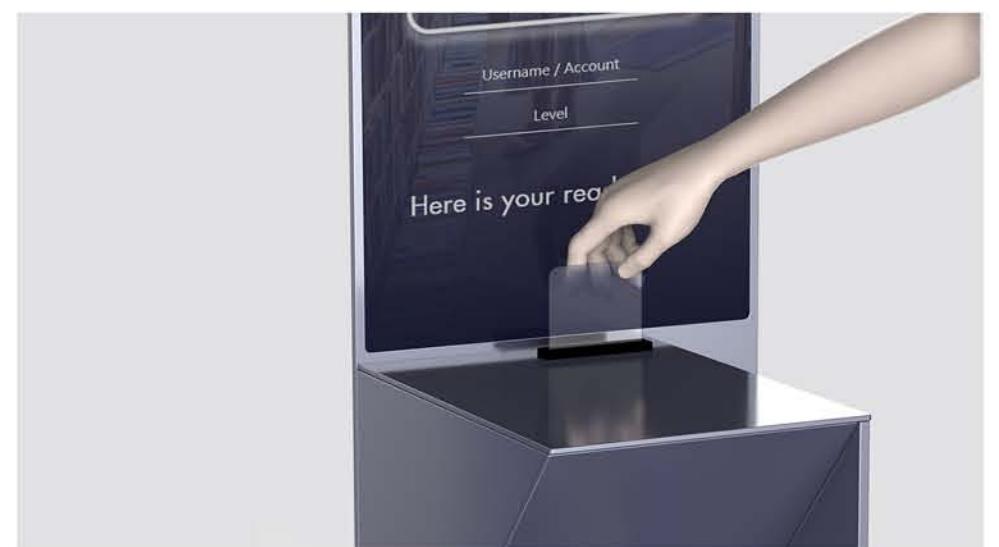
This is a self-service machine that integrates several functions, including book retrieval, book borrowing and returning, personal data retrieval, and history.



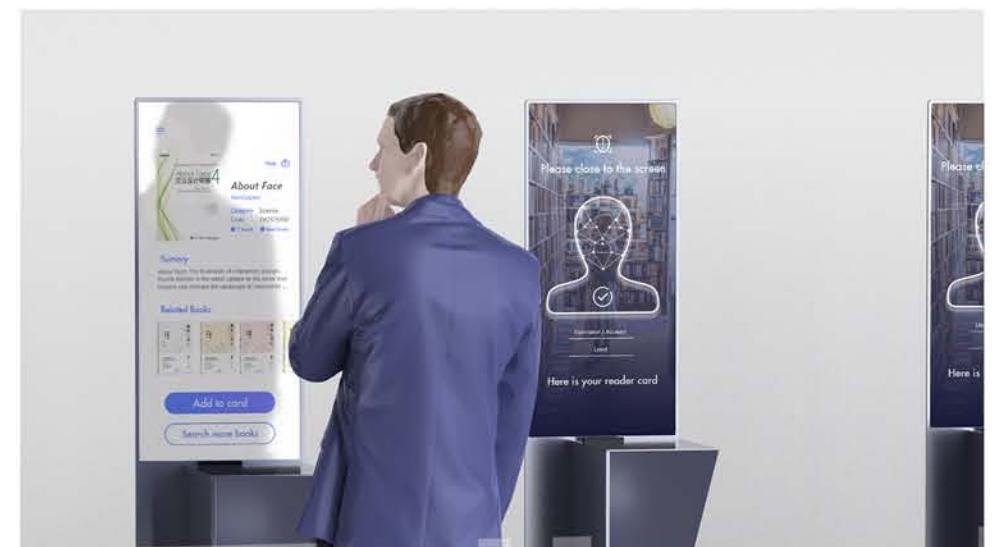
Usage Scenarios



Self-service machines are distributed on every floor, and people can easily find them.



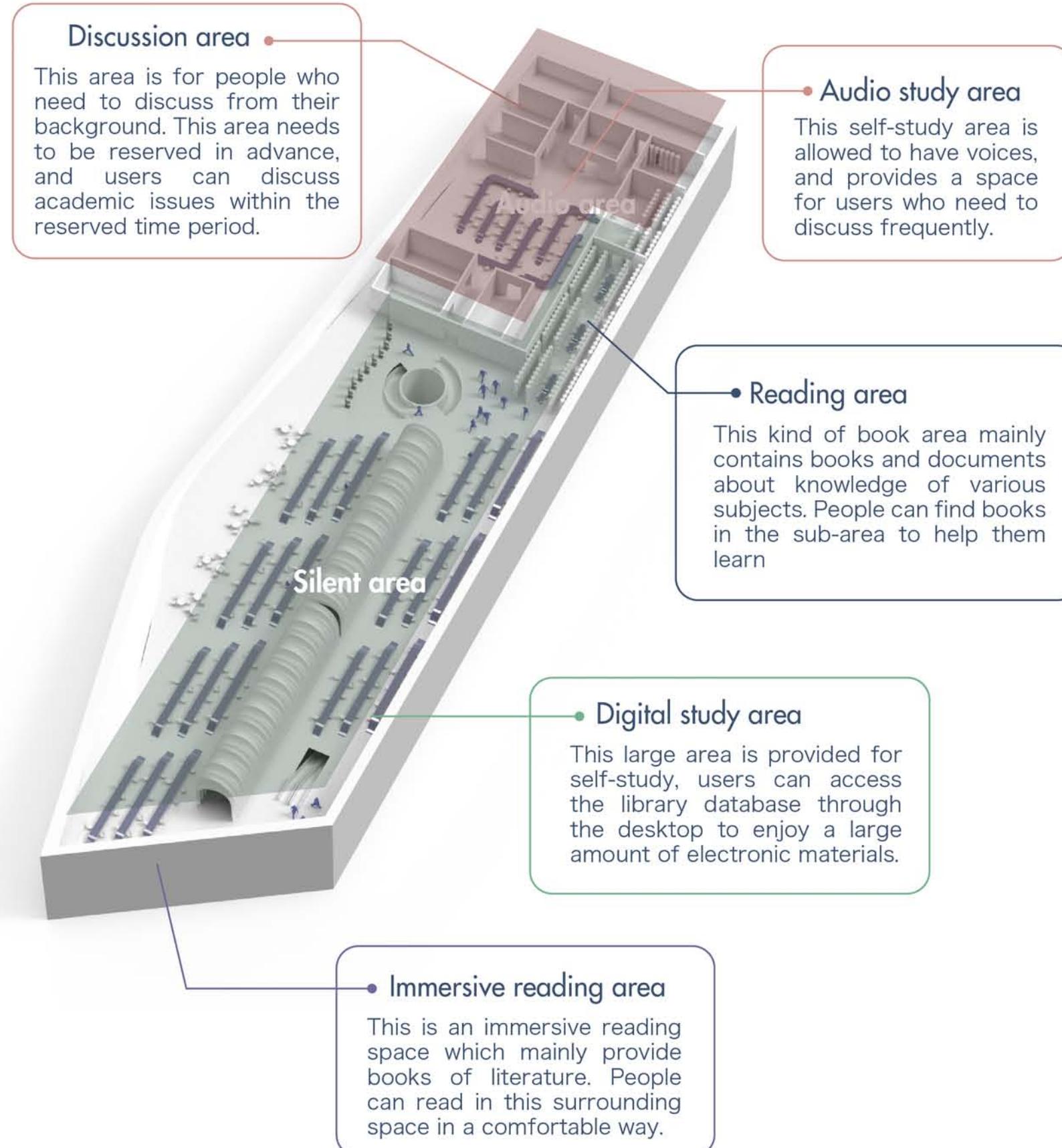
Through the face recognition of the self-service machine, the user can get his reader card and use it to log in from a reserved seat or find books through his navigation system.



In the query book function, the self-help opportunity shows the classification of books, whether there are e-books or physical books, the location map in the library, and related book recommendations.

Function Area

In order to meet the needs of different people and improve their experience in the library. I re-divided the functional areas of the library and enhanced the digital experience of readers.



The third floor of the library is roughly divided into a sound area and a silent area, which is convenient for users with different usage habits.

Digital study area

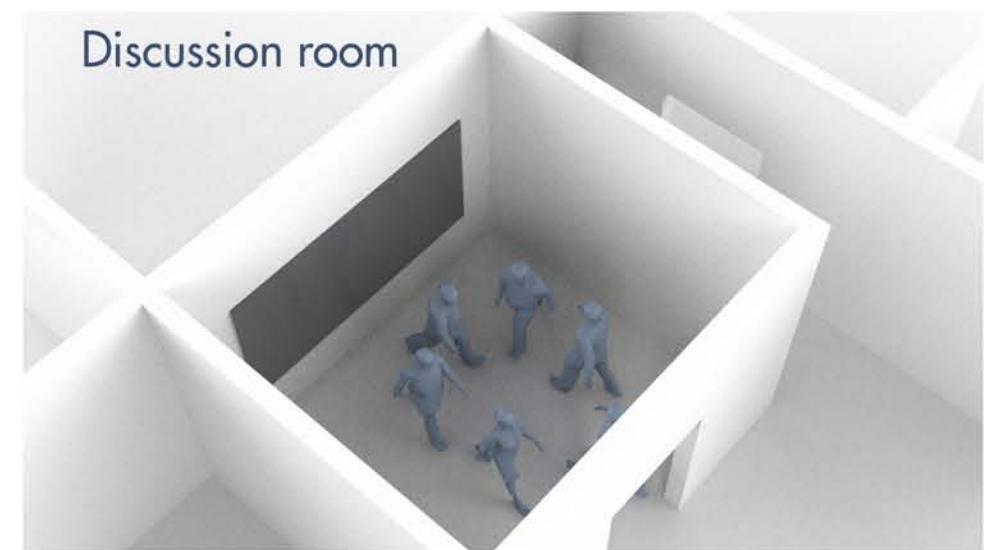
This area is designed for learners. Users can use this digital learning table to consult. Through the reader card, the user can sign in on the record and store all kinds of related materials of books or e-books, upload them to their reserved seat, log into the reader account and personal storage space which is allowed to view at anytime and anywhere.



When places a physical book or reader's card on the table, it will automatically recognize the book's contents and **provide relevant information** to the user in the form of pictures, articles, videos and even 3D models.



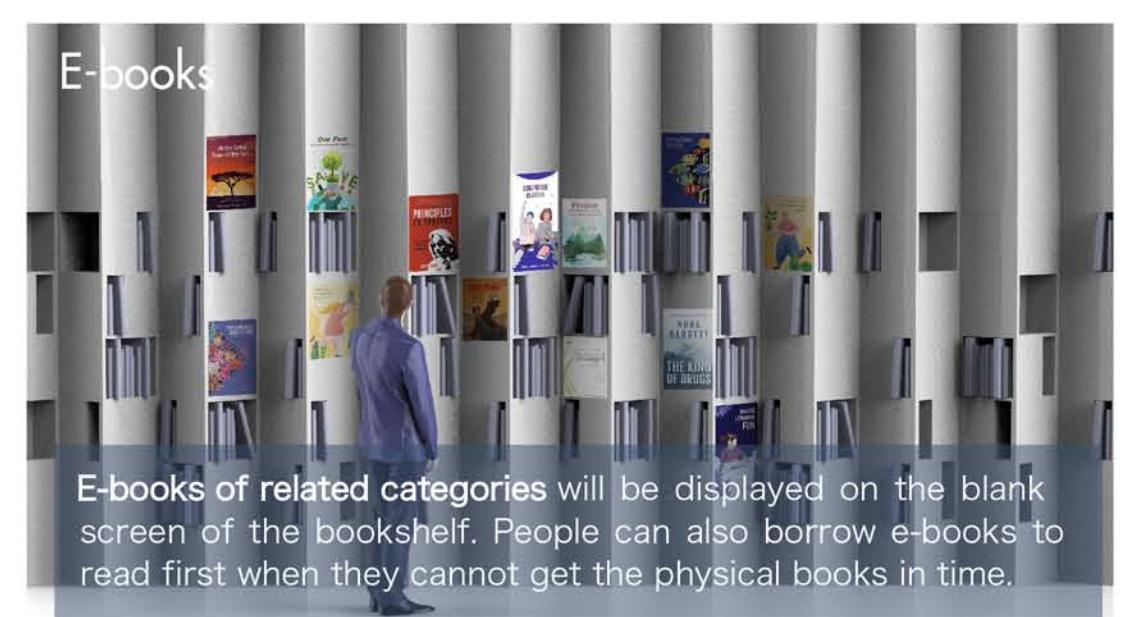
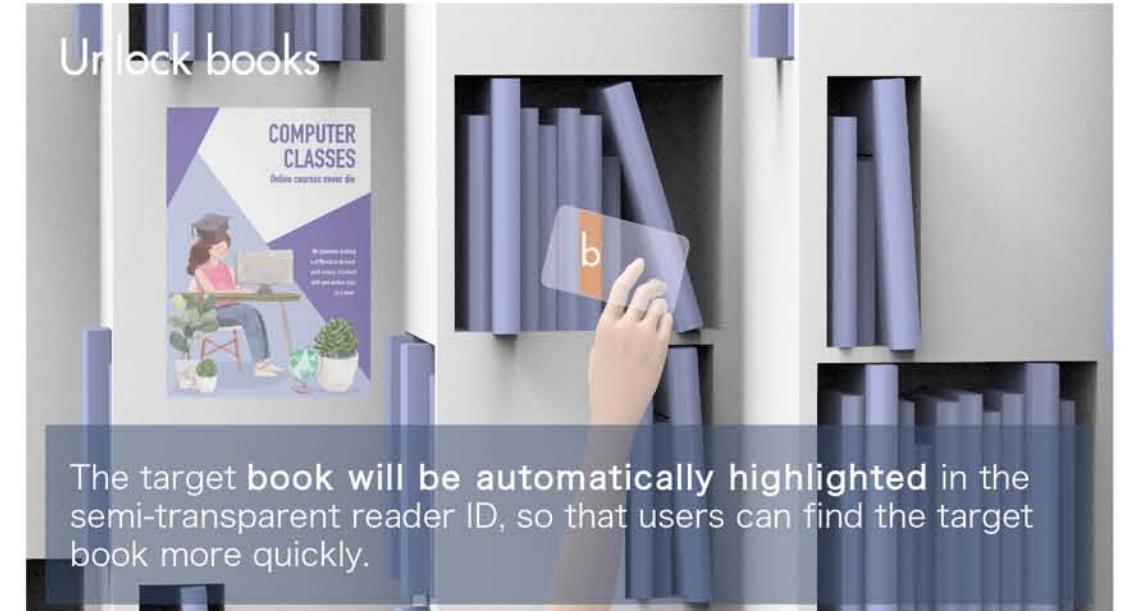
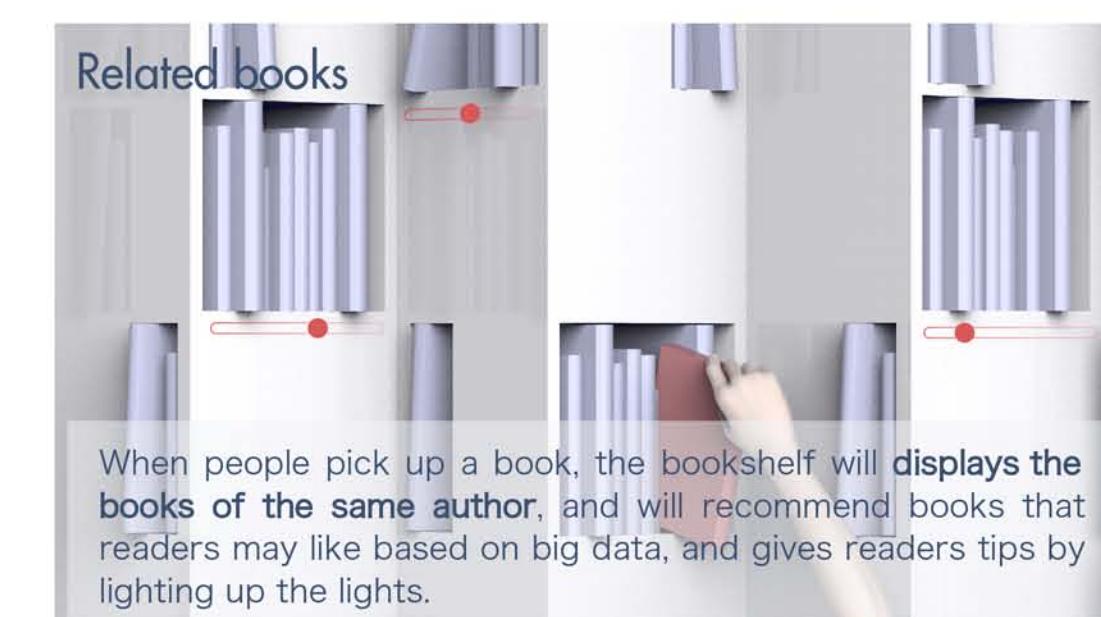
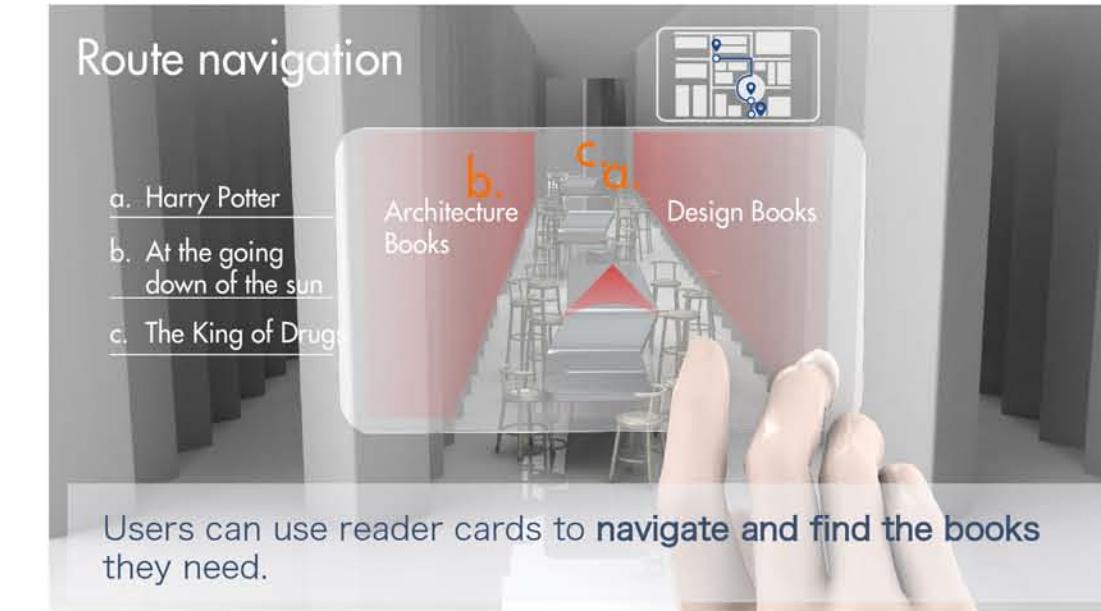
The table can **project a three-dimensional model of complex concepts or shapes**, allowing the user to view objects dynamically in order to better learn such knowledge.



People can use a touch screen in the discussion room to study and research. the room will need score to researve.

Immersive reading area

This is an immersive reading space which mainly provide books of literature. People can read in this surrounding space in a comfortable way.



Phantom Face²⁰²⁰

Personal project

Interactive installation — Smart wearable device

Design for privacy

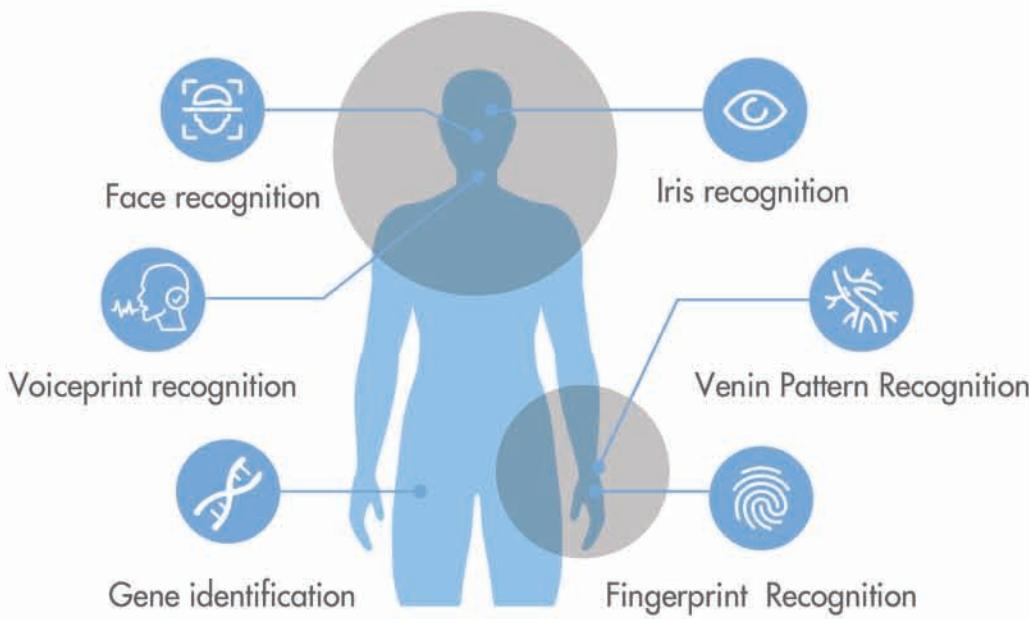
In this age of no privacy, electronic devices around us are stealing our privacy all the time. Biological information, which is used for human identification, faces the same problem. The huge risk of leakage of them, turning us into data people.

I designed this smart wearable mask "Phantom Face" that detects cameras in the environment and emits light to interfere with impermissible facial information acquisition.

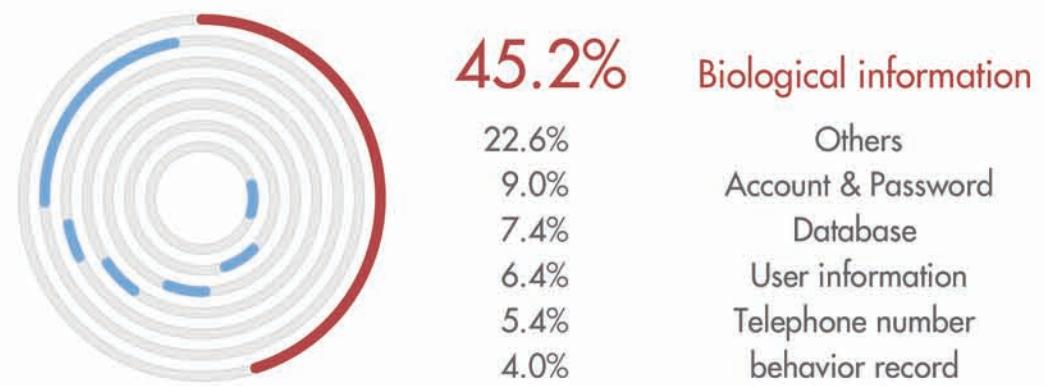


Background

Biometric identifiers are the distinctive, measurable characteristics used to label and describe individuals. Physiological characteristics are related to the shape of the body. Examples include, but are not limited to fingerprint, palm veins, face, DNA, palmprint, hand geometry, iris, retina and odour/scent.

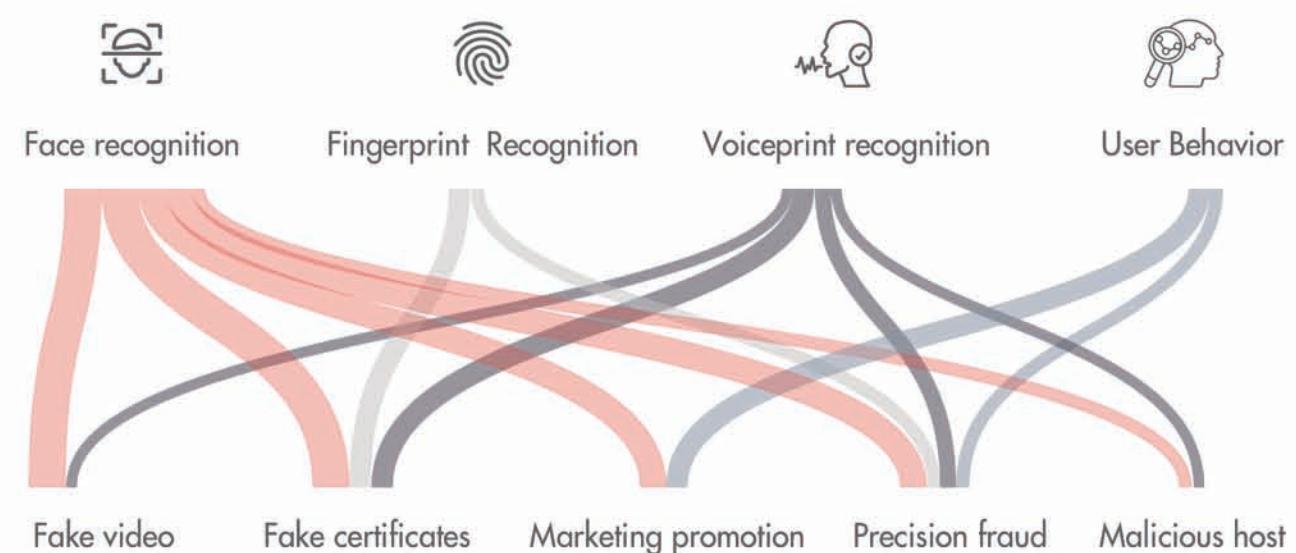


Trade in deep web



Biological information is the most trafficked type of information on the dark web, which account for 45.2%. This information is usually used for marketing promotion and precision fraud.

Biological information leakage

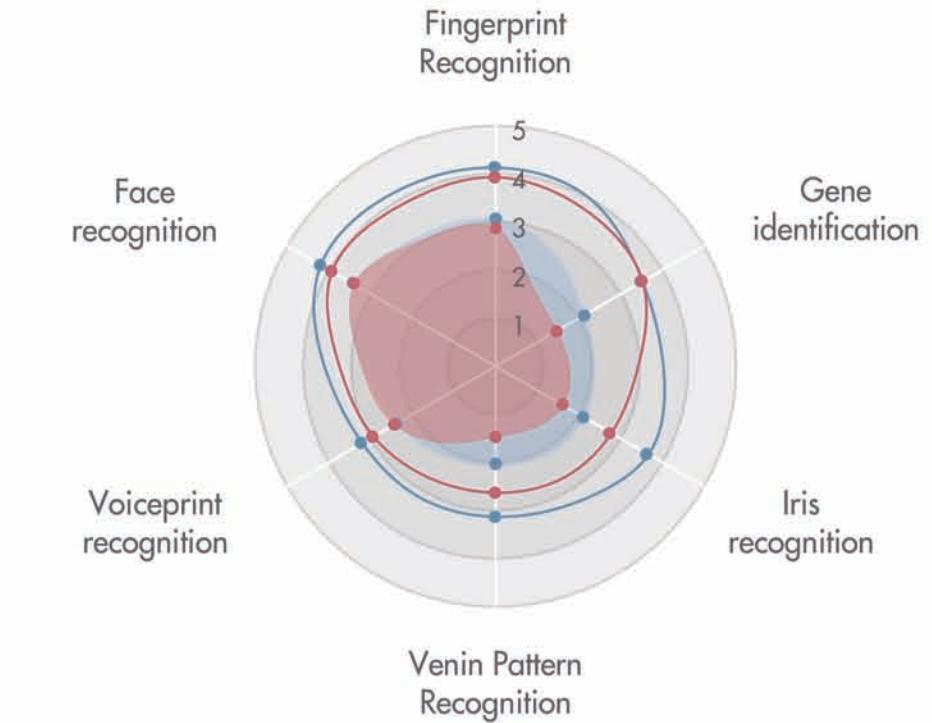


In biological information, the disclosure of facial and voice information can lead to a large number of serious consequences.

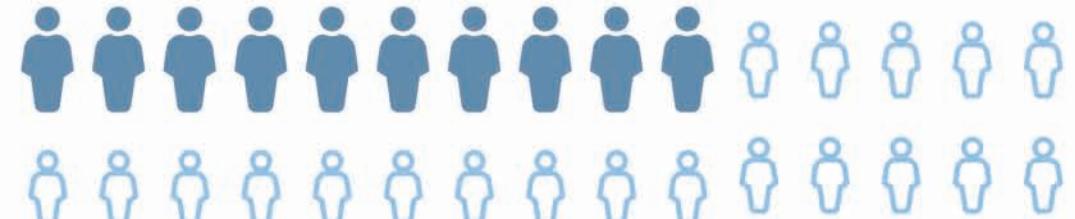
Questionnaire

I designed a questionnaire to investigate people's awareness of biological information leaks and their perceptions of the consequences of leakage.

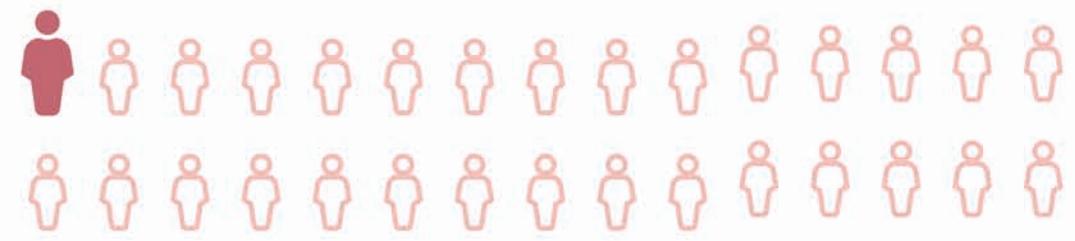
- People's opinion on the leakage of Biological information in different age.
- Recognition on specific places where biological information is leaked.



- Compared to young people, middle-aged people are more likely to underestimate the risk of biological information leakage.



30% of mid-aged people say they do not know.



3.7% of young people say they do not know.

- Middle-aged people seldom understand how biological information leakage happened.

Diary Research

In order to learn about the exposure to biological information in people's daily lives, I invited 5 users with different living habits to conduct a diary study on them.

- Face recognition
- Fingerprint Recognition
- Behavior identification
- Voiceprint recognition



From the activities of the five users, I found that there is a large risk of biometric information leakage in public places, especially the theft of facial information by various cameras.

Persona

According to different personalities and lifestyle, I summarized two groups of people. The first have high levels of bioinformatics exposure, while the second group had low levels.



Bella

“I think the use of biometrics in society is very convenient and safe.”

Age 35
Job Designer
Hobbies Computer games, fitness, travelling, visit exhibition

Goals
I hope to enjoy a convenient life in contemporary era.
Frustration
Do not know where is dangerous to use biometric identifiers.

User Story
I like going out to see exhibitions on weekends, and I like going out to do sports after work. I enjoy the convenience brought by modern technology to my life, and privacy disclosure does not bother me.



Godfrey

“My daily life is very simple and I believed privicy is important.”

Age 21
Job Student
Hobbies Studying, working, staying at home

Goals
I hope to protect my privacy in the society.
Frustration
Many apps have mandatory privacy policies, but I can't use them if I don't agree.

User Story
My daily life is very simple, often use the traffic tools to go to the library, the privacy is very important to me, because I am afraid that the economic loss, so I've never used a human face.

User journey map

In order to study places, behaviors and devices related to biological information leakage from more aspects, I chose people with high exposure to study, classify and analyze their user behaviors.

Stage

01 Do sports

Actions

- Playing basketball in the outdoor basketball court in the community.
- Buy drinks at the vending machine in the community.
- Check data on Apple Watch.

Equipment

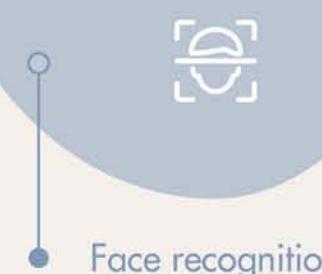
- Surveillance cameras
- Apple Watch
- Vending machines

Exposed Point

Know



Unknown



Problem

Cameras distribute almost everywhere, which puts people at great risk for facial information exposure.

Sometimes, people don't realize that their privacy is read by some device.

02 Commuting

- Use the Autonavi map for navigation.
- Take a taxi which is booked on iphone.
- Take subway.

- Mobile phone
- Recording equipment

03 Having lunch

- Take elevator on the shopping mall.
- Pay the meal with Wechat.
- Use in-game voice chat while waiting for lunch.
- Take photos of the food with Meitu.

- Surveillance cameras
- Mobile phone
- Recording equipment



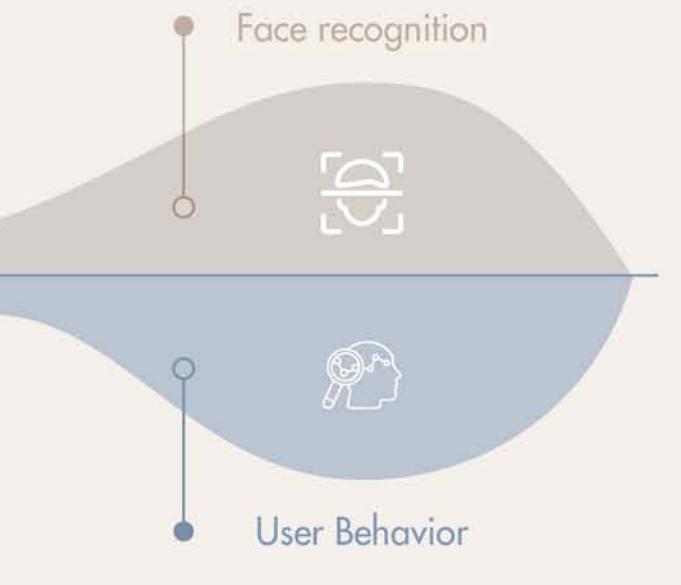
Warning people that privacy disclosure will lead to serious consequences.

Alert users when privacy disclosure occur, and prevent it happen.

04 Visit the exhibition

- Register your real name at the entrance of exhibition.
- Complete the security check and check temperature.
- Visit and experience the exhibits.

- Security inspection machine
- Thermodetector
- Surveillance cameras
- Mobile phone



Analysis

After the research, I choose three biological information which exposed most frequently to analysis their characteristics.



Among these, face information will leads most serious consequence but people could hardly prevent their be recognized.

Mood Board

Compared with the leakage of all biological information, the leakage of facial privacy is more extensive. The frequency of forced leakage is also higher, so I set out to design from this aspect.



I can adding some decorations to people's faces to prevent the face recognition function of cameras or other related devices but not affecting other people nearby.

Ideation

To prevent facial information from leaking out, I've borrowed some facial decorations from the design. They can get in the way of the camera, but don't interfere with ordinary people's recognition. The device recognizes the camera by detecting WiFi, and when it encounters a camera that's filming, the transparent component emits a changing flash to interfere with facial recognition.

State



Condition



When there's no camera, it's transparent.
Because of the incomplete facial features in the captured portrait, the user cannot be recognized.
When a camera is filming, it changes color to infect facial recognition.

Element



Arduino Uno

This is a development board that can be edited and connected to various electronic components and other circuits.



WiFi module—ESP8266

The ESP8266 can be used as input of the development board that detects WiFi in the camera.



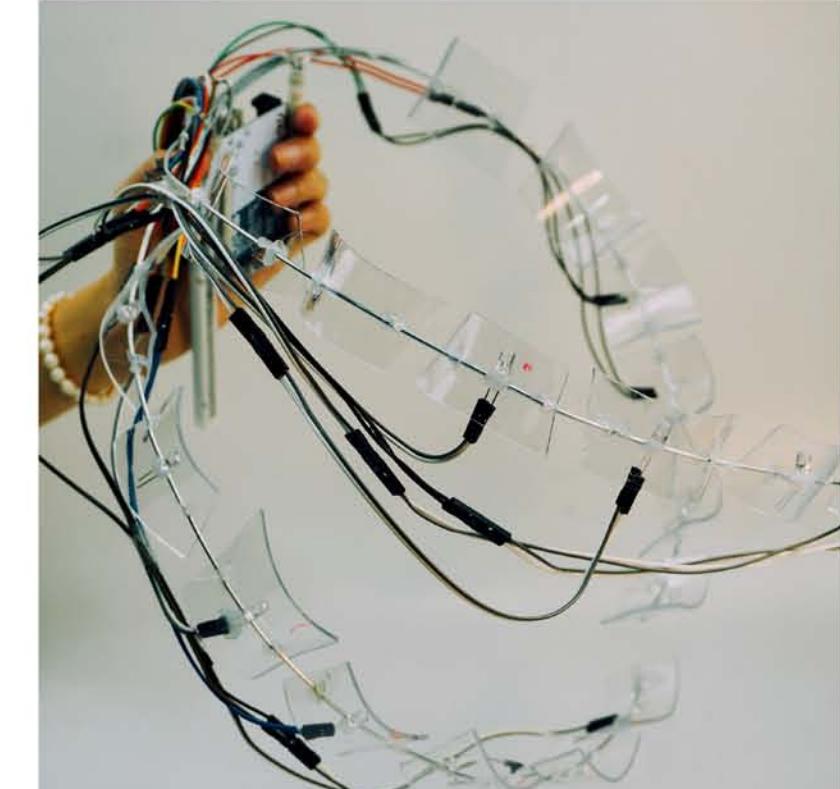
LED light

LED lights can change color depending on the number of cameras in the environment.



PVC

PVC is very transparent and has good light conductivity.



Coading

I used the ESP8266 to identify the amount of WiFi in the environment and then analyzed it to confirm that it was a camera. Upon detecting the camera it triggers the bulb to glow, the more ambient cameras there are, the brighter the light changes.

```
#define AP_SSID "jia"
#define AP_PSW "lm654321"

void setup() {
    WiFi.mode(WIFI_STA);
    WiFi.disconnect(); //断开网络
    Serial.begin(115200);
    delay(2000);
    WiFi.begin(AP_SSID, AP_PSW);
    Serial.print(String("连接到: ") + AP_SSID);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("连接成功");
    WiFi.scanNetworks(true); //异步扫描
    delay(3000); //扫描需要一段时间，所以等待一会儿
    int n = WiFi.scanComplete(); //返回异步扫描找到的个数
    if (n >= 0) {
        Serial.printf("%d个网络找到\n", n);
        for (int i = 0; i < n; i++) {
            #include <ESP8266WiFi.h>
            #define AP_SSID "PSONE(5G)"
            #define AP_PSW "20180417888"

void setup() {
    WiFi.mode(WIFI_STA);
    WiFi.disconnect(); //断开网络
    Serial.begin(115200);
    delay(2000);
    WiFi.begin(AP_SSID, AP_PSW);
    Serial.print(String("连接到: ") + AP_SSID);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("连接成功");
    WiFi.scanNetworksAsync(prinScanResult); //异步扫描周期
    //参数 回调函数

void setup() { // 程序初始化
    for (i = 2; i < 12; i++)
    {
        pinMode(i, OUTPUT); //设定2到7号脚为输出模式
    }
}
void loop() { // 循环执行
    for (i = 2; i < 8; i++) //逐渐点亮
    {
        digitalWrite(i, HIGH);
        delay(50);
    }
}
```

Production Process

I built the prototype by hand using Arduino, LED lights, wire and PVC.



I made the approximate shape of the mask based on the size of the person's head and the position of the facial features. I then designed and tested the glitter using Arduino and Sevens lights, before attaching them to the mask.

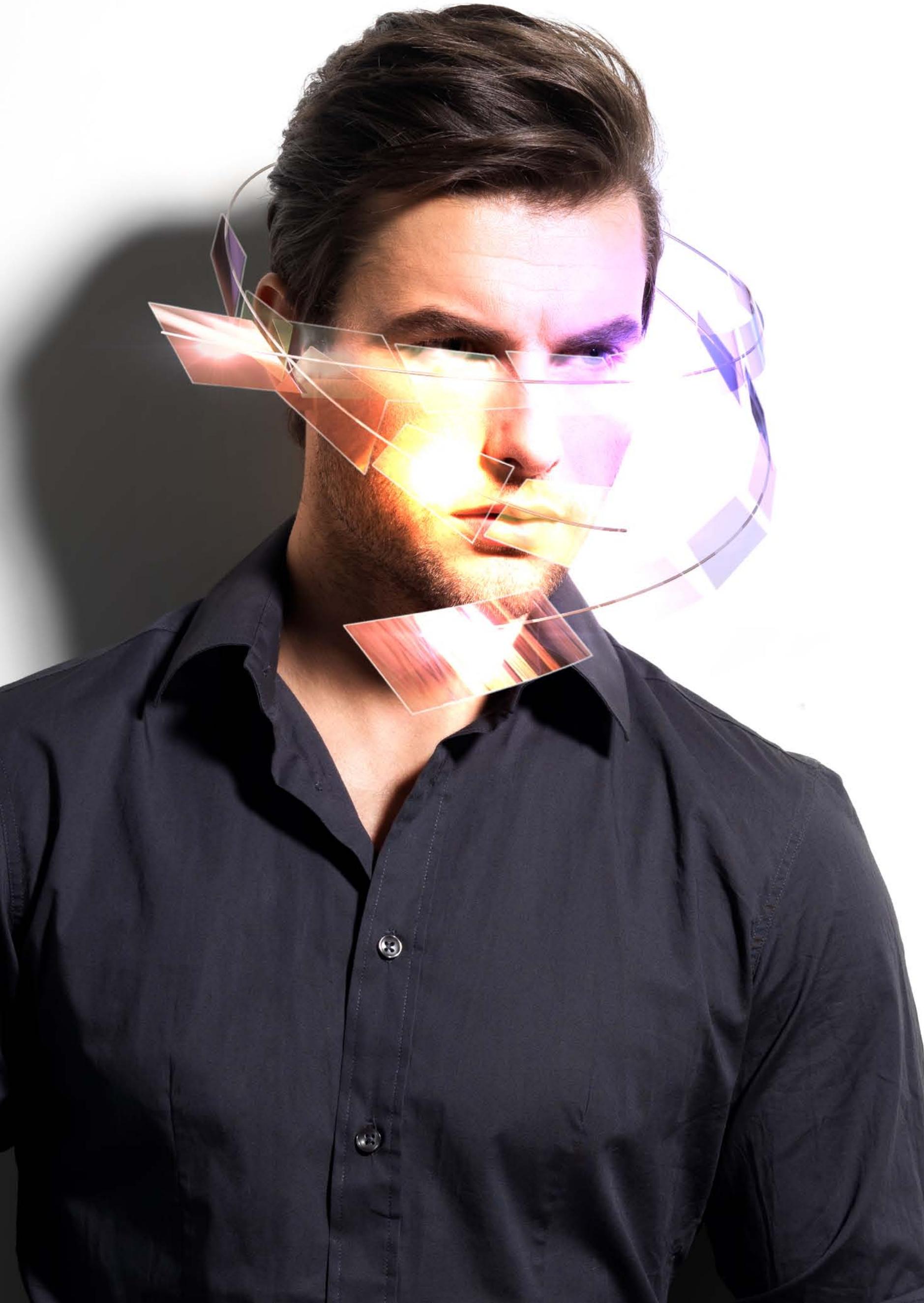
Affordance Test

I asked users about their initial opinion of the product and whether they knew how to wear it.



Outcome

Most users think it should be wearable, but don't know exactly how to wear it, and some feel it should be worn on the head while others feel it should be worn around the neck.



Testing Process

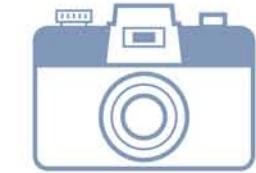
I designed a user testing process to understand the usability of the product.



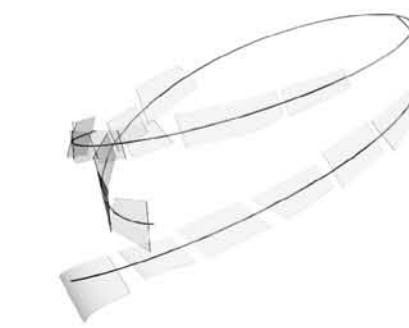
Wear the mask



Enter a room
with camera



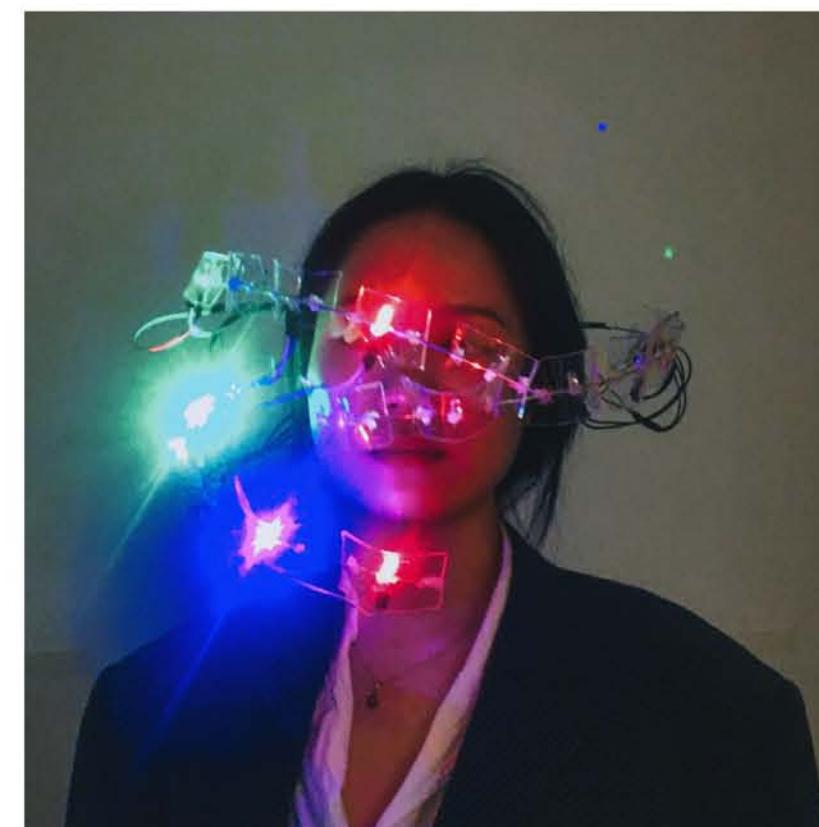
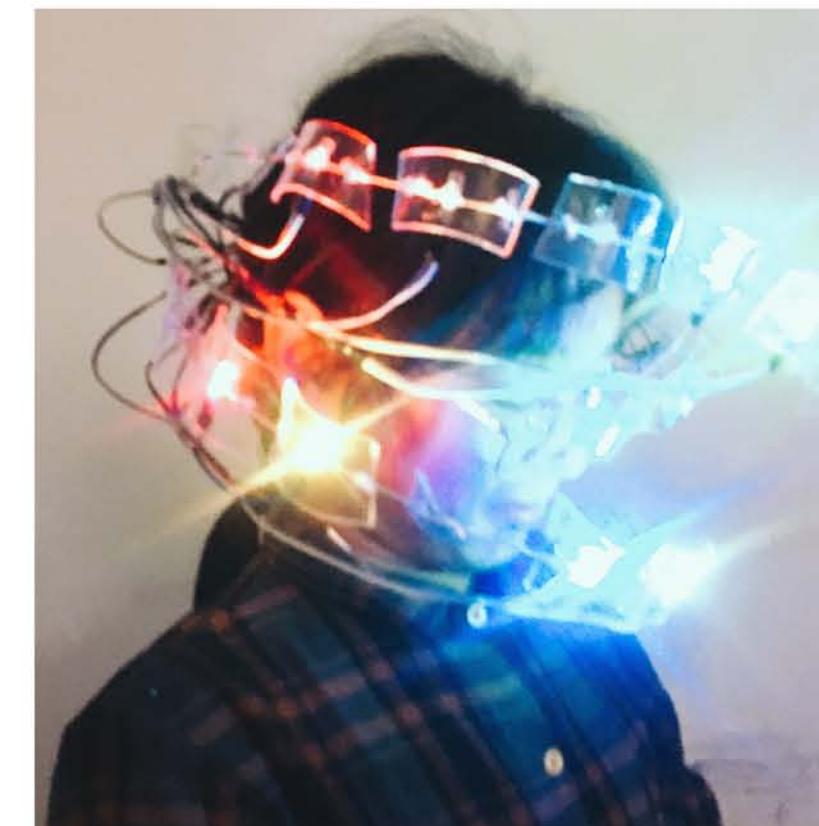
Mask responds



The mask flashes and changes color when it encounters the camera.



Four users are invited to test the product.



Advantages

- The shape of the mask is individual and decorative.
- The light is brilliant and won't hurt the eyes.
- Effectively alerts users that facial privacy has been compromised.
- You can prevent facial information from leaking out and get a good shot.

Further iteration

- Set the on/off mechanism for the mask so that the user can use the necessary facial recognition.
- Upgrade the wearer's comfort.
- Modify the form of the mask to reduce obstruction of vision while wearing it.
- Styling more suitable for daily wear



Enjoy Vegetables

Smart Vegetable Incubator

2020

Team project

Service Design + Product Design

Design for the Wildbox, which is an enterprise specialized producing smart vegetable incubator.

In this project, clients are willing to build a smart, young, fashionable, and household smart vegetable incubator and also a product community for their user.

The modeling and rendering of the medium-sized and desktop smart vegetables incubator are a form of team effort. The service blueprints, as well as the rest of the project were produced independently.



reddot design award

The Wildbox was shortlisted for
the 2018 Red Dot concept design award

Background

The Wildbox is a company that specialized producing and selling smart vegetable incubator. In this project, clients are able to build a smart, young, fashionable, and household vegetable incubator.

In this project, the company has two demands :

Part A To estimate the current sale space of the product.

Part B To iterate the generation of the product and explore a larger market.

Function Analysis



Entertainment



Eating

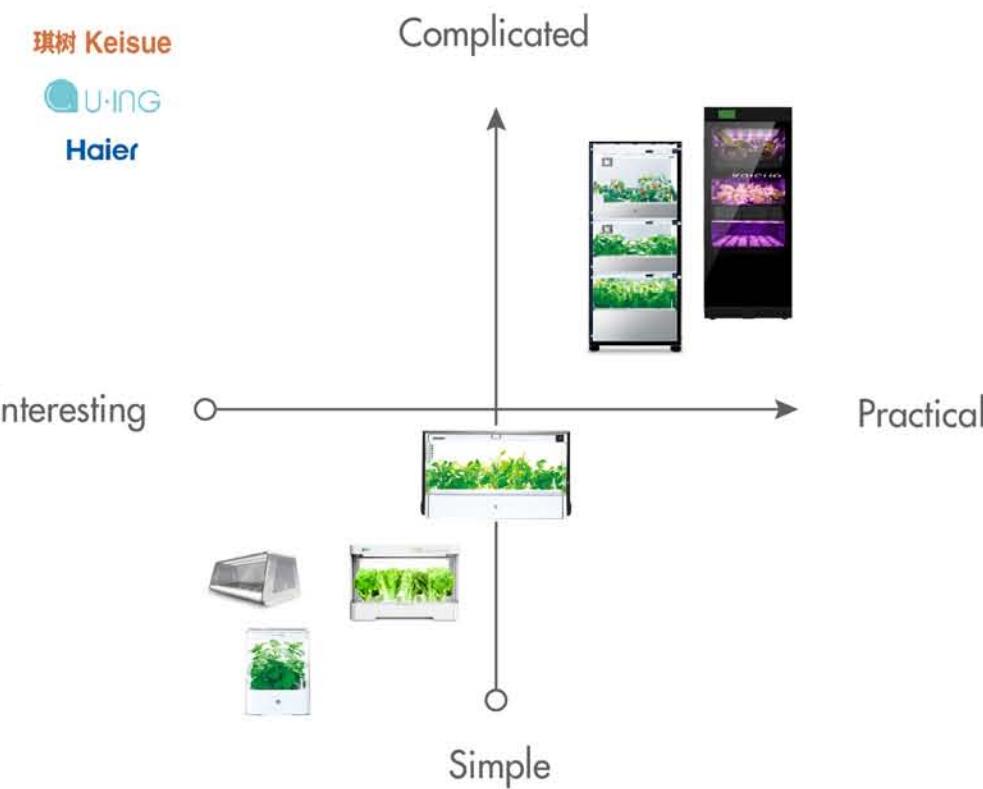


Decorating

I have analyzed the product of the first generation of smart vegetable incubator. I think its main functions are **experience the fun of planting, eat safe vegetables and decorate the house.**

Using Feeling

I found four competing brands on the market, which mostly formed in small or big size. I interview the users of each and recorded their feedbacks.



- Small type product is flexible which can be placed on a desk. It is decorative and has good parent-child interaction.
- Big type requiring a certain amount of space. The ornamental and decorative features are weaker and is more practical.

Interview

After that, I went to the experience store of the Wildbox to observe and interview the staff and customers.

Party A

Smart vegetable incubator company

- “ The first step is to let the seed germinate; then the seedling is moved to the colonization cup. The cultivation cabinet has a self-contained water circulation system, and the user needs to prepare the nutrient solution every week and add it to the water tank.
- “ Our planting cabinets are used indoors so that the red and blue light can be used for photosynthesis of plants.
- “ We have not studied who is buying it, but there is a certain amount of sales.

Employee

Offline experience store

- “ Some teachers will take children here to teach them planting vegetable to cultivate their hobbies.
- “ The vegetables we grow are completely clean and they can be eaten directly without washing. Some people who doing exercise nearby will use them to make salads.
- “ It takes one or two hours a day to do cleaning and some flying insect will fly in the incubator sometimes.

Mr Liu

Designer who lives a healthy life

- “ I often eat vegetables because I want to live a healthy life. Vegetables are rich in fiber and are better for digestion and absorption.
- “ I eat raw vegetables and I often eat vegetable salads, but I only judge whether the salads are clean and safe by the environment.
- “ I think growing vegetables at home is particularly unsightly and troublesome because it will be very dirty and may attract insects. It is interesting for restaurant to grow vegetables for customers.
- “ My dad likes growing flowers. He spends a long time taking care of them every day, and he enjoys the process of watering the flowers and moving them around.

Professor Zhu

Author of a plants book

- “ I am very obsessed with plants and I love exploring their cultural backgrounds and the stories throughout history. It's a pleasant surprise to bump into them in nature.

Linda

Mother & Gardener

- “ I focus on living a healthy lifestyle and want to give my children the safest food possible. Although I am usually very busy, I enjoy the time I spend tending my garden.

Part A Current Sale Space

Based on how different users feel about using different types of products, as well as their attitudes, I've concluded that these three locations are suitable for the placement of smart vegetable cultivation cabinets.

Apartment & House

Some families would like to let the family eat healthier vegetables and cultivate the interests of children.



- Housewives
Planting Cleaning Eating
- The olds
Planting Cleaning Eating
- Children
Planting Cleaning Eating Playing

Parents pursue healthy and safe diet for children.

The olds can grow vegetables with children.

Healthy Diet Restaurant

There are some health-conscious people who choose to eat healthy vegetables after a workout.



- Waiter
Planting Serving Cleaning
- Chef
Cooking Picking
- Visiter
Eating

Some pursue healthy lifestyle want to eat vegetables.

The owner need clean vegetable to show to people.

Education institutions

Some teachers will take students to experience planting vegetables and cultivate their interest.



- Staff
Planting Cleaning
- Teachers
Teaching Playing
- Students
Planting Playing

The teacher want to cultivate kids' interest.

The teacher need the machine to be safe and visible to show.

The staff need to take care of vegetables in a simple way.

Observation

I went to the only offline store under the Wildbox to experience the planting process of this product and I found some problem of existing products.



The sponge would grow moss.



The blue and red lights on the incubator are weird and make our eyes uncomfortable.



The remote control is not beautiful.



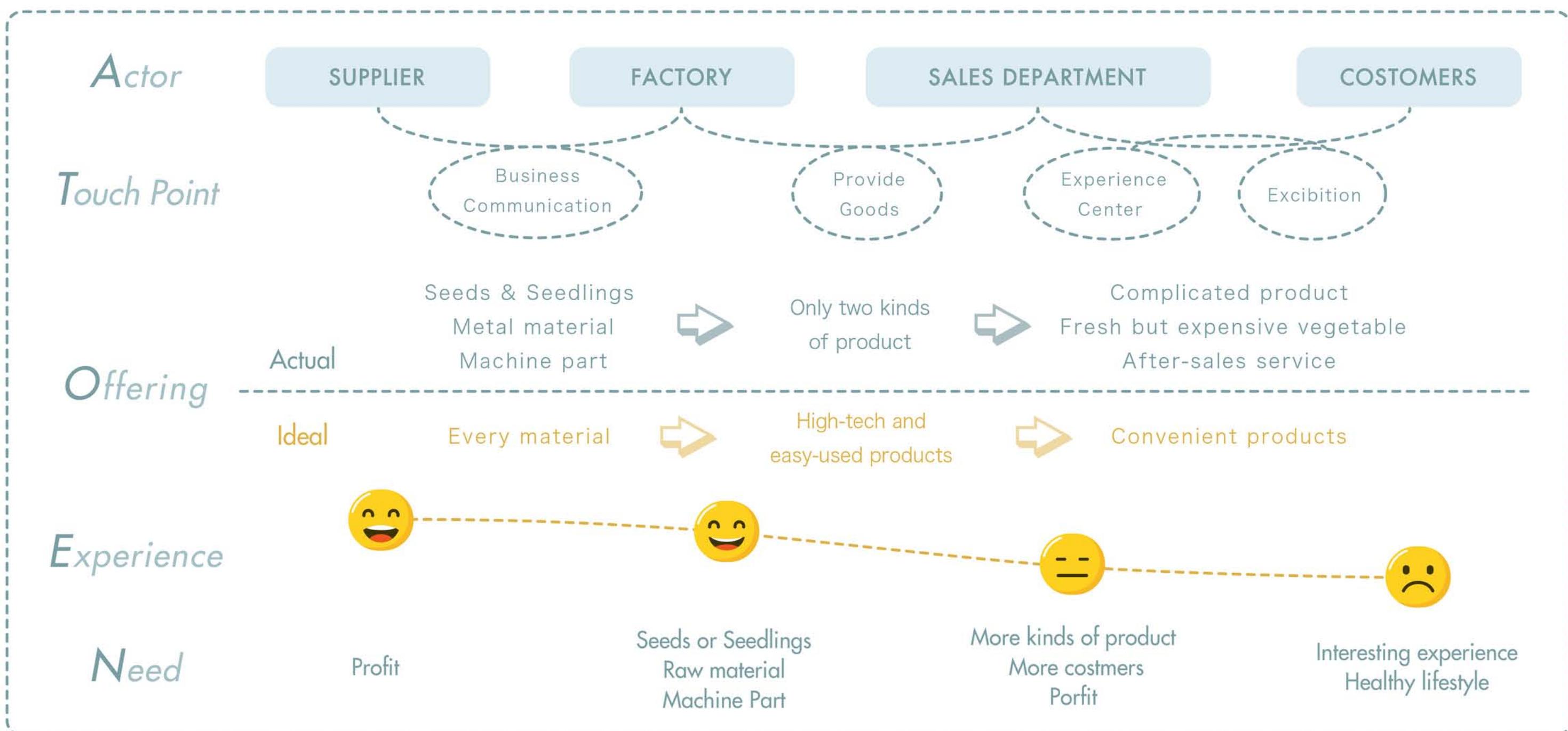
The control panel is too high to some users.



The clean processing is complicated.

ATONE Analysis

According to the existing first-hand research content, I have summarized and carried out a ATONE analysis.



Value Proposition canvas

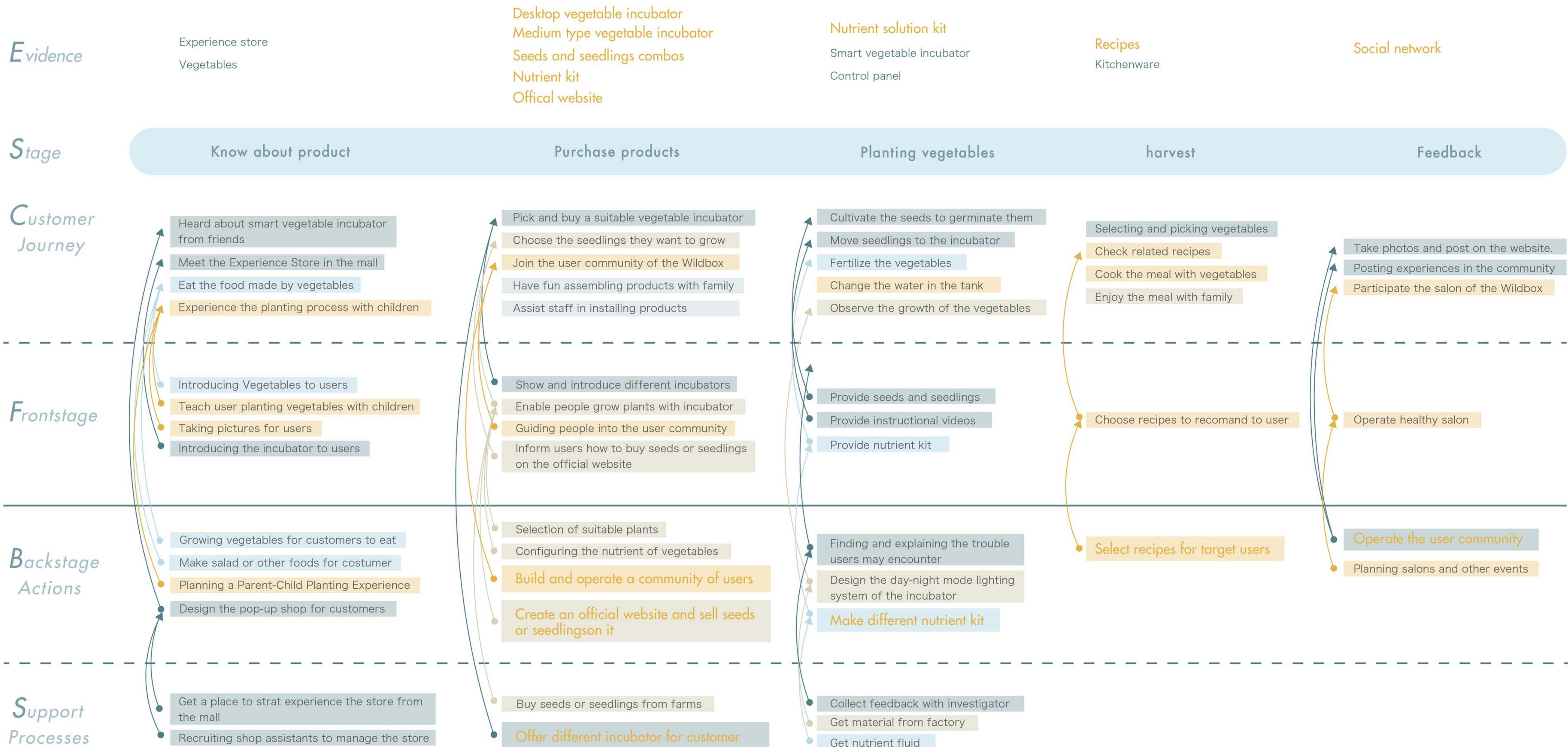


Value Map



SERVICE BLUEPRINT

According to the existing first-hand research content, I have summarized and carried out a ATONE analysis.



Observation

To meet the needs of different people, I the design of medium type and desktop type smart vegetables incubator on the basis of the original large vegetable cultivation cabinets.

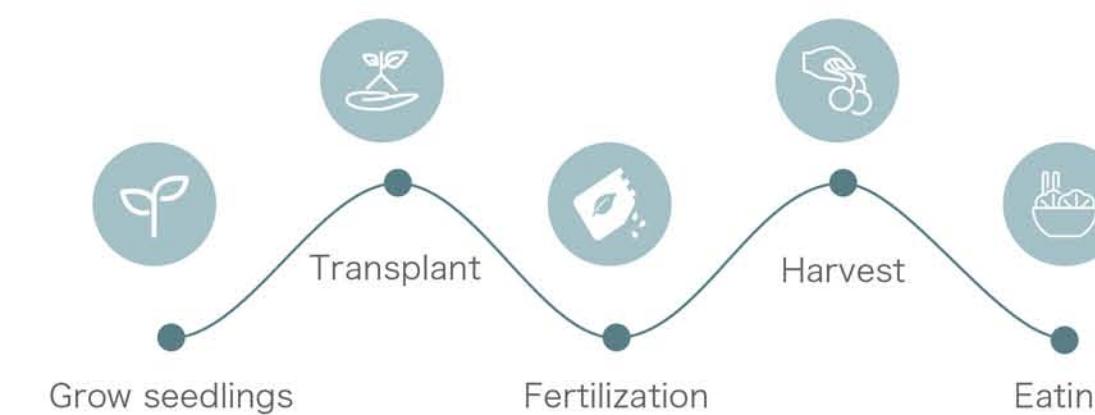
Middle-sized vegetable incubator

The middle-sized smart vegetable incubator can be placed in a home, which can produce enough vegetables to feed a family every day.



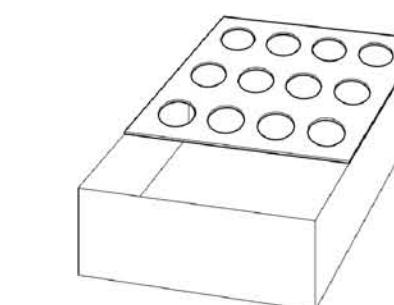
Using Process

I have redesign the use process for the user.

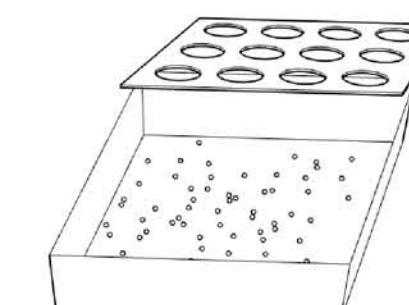


Seedling Process

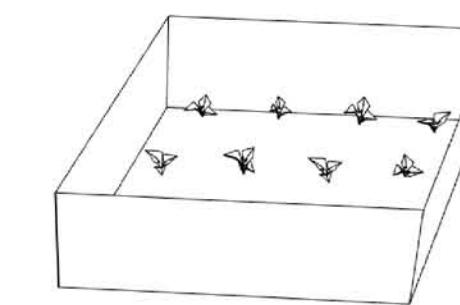
I added seedling nursery function based on the original function of the product, and the nursery is used as a water tank after the nursery.



Unpacking the seeds



Put seeds into the water tank



Seed germination

Desktop smart vegetable incubator

The desktop samrt vegetable cabinet can fit the household or many other places. It has good entertainment for users, which is suitable for parent-child interaction and cultivate children's interest.



Off state



Open state



Control panel

Ligting system

The lighting system adopts the day-night mode, which use white light for viewing during the day and red or blue light for photosynthesis at night.



White light



Red and blue light



6:00 – 24:00



24:00 – 6:00

Related Products



Seedling combo

I designed mixed combos of seedlings so that the user could quickly learn about the different vegetables in early stage. Each set of seedling packs contains 16 seedlings, perfect exact amount for one regular layer of the cultivation cabinet.



Seeds Kit

The seeds are carefully selected and come from the best sources around the world, with a delicious taste. Familiar users can grow their own seeds.



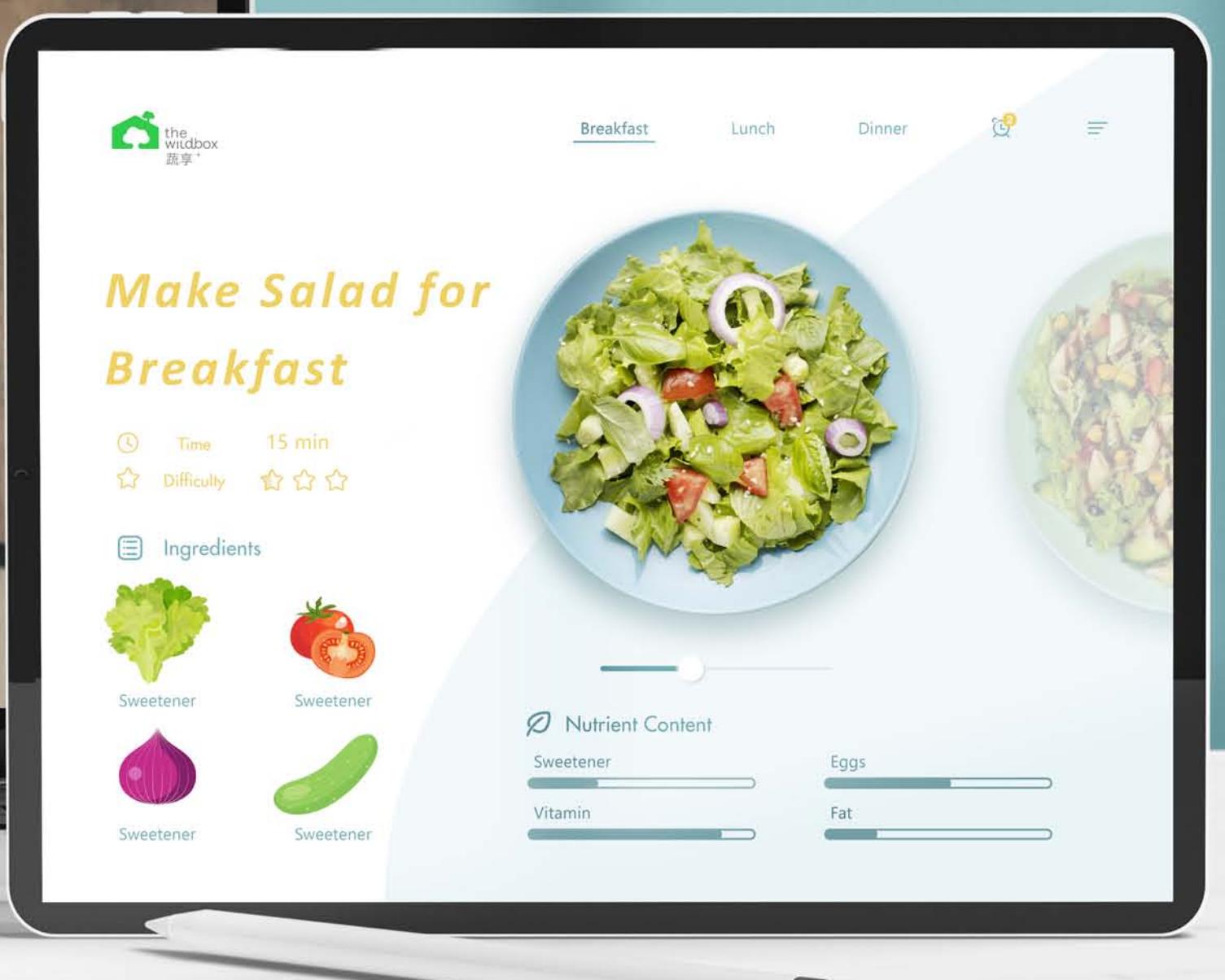
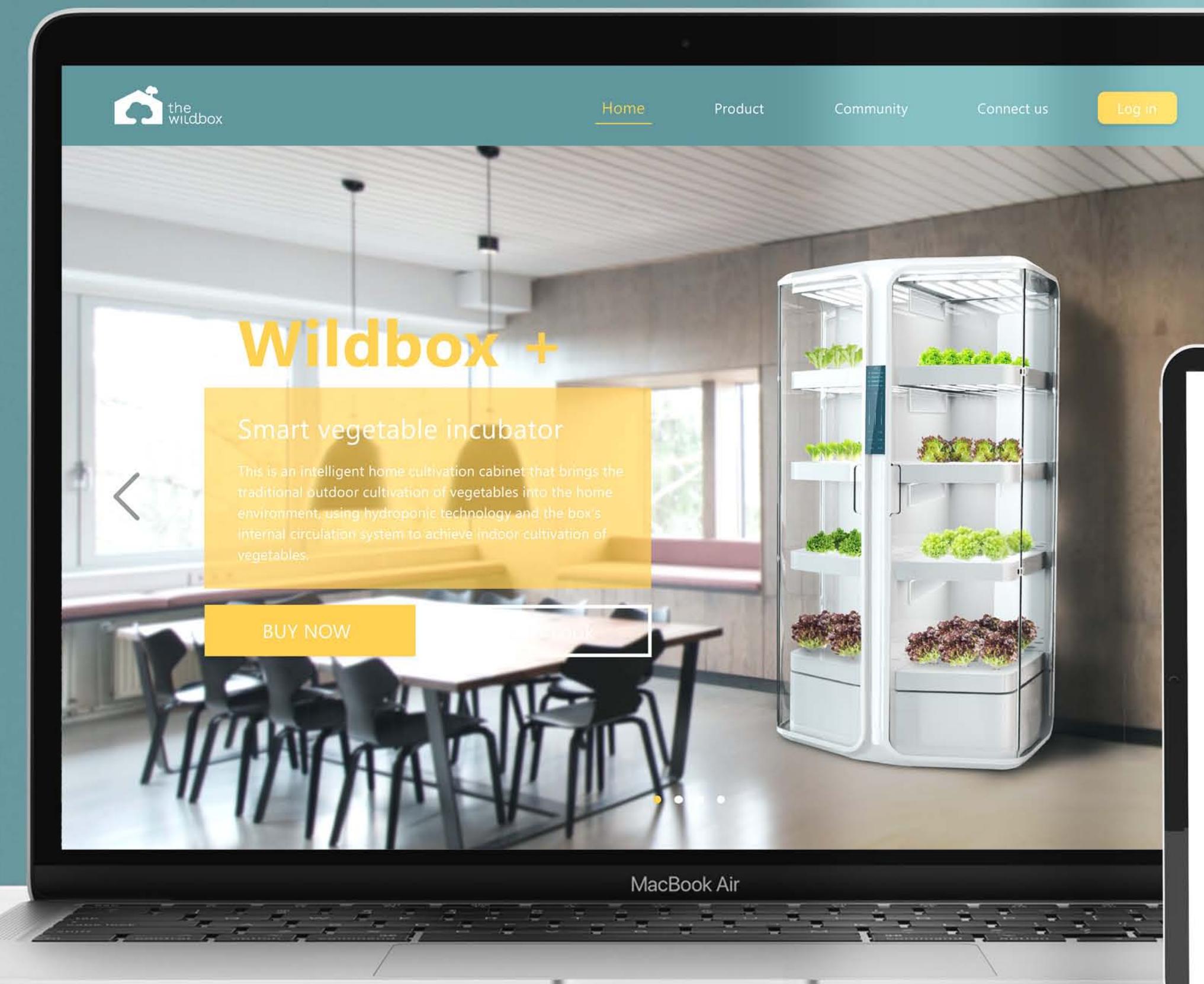
Nutrient Kit

The nutrient solution comes with the purchase of seeds. Users only need to add one small cup of nutrient per week to reach the nutrients needs of the vegetables.

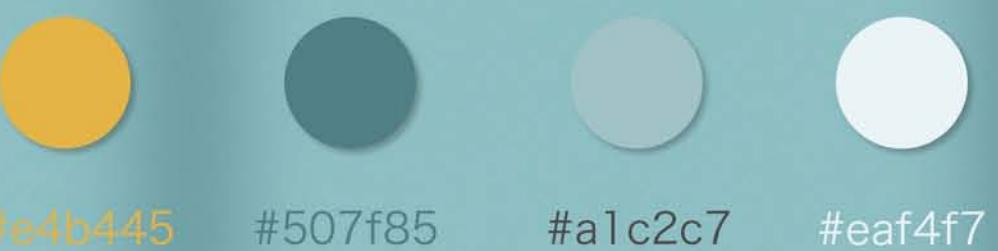


Website & App Design

Users can purchase incubator and complementary products such as seeds on PC and mobile, and communicate with other users in the community through the forums and receive recommendations for healthy recipes.



Color & Typography



Futura
Medium

Segoe UI
Bold

Segoe UI
Regular

Retractable ice cream packaging

2018

ice cream packaging

See more details through this video.

<https://youtu.be/-IYrlYf1Ydo>

Team project

Product design

Design for ice cream package

When we eat ice cream, it melts easily, and the falling ice cream may stain your hands. In order to make it more convenient for people to open the ice cream package and keep clean when eating, we designed this retractable ladder ice cream package.

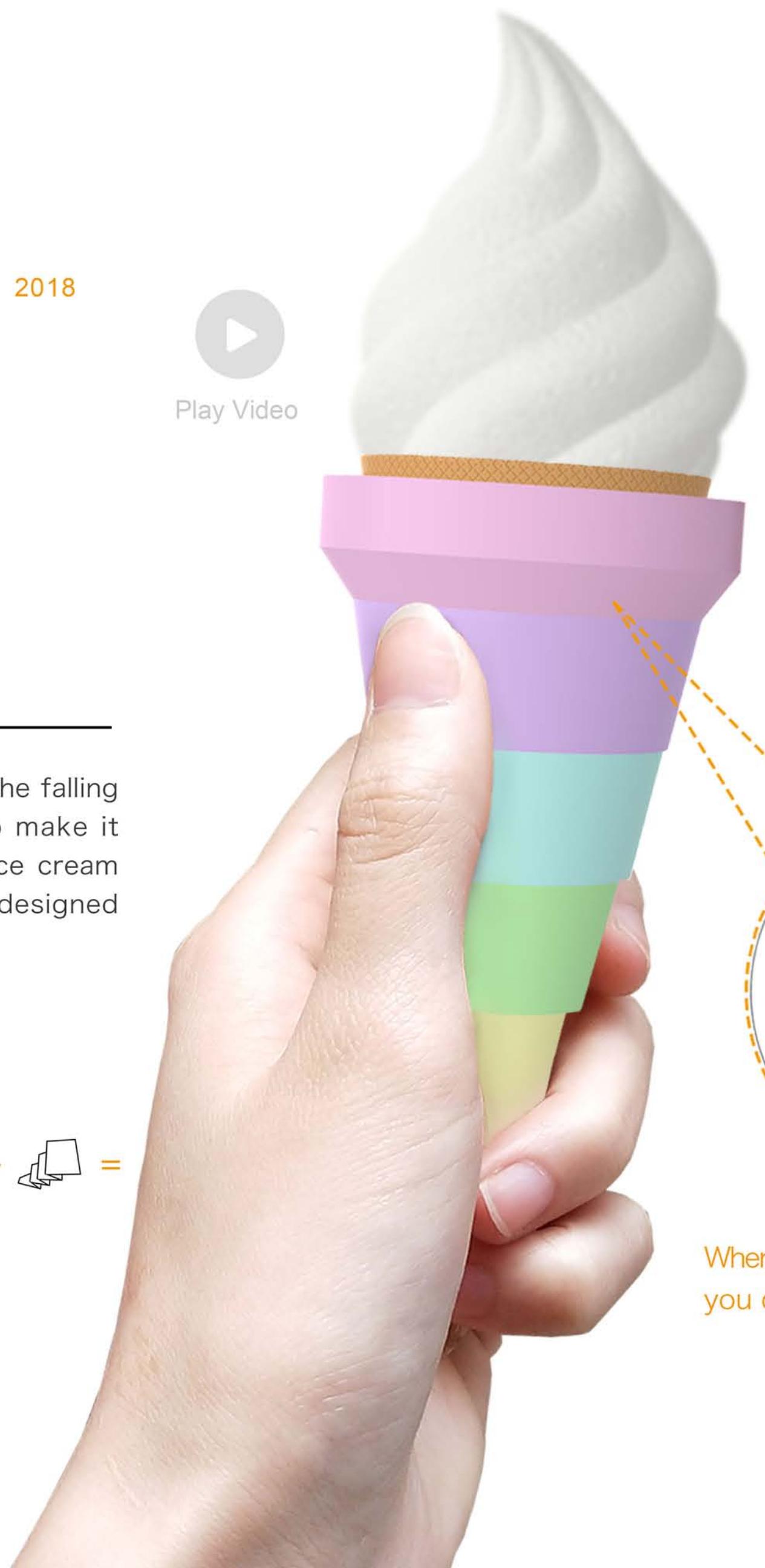


reddot design award

Retractable Ice Cream Packing was shortlisted for the 2018 Red Dot concept design award

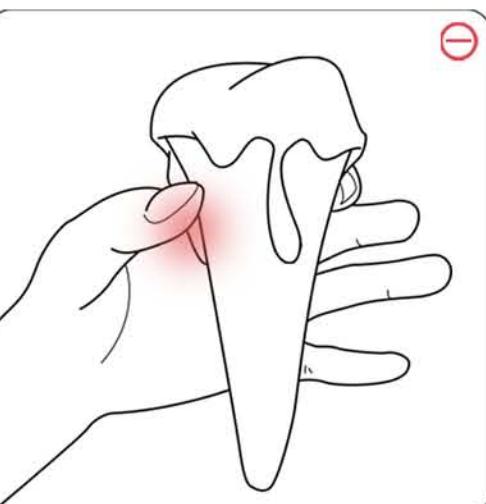


When you need to change the length,
you can fold it through the stairs.



Play Video

Before



Now



How to use



catch up

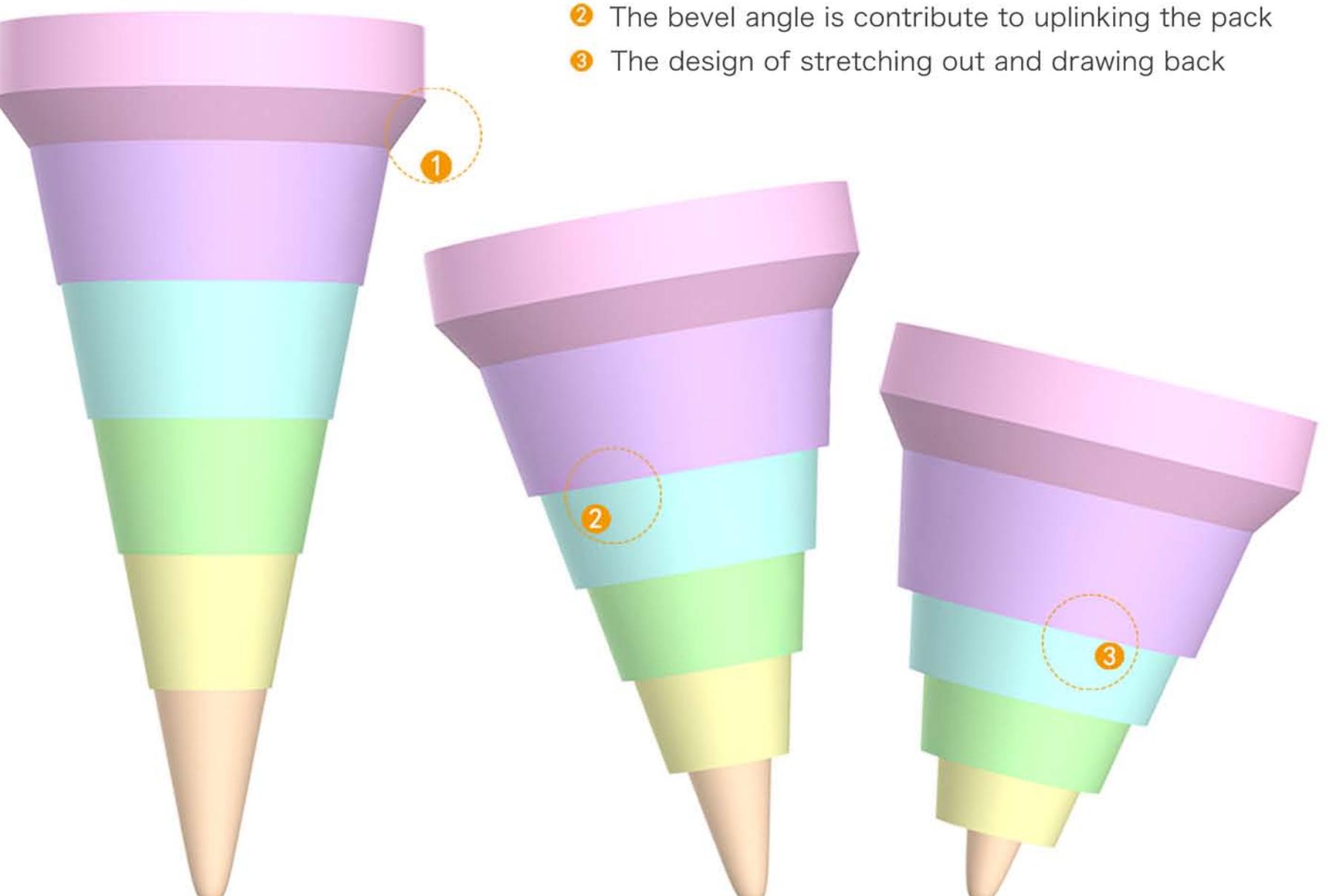


push upward



eat

- ① The design of funnelled tray
- ② The bevel angle is contribute to uplinking the pack
- ③ The design of stretching out and drawing back



Four-leaf

2018

mooncake holder

Team Project

Product Design

Mooncake is a kind of Chinese traditional dessert.

Each mooncake was put in a holder for food hygiene. However, it is awkward when a family member difficulty divides a mooncake into four pieces, which is in the mooncake holder. The "Four-Leaf" mooncake holder has four gaps in all round. If we put mooncake into the "Four-leaf" mooncake holder, we could easily cut it into four pieces and share them with our family.



How to use



We always have some trouble when cut the mooncake

- a There is an arc in opening that can guides the user to cut from there.
- b There are four long slits on each side, making it easy for the user to cut the mooncake.
- c Add a ring of stiffeners at the bottom to keep the holder strong.

