

# PORTFOLIO

TU Delft

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2.0.2.2.



**Nature, humans, life**

Through my third eye

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Selected work from 2019-2022

TANG Yanfeng

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# 01. Plant Shelter

**Recycling and adoption service for houseplants**

Service design/Interaction design

Environmentally-friendly/Resource recycling

Individual project

June. - July 2022 Duration: 5 weeks

I love plants and respect nature and all life, so I feel sad when I see houseplants being discarded as rubbish. Launching this project gave me the opportunity to use my life experience and skills to promote an environmentally friendly way of living. I designed a plant shelter that includes online and offline services to enable unwanted plants to circulate in the community and help people establish or maintain connections with plants. As a medium of communication, plants will help people to strengthen their connection with their surroundings, and the whole community will benefit from this.



Recycling x Adoption



# Inspiration



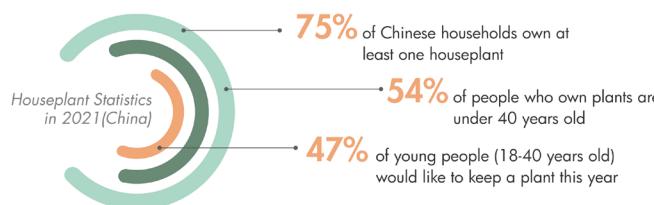
My family and I are plant lovers and we have grown over 90 plants in our hometown. In recent years I have gone to work alone in a big city and purchased some plants to accompany me.

Due to the unstable job and residence, I have to move almost once a year, which is very common in big cities in China. When I moved, the plants became a problem for me. As much as I wanted to take them with me, it would have cost me too much energy and money. Today, I have a few plants in my flat that were given to me for free by my neighbours when they moved.

Hopefully someone will continue to look after the plants when I next move.  
I hate to throw them away as rubbish like most people do!

## Background

In recent years, young people in China's big cities have become increasingly enthusiastic about growing plants. They choose plants to decorate their rented flats, to purify the air and to relieve the feeling of loneliness. Keeping plants has become a trend associated with a healthy lifestyle.



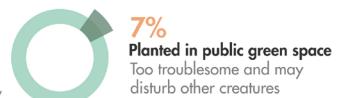
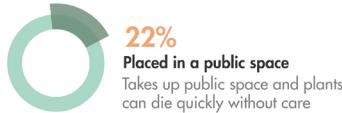
However, many young people have a **very short-lived passion for keeping plants**,

For a variety of reasons such as not knowing how to grow, not easy to move and so on,

**plants are no longer needed!**

### How people deal with unwanted plants?

According to an online survey of young Chinese houseplant growers, there are four main ways people dispose of unwanted plants at home. Each of these methods has its own drawbacks and even leads to serious waste.



**"Over 70%**  
of people try to find new homes for their plants before they throw them away. But this is **not an easy task**."

The survey estimates that **more than 1.2 million houseplants are thrown away** as rubbish each year in major Chinese cities with a population of over 10 million.

I collect some news about plants being discarded:



## Problem statement



"Houseplants are **popular** with young people, but they are also **highly discarded**, which creates a huge amount of waste."

"Can I create a **recycling and adoption service** to reduce the possibility of plants being discarded, while raising their **awareness of environmental protection**? Just like the **BookCrossing**."

## User Research Questionnaire

In order to better understand what is happening between people and houseplants, I developed a questionnaire. The questionnaire was conducted online and targeted young people who were interested in keeping plants. (71 valid questionnaires were received, with respondents aged 18-39.)

### Why people need houseplants?



### Memories with plants



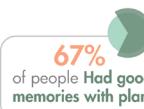
"When I was in college, I kept a hydrangea in my dormitory, which stayed with me for three years."

"When I graduated, I gave it to my teacher and made bookmarks with the petals."



"The first day I moved to the city, my friend gave me a jasmine plant."

"Every day since then, the flat has been filled with the fragrance of jasmine flowers!"



"Five years ago, I had a Ficus lyrata in my bedroom."

"Then I moved to another city and my parents continued to look after it. It has now grown taller than me!"

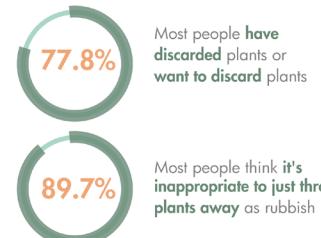


"I am now a greenery blogger. Taking care of plants is my job and my life."

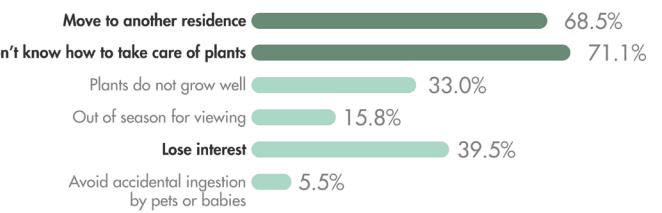
"I used to feel very lonely, and it was the plants that gave me company."

"I wish more people would learn to take care of plants."

### Why people throw away houseplants?



Most people think it's inappropriate to just throw plants away as rubbish



## Persona

According to user research, persona can be concluded to present people who want to discard houseplants and people who want to grow houseplants.

### People who want to discard houseplants

29/IT/Shenzhen, China "It's a shame to just throw plants away as rubbish!"

#### BIO

Jiaqi is an employee of an internet company. He likes nature but doesn't have much time to engage with it. He has grown some plants at home which have accompanied him during his negative times. Recently he had plans to move and the plants were not in a good state. Although reluctantly, he wanted to give up the plants.



#### Goals

- Need to dispose of unwanted plants easily
- Want to find people willing to receive plants
- Want to preserve memories with plants
- Want to know what happens to plants afterwards

#### Skills

Gardening	● ● ● ●
Socializing	● ● ● ●
App	● ● ● ●
Internet	● ● ● ●

#### Frustration

- Unwanted plants can only be discarded as rubbish
- Hard to find people willing to adopt plants
- Difficult to make connections with plants
- Completely lost connection after giving up the plant

### People who want to grow houseplants

24/interior designer/Shanghai, China "I want to keep plants, but I'm not sure I can hold on to them."

#### BIO

May is an interior designer who seeks to live a healthy lifestyle. She lives alone in a rented flat and rarely gets a break except at weekends. She sometimes feels lonely and wants to have a pet but finds it too much trouble, so she plans to buy some plants as an alternative.



May

Want to grow houseplants

#### Frustration

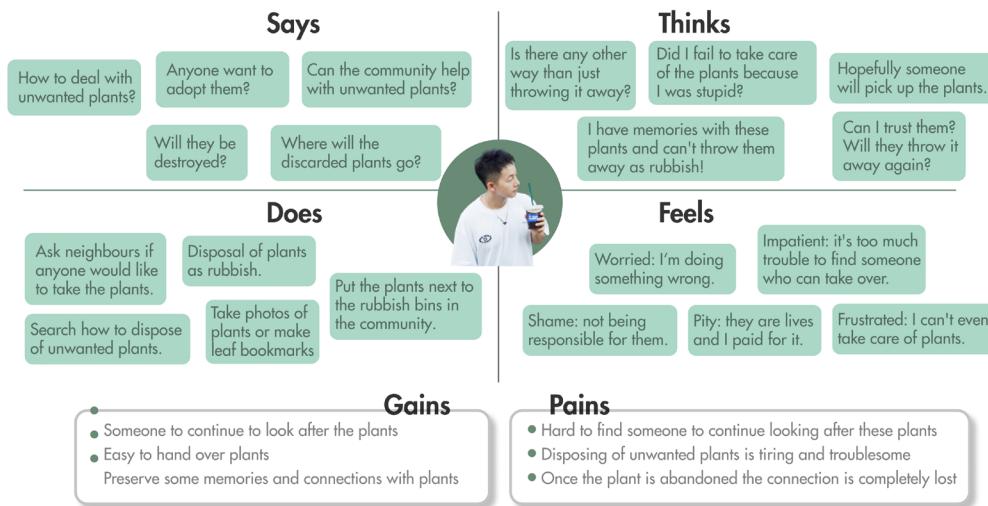
- Plants are not cheap
- Lack of plant knowledge
- Difficult to make connections with plants
- No guarantee of the condition of the plant
- Unable to care for plants in absence

#### Skills

Gardening	● ● ● ●
Socializing	● ● ● ●
App	● ● ● ●
Internet	● ● ● ●

## Empathy map

In order to get a deeper understanding about user behaviour and decisions, I created two empathy maps.



## Insights

1 People need plants and houseplants can bring positive impact and beautiful memories.

2 The difficulty of carrying plants and the lack of knowledge of raising them largely contribute to their being discarded.

3 Most people do not subjectively want to discard plants and do not think that plants should be discarded directly.

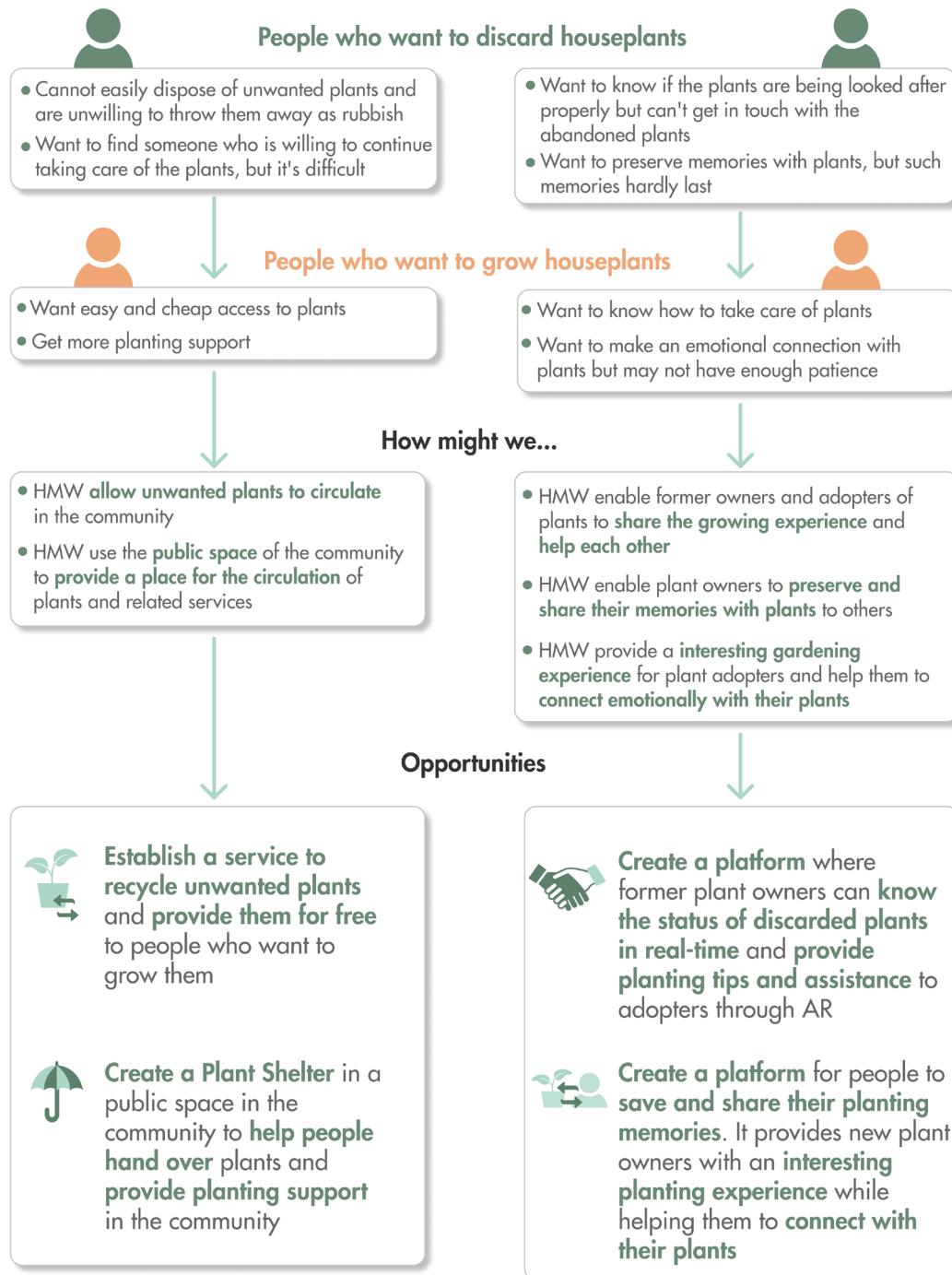
4 There are many needs that can be matched between people who want to discard houseplants and those who want to grow them, allowing plants to circulate in the community.

## Conclusion



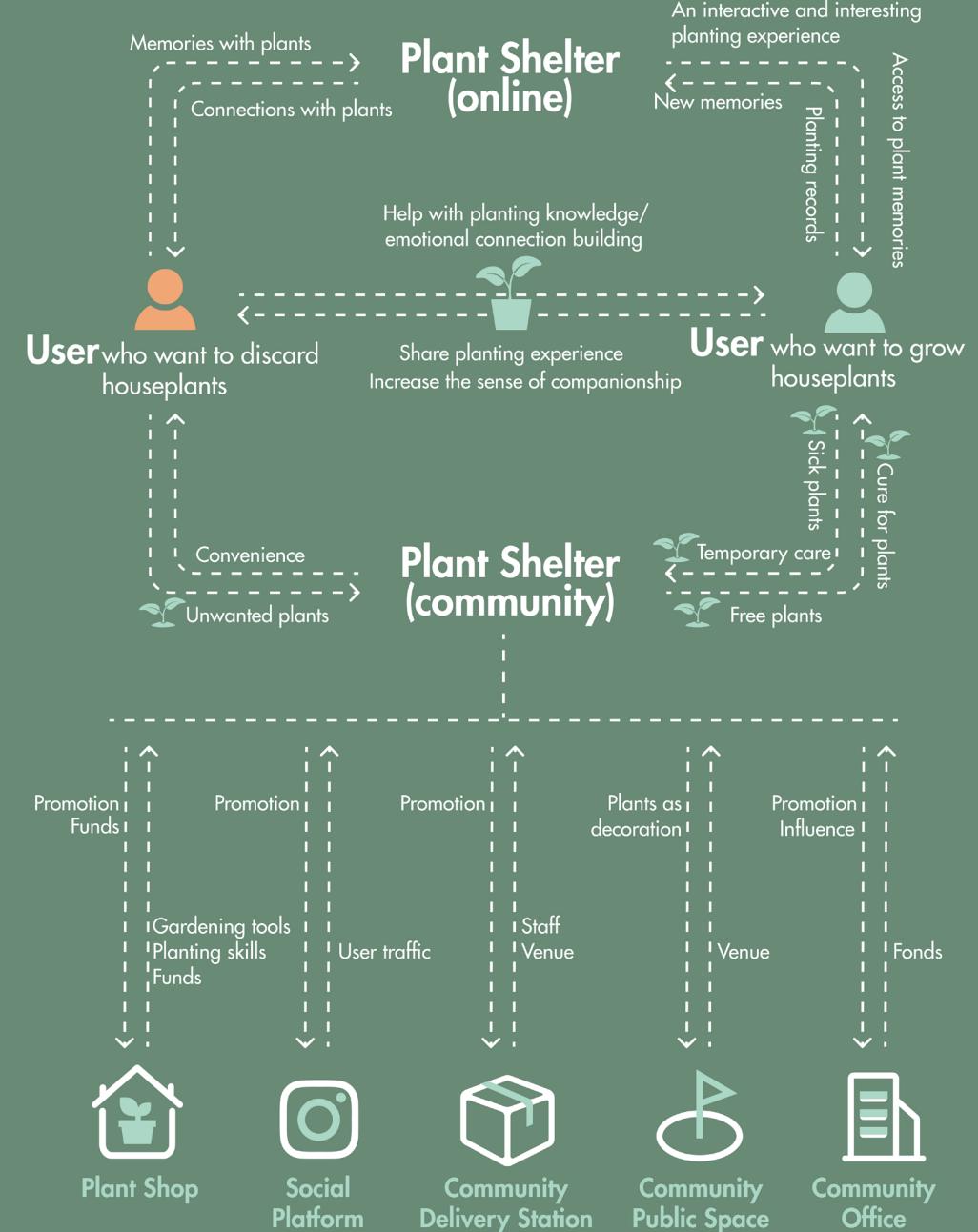
Therefore, an online and offline plant shelter can be built to help match the needs of people who want to discard houseplants with those who want to grow them.

# Service concept generation



# Service system

The main stakeholders are people who want to throw plants and people who want to grow plants. We also need the support of the community and the use of public spaces in the community. In addition to them, we can also establish win-win partnerships with the delivery station or plant shops in the community.

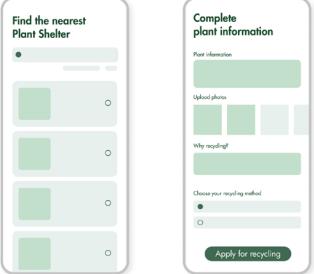


# User flow

We want to cooperate with the service with APP to create the user experience for both those who want to discard houseplants and those who want to grow houseplants.

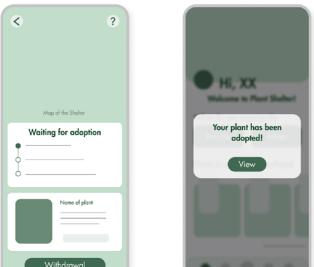
## Apply to recycle a plant

Choose the nearest Plant shelter and fill in the information about the plant to be recycled.



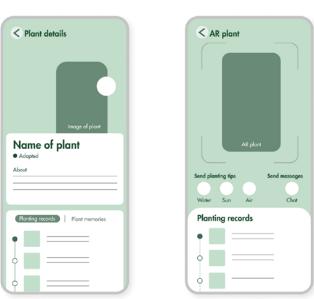
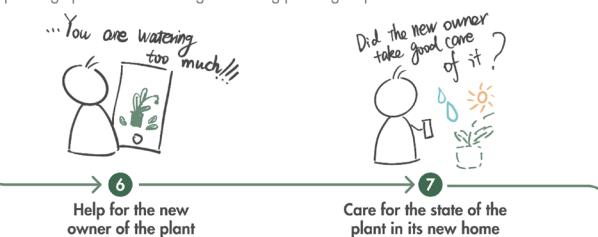
## Send the plant to the Plant Shelter

Plant is kept in a plant shelter, where it is cared for by the staff on a daily basis and is waiting to be adopted.



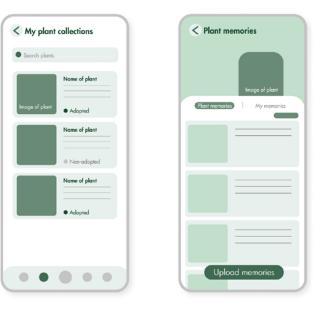
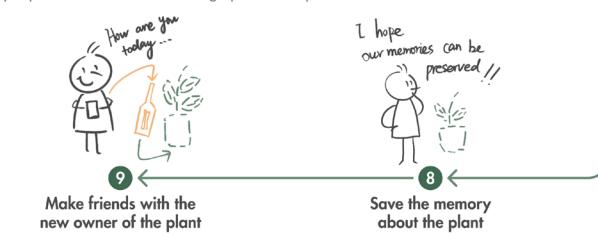
## Get the real-time state of the plant and help the plant's new owner

See the AR plant and the new planting record. Get a shared planting experience by sending planting tips such as watering or offering planting help to the new owner.



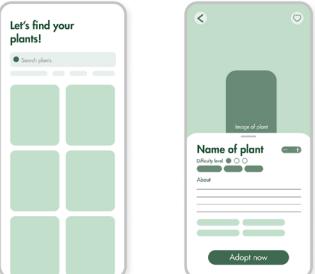
## Save the memory about the plant and communicate with the plant's new owner

Save memories about the plant through diaries, photos, or videos. These memories can be shared with the plant's new owner as a reward mechanism. Connections between people can be enhanced through plants and plant-related memories.



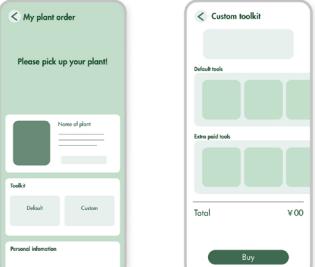
## Apply to adopt a plant

Search for a favorite plant in the list of adoptable plants, find out brief information about the plant and its planting needs, and apply for adoption.



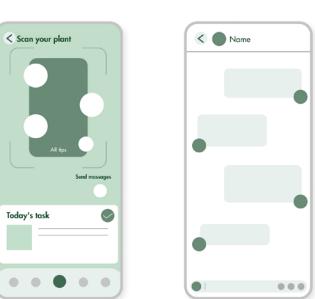
## Receive the plant in the Plant Shelter

Receive plants and custom toolkits in the plant shelter according to the order.



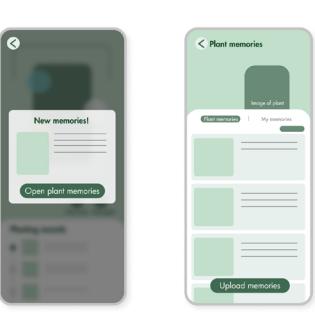
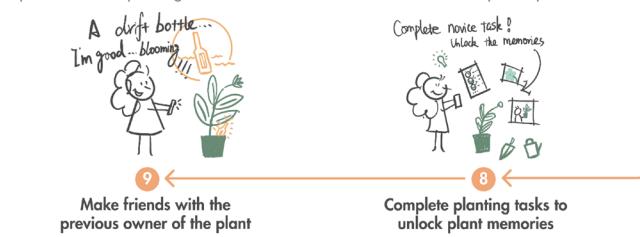
## Share the planting experience with the previous owner of the plant

Follow the guide to plant and upload records. View interactive AR tips from the plant's previous owner. Ask for help from the previous owner or the plant shelter when having planting problems.



## Unlock Plant Memories and communicate with the plant's previous owner

Plant memories can be unlocked as a reward for completing planting tasks. It helps the adopted establish connections with the plant as well as helping them to understand the plant and learn planting skills. It also establishes connections with the plant's previous owner.



# Mid-Fidelity prototyping

Based on user flow and low-fidelity prototype, we improved the content and position of some information, optimised the connections between interfaces, and presented more interface details.



# Test and Iteration

We conducted five **formative usability tests** on potential target users of the **Plant Shelter**. Participants were given two tasks to test the key functions of the Plant Shelter:

## Our process

1. Introduce the purpose of the study.
2. Describe the scenario and give participants the tasks.
3. Take notes and intervene when users show frustration.
4. Ask post task questions on their attitudes.

1.Handing over plants to the Plant Shelter for recycling and continuing contact with the plants.

2.Adopting plants in the Plant Shelter and enjoying an interesting and interactive planting experience.

## Finding

In general, all five users are able to complete all the tasks but some got stuck. Based on user feedback, the insights and feedback we received fell into three main categories: **unclear information, redundant information, and lack of fluency**.

Users raised questions on some key pages, and we optimized the pages to address these questions.



# Final Deliverables

We further optimised the page and created a high-fidelity prototype image to illustrate the core services.



## 1. Apply to recycle a plant

Ian took the plant to a plant shelter for recycling and hopes that someone can adopt it.



Avoid being discarded  
Continuous connect  
More convenient

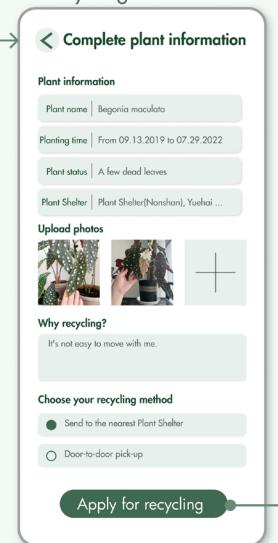
### List of Plant Shelter



### Find the nearest Plant Shelter



### Fill recycling information



## 2. Apply to adopt a plant

May wants to keep a plant. She adopts a begonia from the Plant Shelter.

### List of adoptable plants

#### Let's find your plants!



### Plant detail page



### Adoption confirmation page



### Congratulations!

You are the new owner of the plant,  
please take care of it!  
1. Pick up your plants  
2. Complete planting tasks  
and unlock plant memories  
3. Enjoy the joy of  
planting.

### Adoption order page



Free plant  
Get planting support  
More convenient  
Make friends



### 3. Get the real-time state of the plant and help the plant's new owner

Ian views the AR plant and the new planting record. He sends a watering bubbles to the plant's new owner because he realises that today's planting task has not been completed.

My plant details(recycling)



Shared planting(recycling)



#### AR plants with AR tips

Users can send tip bubbles (e.g. watering bubble, sunshine bubble) to the new owner of the plant by sliding the bubble on the page toward the plant.



Tip bubbles



## Reflection



#### Creating a peer-to-peer social innovation service project between grassroots

It is a service that is almost entirely supported by the users. By matching demand between users to build the service, there is no need to rely on large organisations to undertake the service. Plants can circulate between users and their needs are met by each other. It directly reduces the possibility of plants being discarded.



#### Fully utilising neighbourhood resources to make services more feasible

The difficulty with this project is not so much the construction of the service system but how to make it work and integrate it into the users' lives. By using the resources in the surrounding area, the service can be brought closer to the user's real-life environment, and the connection between the user and the surrounding environment can be further strengthened. This benefits both the user and their surroundings.



#### Using new technology to enhance the growing experience and foster environmental awareness

The project uses AR technology to provide users with an interesting planting and communication experience. With the help of AR technology, plants can be seen as a medium of communication, allowing users to have a timely and fun planting experience, as well as to be more proactive in understanding plants and raising environmental awareness.

### 4. Share the planting experience with the previous owner of the plant

May sees the watering tips sent by the plant's previous owner and having completed today's planting task. May prepares to ask Ian for more tips on how to care for begonias.

My plant details(adooption)



Shared planting(adooption)



#### Plant memories

Users can unlock previous memories of plants by completing planting tasks. By uploading new memories, users can record new stories of their time with plants.

Plant memories



## What's next?



**1** Explore more interesting and diverse interaction methods to improve the current relatively monotonous AR plant experience.



**2** Building mobile plant shelters by vehicle, making the service more accessible to users and offering a wider choice of plants, eventually creating a network of plant shelters across the city.

## 02. The Dilemma of Urban Wetland Parks

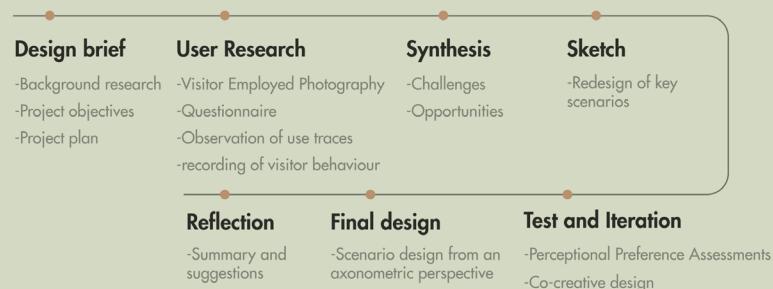
**How can designers create urban wetland parks that are popular with visitors?**

Design evaluation/User research  
Landscape design/Co-creative design

**Individual project**

**July. - August 2019 Duration: 7 weeks**

Wetland parks play a huge ecological role in cities, but many of them are not popular with visitors, leading to waste and loss of money. This project provides a detailed insight into park users and their behaviour through extensive research, eventually identifying the key factors that affect the visitor experience and making effective recommendations for future wetland park design. The project was inspired by the National Innovation and Entrepreneurship Training Program I undertook during university. I applied the user research and design evaluation methods involved in the project. It was also a reflection on landscape design from a user experience perspective.



# Background

## What is Urban Wetland Park?

It is a park with the ecological functions and typical characteristics of wetlands, which is incorporated into the urban green space system planning, with ecological protection, science education, and recreational excursions as the main contents.

## What is the role of Urban Wetland Park?

### Ecological protection



### Ecotourism



### Relaxation



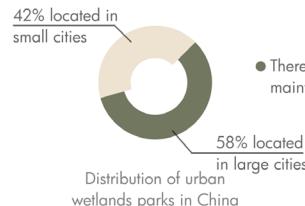
### Natural education

### Responding to natural disasters



## What's happening to China's urban wetland parks?

- China's first National Urban Wetland Park was established in Hangzhou in 2005.



- There are 98 of them located in densely populated areas, maintaining the ecological environment of the city.

- Urban wetland parks are a key part of urban construction in the future plans released by the Chinese government.

However, many relevant studies have mentioned that China's urban wetland parks are currently facing a number of difficulties:

- Wetland park design tends to be similar in order to meet the needs of rapid construction.
- The actual use of the park deviates from the design objectives due to a lack of research on the site and the population it serves.
- Many residents and visitors are dissatisfied with the experience of visiting wetland parks compared to other types of parks (e.g. community parks and sports parks).
- Wetland parks with a purely visual landscape emphasis are difficult to attract visitors.



# Project Objectives

## Phase 1

Identify the key influencing elements of enhancing visitor experiences in urban wetland parks.

## Phase 2

Proposing key suggestions for future urban wetland park design.

To achieve my goal, I posed two questions:

## 1

What kinds of landscapes are popular with visitors?

## 2

How can designers create urban wetland parks that are popular with visitors?



## Project Plan

As it was not possible to research all urban wetland parks in China, it could be considered reasonable to select one representative urban wetland park with rich landscape elements as a case study.



# Mangrove Wetland Park

Shenzhen, China

 Opened in 2015, Mangrove Wetland Park is the most representative urban wetland park in Shenzhen. It has taken on the important task of protecting the wetlands on the border between Shenzhen and Hong Kong and is also an important venue for nature education.

## Why I chose this park?

- It contains a wealth of landscape elements.
- It is similar to many wetland parks in China.
- It is centrally located in the city, close to residential areas and highly accessible.



## Phase 1 Identify the key influencing elements

### Visitor Employed Photography(VEP)



To find out what landscape elements visitors are interested in, I used the Visitor Employed Photography(VEP) to research the park.

#### 1. Setting the character

I invite five students to participate in the study. As no user research has been carried out yet, we assume that the users of this park are mainly families, students and workers (user research will be carried out during the questionnaire research phase).



#### 2. Research methodology

In teams of two, they take on the role of three different types of users, speculating on what kind of landscape this type of user would be interested in and filming it during the tour, as well as recording the location.

#### 3. Field research

We photographed the park on the 5th and 10th of July 2019.

#### 4. Photo identification

Delete duplicate and invalid photos. Identify the landscape elements in each photo and sort them by preference.

#### 5. Classification and statistics

Classification and statistics based on landscape elements in photos.

1.roof garden 2.Event square 3.Children's playground  
4.Waterfront platform 5.Bird house(in maintenance)  
6.Viewing platform 7.Birdwatching platform  
8.Aquatic plant ornamental walkway



#### Photo identification

Identify the landscape elements that appear in the photograph and mark the most attractive one.

#### Research result

We took a total of 189 photos, of which 171 were valid.

Based on the photographs, we have summarised 9 landscape elements that are likely to attract users:

No.	Element	Examples	Total/most attractive	Percentage
1	plant	Trees, flowers, lawns	158/79	92%/47%
2	Water	Creeks, lakes, wetlands	104/36	60%/21%
3	Animal	Birds, butterflies, fish	78/17	45%/10%
4	Construction	Building, bridge, viewing platform	52/12	30%/7%
5	Service facility	Seats, signs, litter bins	39/6	23%/3%
6	Road	Main roads, walks, paths	31/7	18%/4%
7	Landform	Slopes, hills, hollows	19/4	11%/2%
8	Leisure activities	Walks, picnics, chat	16/9	9%/5%
9	Exercise	Run, dance, Tai Chi	7/1	4%/1%

## Insights

1

Plants and water are popular with users as the most important elements that make up a wetland park.

2

There is an inherent user preference ranking of natural and artificial landscapes: natural > artificial

?

Do the results bias the actual situation because we subjectively set the user identity?

## Questionnaire

I conducted a questionnaire to further define the type of the users and to investigate their satisfaction with the various landscape elements in the wetland park.

### Design questionnaire

For the purpose of this study, a three-part questionnaire was developed.

#### 1. Who are the users of this park? What are their characteristics? What is the purpose of their visit to this park?

Respondent's demographical characteristics, socio-economic status, transportation modes, and purpose of visit to the park.

#### 2. How do they feel about these landscape elements in this park?

Survey respondents' satisfaction with various landscape elements in the park, with responses given using a five-point Likert scale with anchor ends of extremely satisfied and extremely dissatisfied.

#### 3. Why are they satisfied/dissatisfied? Are there any suggestions?

Ask respondents why they are satisfied or dissatisfied with some landscape elements. Respondents are free to express their opinions and suggestions about the park.

### Research result

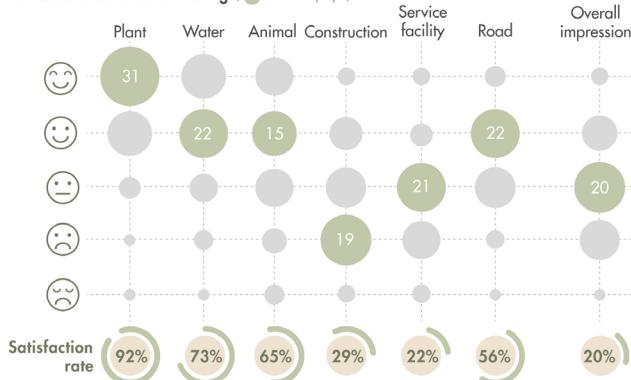
I invited one of my classmates to join me to conduct a questionnaire study in the park. We conducted the research on 14 July and 16 July 2019, randomly selecting visitors in the park as respondents. A total of 60 questionnaires were collected over the two days, of which 55 were effective.

Extremely satisfied Satisfied Ordinary Dissatisfied Extremely dissatisfied

#### Part.1 User information



#### Part.2 User satisfaction rating (Number of people)



#### Part.3 User opinions

"The scenery is great but hardly worth stopping for us."

"My kids had a great time but I was tired due to not having a seat near where the kids like to go."

"The gazebo was old that I didn't want to walk into it."

"The roads were a bit monotonous and I was not interested in wandering the whole park."

"Seems unattractive compared to other parks except that there are more plants."



## Insights

**1** Users are more satisfied with natural elements than with artificial ones (in accordance with the results obtained by VEP).

**2** Even though the park has good natural landscape elements and these elements are most attractive to users, the overall impression of the park by users remains poor.

**3** Artificial landscape elements largely influence the experience and satisfaction of users in urban wetland parks.

What's happening to artificial landscape in this urban wetland park?

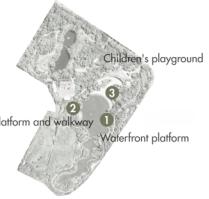
## Phase 2 Proposing key suggestions for future urban wetland park design

### Observation of use traces and recording of visitor behaviour



- Investigate more objectively the actual use of the park's artificial landscape and corroborate the results of the questionnaire.
- Understand why key landscape elements are unpopular in actual scenarios and explore design opportunities for them.

Therefore, I chose three landscape nodes in the park where artificial landscape elements dominate to observe traces of visitor use and record visitor behaviour and interview visitors.



Viewing platform and walkway  
Waterfront platform  
Children's playground

### Research result

I conducted the survey on 21 July 2019, staying in each node for 30 minutes and recording the visitors who stayed in the node during that time period. At the same time, I observed traces of visitor behaviour and selected a few visitors who stayed here to interview. (Users)

#### 1. Waterfront platform



##### Phenomenon

- Most visitors do not enter the node or spend no more than 2 minutes here.
- Visitors enter the site to sit for a while or to view the lake.
- The wooden walkway at the entrance is more worn than the interior.

##### Finding

- Lack of attractive landscape elements.
- No more activities for visitors apart from viewing the lake.
- Lake view not enough to keep visitors.

##### Design opportunities

- Add more attractive landscape elements, such as flowering plants.
- Improve service facilities and visitors enable to do more activities.
- Create site character with existing natural landscape elements.

#### 2. Viewing platform and walkway



##### Phenomenon

- Visitors stand on the walkway to watch the fish for a short time.
- The walkway is crowded, blocking visitors passing by.
- The viewing platform is almost empty and shows little sign of use.

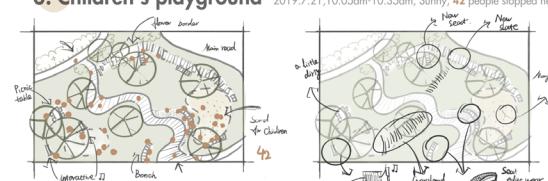
##### Finding

- No service facilities to support visitors staying here.
- Insufficient space to stay.
- Attractive landscape elements are blocked by other elements.

##### Design opportunities

- Provide seats for fish watchers.
- Design more space for visitors to stay.
- Ensure that visitors can focus on the key landscape elements.

#### 3. Children's playground



##### Phenomenon

- Visitors are willing to stay in the site and to use the facilities there, especially for children.
- Visitors are concentrated around the sandy area in the east of the site, which is a bit crowded.
- Many adults stay near the children's facilities so the benches are full.
- The interactive facilities show obvious traces of use and are mostly in disrepair.

##### Finding

- The design of the node generally meets the needs of the users.
- Location of attractive landscape elements too close together.
- The number of seats is insufficient.
- Interactive facilities attract visitors.

##### Design opportunities

- Design more child-friendly landscape elements to make the site more appropriate to its positioning.
- Make the location of the landscape elements more dispersed.
- Provide more service facilities such as benches near areas that children may enjoy.
- Maintain the existing interactive facilities and add more interesting experiences.

"I often bring my children here and they love it, they can play in the sand or play games on the grass. But when it's crowded I find it hard to find places to rest around the children."

"I love the atmosphere here! I can sit under the trees and watch the kids play."

## ● Design synthesis

**Why artificial landscape elements are unpopular in the actual scenario of an urban wetland park?**

After analysing the three landscape nodes where artificial landscape elements dominate, I have summarised the following reasons:

### 1 Lack of attraction

Many artificial landscape elements in the scene are broken or monotonously designed that visitors have no desire to use.



### 2 Insufficient number

The number of artificial landscape elements, especially service facilities such as seating or picnic tables, does not meet the needs of visitors.



### 3 Disturbed by natural landscape elements

Natural landscape elements in the scene are unattractive or have conflicting relationships, resulting in unpopular artificial landscape elements.



### 4 Inappropriate layout

Artificial landscape elements are placed in unsuitable locations. For example, placing viewing platforms and seating in areas with poor sightlines.



### 5 Lack of space

Artificial landscape elements are placed in unsuitable locations. For example, placing viewing platforms and seating in areas with poor sightlines.



## Opportunities:

Design more attractive artificial landscape elements

Provide adequate service facilities

Enhance the quality of natural landscape elements

Layout landscape elements more reasonably

Provide sufficient space for landscape elements

## ● Perceptual Preference Assessments I



After completing the primary design of the three actual scenarios, I tested my design. By presenting my sketches and design intent drawings to the users, they scored the landscape elements in the redesigned scenarios. During the testing process, I recorded their thoughts and suggestions on the redesigned scenarios.



21. Student

"I like the atmosphere in the scenes, but it still looks a bit boring."

"I would like **more interactive facilities** rather than just seating."

"I have scenes in my mind that **I don't know how to express...**"



28. Employee

"**Not everyone wants to use the facilities**, sometimes they just **need some space.**"

"**If only there was a garden full of flowers here...**"

"Would it look bad here from another angle?"

I approached some potential users of the park to let them know about my redesigned scenarios. They put forward suggestions and views on scenarios and diverse landscape elements. I found that the users had lots of ideas for the landscape and were enthusiastic during the test, but they **had difficulty describing the landscape they wanted.**

So I chose to **communicate design ideas to the user by hand drawing**. Users can express their ideas through very simple hand-drawings and then I **try to integrate** the user's ideas **into the actual scenarios.**

## ● Co-creative design



In order to make the user's needs more directly reflected in the design, I, as the designer, invite the user to join me in the design.

**1. Designer** Explaining the preliminary design to the user.

**2. User** Making comments or expressing them by drawing simple sketches.

**3. Designer** Understanding user intent and integrating user ideas into scenarios.

**4. User** Determining whether the modified design meets the requirements.

**5. Designer&User** Repeated discussions and iterations.

**6. Designer** Delivering the final proposal for collaborative design.

## ● Perceptual Preference Assessments II



After completing the co-design, I tested and iterated on the design again. Users rated their satisfaction with my redesigned scenarios and the landscape elements within them in the same way. I recorded the ideas and suggestions they made.

### Test finding

User satisfaction with both **natural and artificial landscape elements** has increased.

**Significant increase** in user satisfaction with **service facilities and construction**.

### Major improvements

**1** Possibility of adding other landscape elements

**3** Landscape details

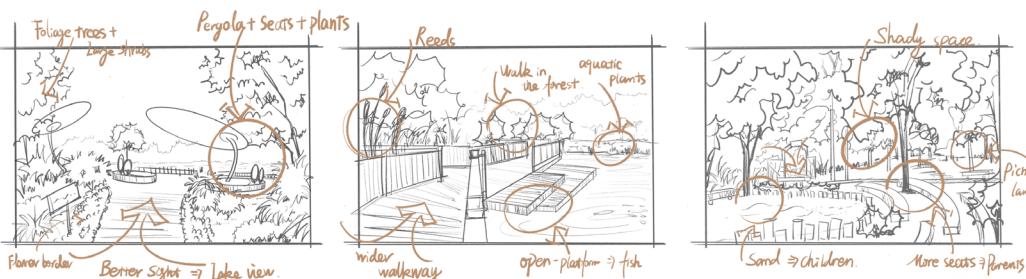
**2** Features of the scenarios



## ● Primary Design



I conducted three sketches **from the visitor's perspective** to explore how to solve the previously mentioned problems in actual scenarios.



## ● Final Deliverables



After organizing feedback from testing, I developed my design **from an axonometric perspective**.

### 1. Waterfront platform

A waterfront platform with a view of the lake, where visitors can take a longer break and enjoy the beautiful flowers.

- Wider view of the lake



- Seats integrated with terrain

- Resting while watching the view

- More attractive landscape elements like flowers and reeds

### 2. Viewing platform and walkway

A walkway through the lake and forest, also including viewing platforms where visitors can get close to the water. Visitors can watch birds and feed fish here.

- More aquatic plants to emphasise the aquatic landscape



- Platform for bird watching and fish feedings

- More space to stay on the walkway

- Platform where visitors can rest and interact with the water

- Different types of walkways

### 3. Children's playground

A scenario featuring child-friendly activities and relaxation, where visitors can enjoy family time.

- Open lawn and tables for picnics

- Beautiful shaded space in the forest to relax



- Interactive service facilities integrated with large trees

- More space for children to play in the sand

- More seats for parents to look after their children

- Paths in the woods

## Final conclusion

### 1 Key influencing elements

According to my research, there are a number of landscape elements that **attract visitors** or **influence visitor satisfaction**:

1. Natural landscape elements are popular with visitors and attract them to the park.
2. Artificial landscape elements largely influence the experience and satisfaction of users

Designers should **pay attention** to artificial landscape elements, but **not ignore** the role of **natural landscape elements**.

### 2 Suggestion I: Focus on five issues

I have identified five issues about artificial landscape elements that **designers tend to overlook**:

1. Lack of attraction.
2. Insufficient number.
3. Disturbed by natural landscape elements
4. Inappropriate layout
5. Lack of space

I suggest that **designers pay more attention to these issues** when designing urban wetland parks in the future and can **use the scenarios I designed as a reference**.

### 3 Suggestion II: Co-creation

I have used co-creation in my designs and proven that **it is helpful to design and prototype with the users**. I suggest that **designers consider co-creation** methods to make designs more user-friendly and reduce the cost of optimising them.



# 03. A Glance into Eternity

*Optimise the experience of visiting the Mogao Caves*

Service design/UX&UI design  
Historic heritage conservation/Digital experience

Individual project

April. - May 2021 Duration: 7 weeks

As a lover of traditional culture, the experience of visiting the Mogao Caves gave me a bad impression, and many visitors have similar thoughts. Visitors come expecting to see the treasures of Eastern culture, only to return with disappointment. I redesigned the flow of the Mogao Caves tour in the hope of enhancing the visitor experience. It would also enhance the cultural impact of Mogao Caves and enable the historical heritage to be more valued and protected.

**Research**  
-Secondary research  
-Field research

**User Research**  
-Interview  
-Persona  
-User journey map

**Ideation**  
-Mind map  
-Userflow

**Sketch**  
-Wireframe

**Reflection**  
-Desirability/Viability/  
Feasibility  
-Next step

**Final design**  
-Service scenarios



# Inspiration

## My Experience

I am a travel enthusiast and have a deep love of traditional culture. The Mogao Caves are representative of the culture of the Silk Road and I have visited there several times. I marvelled at the beautiful murals and statues, but the experience was not good for me: exhausting, boring, too restrictive... Despite this, every visitor, including me, is overwhelmed by the sight of the caves.



In recent years, I have noticed an increase in social media posts about China's historical sites. The Mogao Caves, with their unique desert scenery and exquisite caves, have become a popular travel destination for young people. However, the less-than-ideal visiting experience has also brought many negative comments. As a lover of traditional culture, I hope to improve the visitor experience and also bring more benefits to the Mogao Caves.

## Background Research

**The Mogao Caves**, also known as the Thousand Buddha Grottoes, form a system of 500 temples 25 km southeast of the center of Dunhuang, an oasis located at a religious and cultural crossroads on the Silk Road, in Gansu province, China. The caves contain some of the finest examples of Buddhist art spanning a period of 1,000 years. The Mogao Caves are the best known of the Chinese Buddhist grottoes.

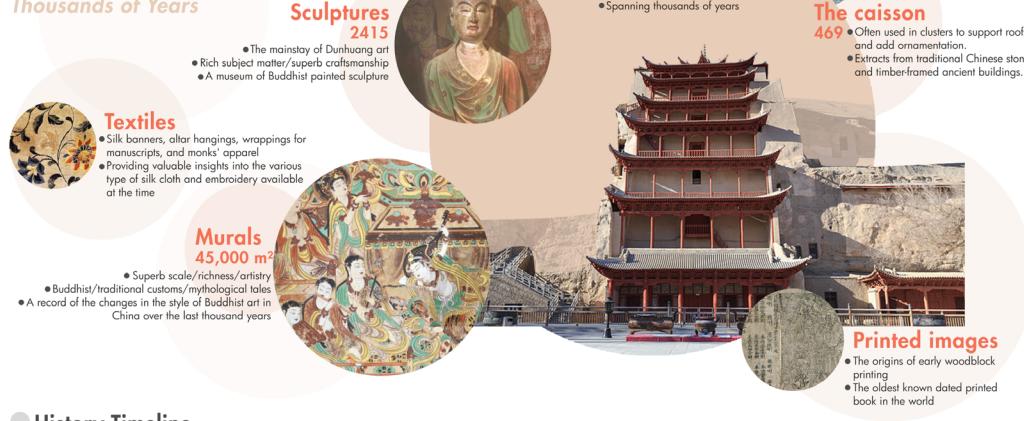
### Key Words

World Art Treasures The Gate Between East and West

Art Galleries of the World

The Museum on the Wall The Silk Road

Thousands of Years



### History Timeline

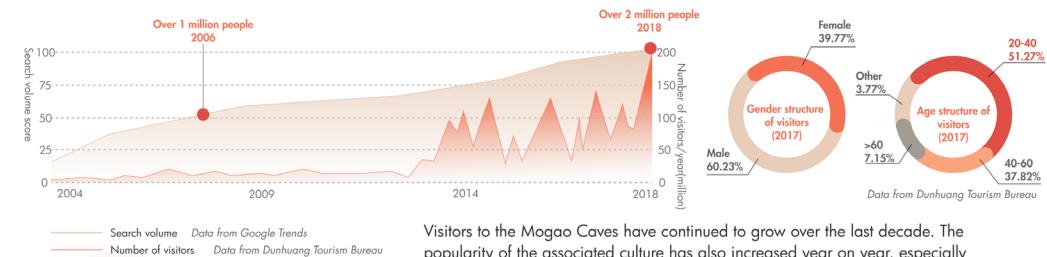


## Current situation

The tour of the Mogao Caves consists of three main sections: the Mogao Caves Digital Exhibition Centre, the cave area and the non-cave area.



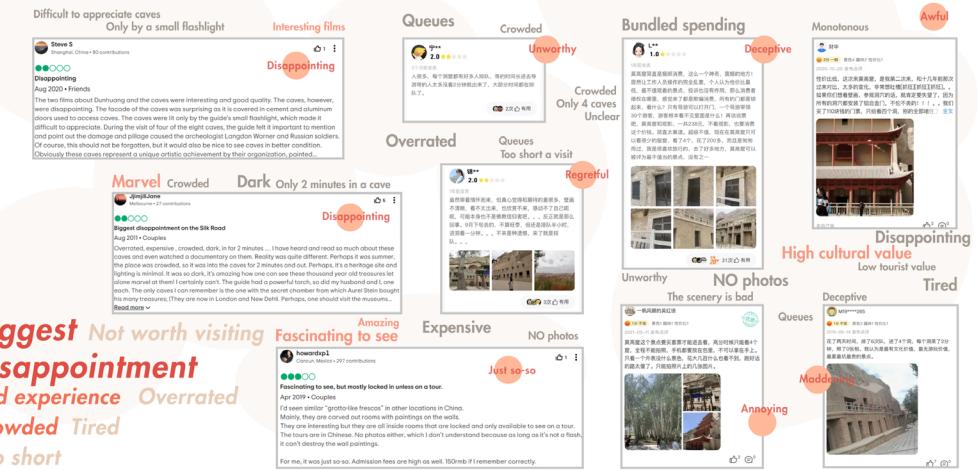
Services to be included	Online only
Tickets	Compulsory
Two films	Compulsory
Tour bus(departure)	Include
Guide in the cave area (6-8 caves)	Compulsory
Explanation service	Compulsory
Other facilities: exhibition gallery, art gallery...	Include
Food & Beverages	Optional
Souvenir Shop	Optional
Tour bus(return)	Include



Visitors to the Mogao Caves have continued to grow over the last decade. The popularity of the associated culture has also increased year on year, especially among the younger demographic.

## Online Feedbacks

To gain a broader understanding of user feelings, I collected comments and problems from visitors to the Mogao Caves from popular travel forums in Chinese and English.



**Bigest Not worth visiting  
disappointment**  
**Bad experience Overrated**  
**Crowded Tired**  
**Too short**

## Conclusion

**1** The current process of visiting the Mogao Caves has led to many bad experiences for visitors.

**2** Visitors recognise the value of the Mogao Caves but are disappointed with the service provided.

**3** The current visit process is difficult to ensure tourists' experience as the number of visitors soars, and it is also difficult to promote the protection of the Mogao Caves.

# Interview

The Mogao Caves are of **great value** and visitors have **high expectations** of them, but the actual experience is **disappointing** for many. Aware of this paradox, I conducted interviews to explore further the difficulties encountered by visitors.

I interviewed several friends who had been to the Mogao Caves and were impressed by them. Before the interviews began, I divided the experience of the tour into three stages: **planning and purchasing tickets, the process of visiting, the post-visit stage**. For each stage separately, I asked the interviewees about what they were **satisfied with** and **dissatisfied with**.



**Jenny**

A travel blogger who frequently travels to famous destinations and has a lot of travel experience.



"Buying tickets was very cumbersome and unclear, I couldn't figure out what was included in the ticket and how to visit. I tried to search the internet for other people's travelogues and shares, but everyone had different routes and no practical information."



**Lee and Mao**

A couple who both love traditional culture and are very knowledgeable about history.



"We were very keen to go to the caves we wanted to go to and stay longer. This was difficult to achieve as the route was random and you had to follow a guide. The pre-visit film is tied to the ticket and we have watched it too many times."



**Daniel**

A photographer who likes to document his life in photographs



"I could hardly find any satisfactory photos of the trip, all the caves were closed to photography and the areas outside the caves were crowded with people."



**Xi Wu**

A university student living in a big city who travels occasionally



"I wouldn't recommend anyone to come here... It took all day and less than half an hour to actually be in the caves. We were in a hurry to walk and were very tired. I didn't know where to go after the cave tour and didn't see any restaurants. Anyway it just wasn't worth the visit!"

# Persona

By integrating background research and interviews, I created three personas to identify the best target groups

They are **already familiar** with the historical background and knowledge of the Mogao Caves, are familiar with the routes and have **less need** for guides and explanations during their visit.



Probably not my target group



**Han**

Occupation: lecturer

Age: 36 years old

Location: Beijing

## BIO

Han is a university teacher with a great interest in history and art. Apart from working, he often visits historical museums and galleries. He enjoys learning about traditional culture and has visited many valuable historical sites. He has been to Dunhuang many times as it represents the culture of the Silk Road.

## Goals

A worthwhile trip

Academic research

Planning ahead

## Interests

Travel ●●●●○

History ●●●●○

Take photos ●●●●○

Share ●●●●○

1

**Big fan of history and art**

## Motivations

Meet interests

Obtain knowledge

## Frustrations

Uncertainties

Too crowded

Time limits

**Candice**

Ordinary tourist with no clear purpose

Occupation: College student

Age: 19 years old

Location: Wuhan



They have **little interest** in tourism or history and culture, and are more interested in relaxed photo opportunities and are **unlikely to want to visit** the Mogao Caves in full.

2

Probably not my target group

## Interests

Travel ●●●●○

History ●●●●○

Take photos ●●●●○

Share ●●●●○

## BIO

Candice is a young college student who enjoys the big city life and entertainment. When she has free time, she likes to meet up with friends or go shopping. She has little interest in traditional culture and historical monuments. She rarely shares trips or photos on social media.

## Goals

Relaxation

Promote friendship

Short tour

## Motivations

Reduce the stress of studying

Spend time with friends

Not interested

## Frustrations

Physical demands

Boring

Waste of time

**Jiang**

Occupation: UI designer

Age: 25 years old

Location: Shenzhen



3

## Interests

Travel ●●●●○ Take photos ●●●●○

History ●●●●○ Share ●●●●○

Travel enthusiast, interested in history and traditional culture

## BIO

Jiang is a young designer who loves to travel. Travelling is more than just relaxation for her, it is also an opportunity to experience different cultures. She is willing to try some physically demanding but rewarding trips. She has an interest in traditional Chinese culture, but doesn't know much about it. She documents her travel experiences on social media as a reference for young people who also like to travel.

## Goals

Relaxation

Different experience

Understand traditional culture

Organise a full schedule

Write blog and make vlog for fellow travellers

## Motivations

Reduce the stress

Enrich life

Get knowledge

Valuable

Run social medias

## Frustrations

Keep track of various booking

Afraid of queues

Waste time on road

Lack of check-in places to take photos or videos

Not getting interaction in social networks

# Conclusion

The third persona has an interest in both tourism and history, as well as a willingness to share their photos and travel experiences. They are more likely to **be willing to learn and experience** as much as possible about the Mogao Caves and thus **use as many of the services** offered to meet their needs **before, during and after the trip**.



Therefore, an **app** needed to be designed to make their visit more **informative, interactive, comprehensive, and convenient**.

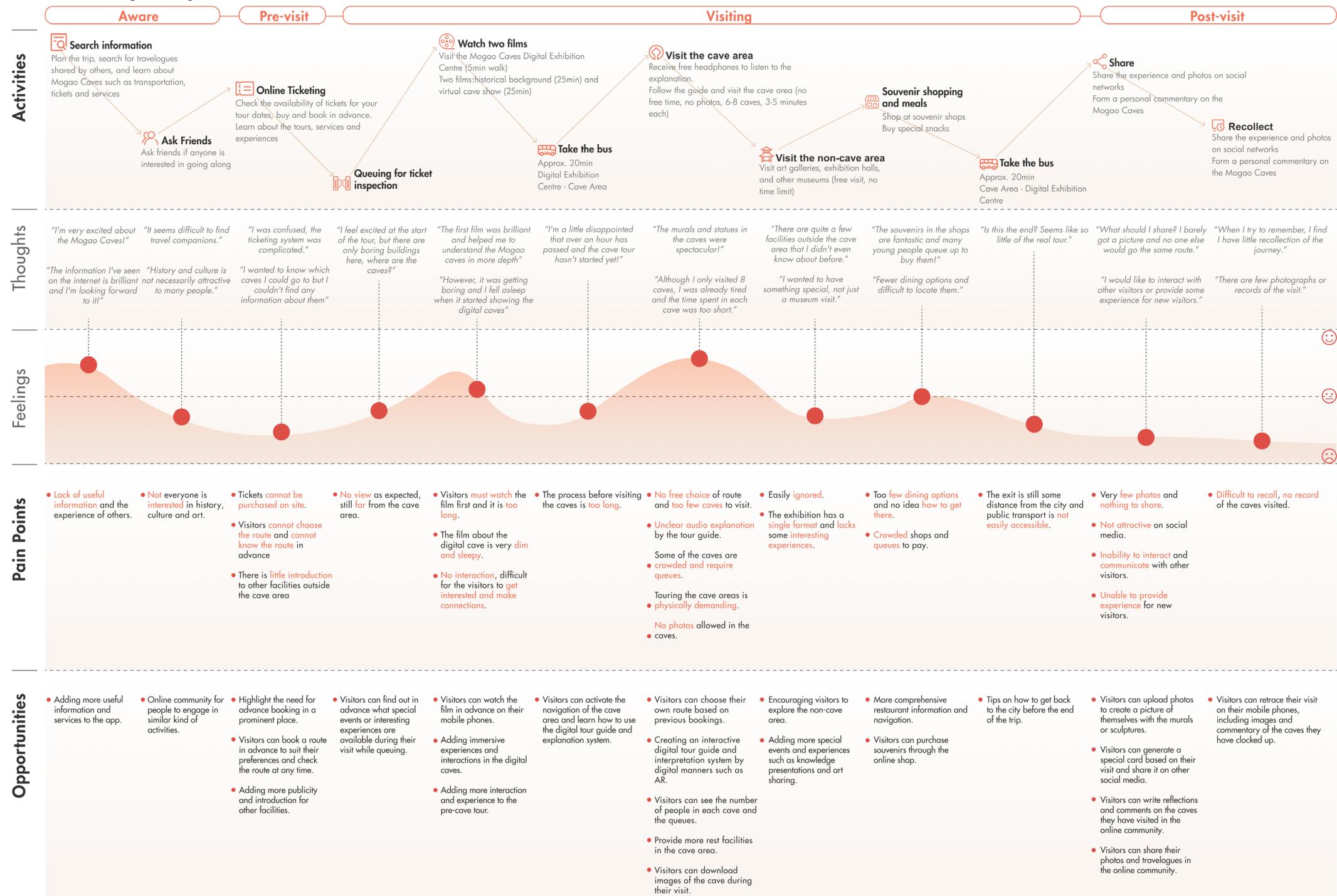
# Insights

1 The **procedures** for buying tickets and visiting are **so complicated** that visitors have **no desire** to explore.

2 Visitors are **not allowed to visit according to their own preferences** is a major reason for a bad experience.

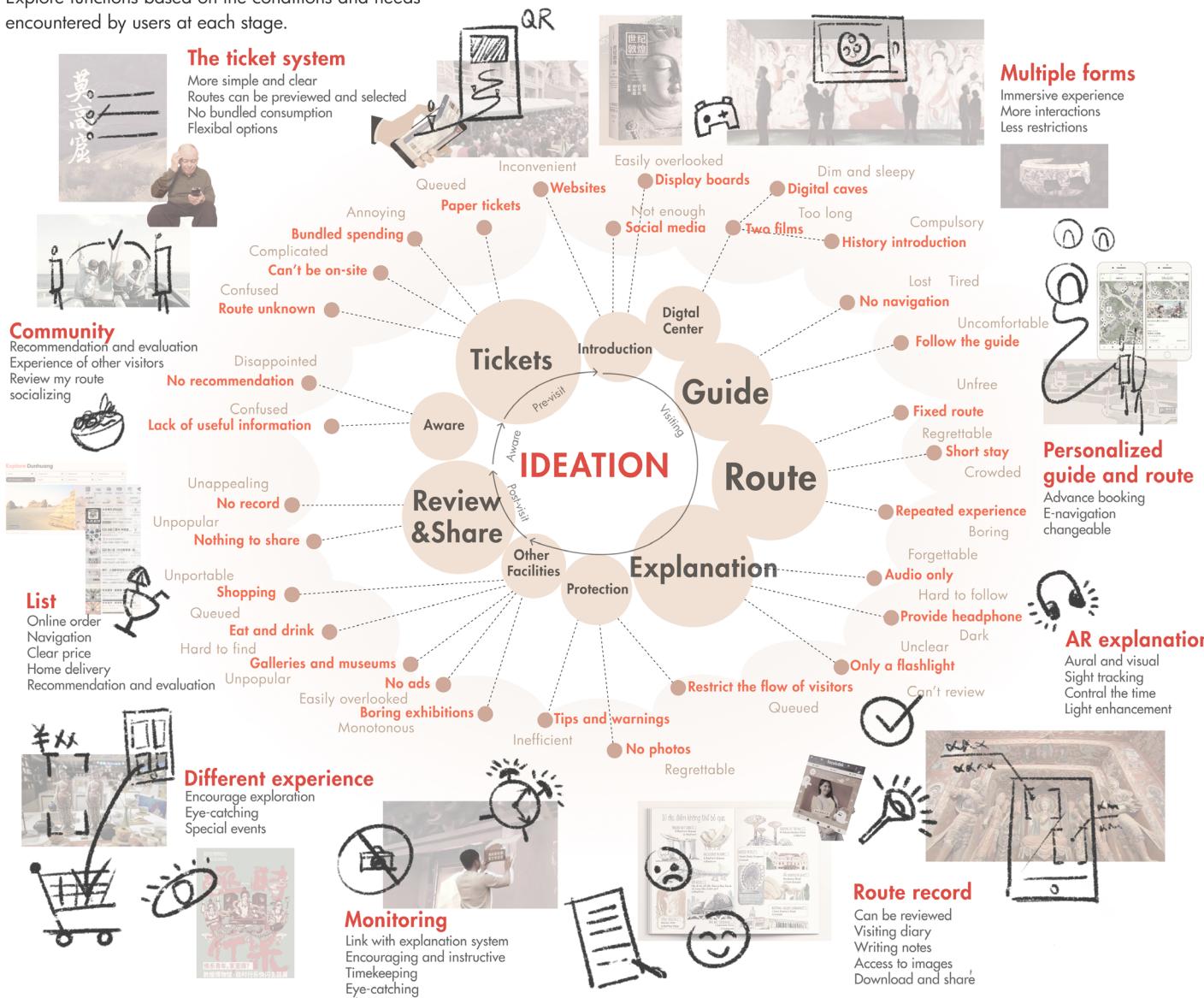
3 **Monotonous services and facilities** leave visitors **uninterested** in the areas outside the caves. Visitors can't even get a satisfactory photo.

# User Journey Map



# Mind Map

Explore functions based on the conditions and needs encountered by users at each stage.



## What we can do to improve the user experience?

### 1 Making the process more convenient

Provide a clearer, simpler and more flexible ticketing and visiting process.

### 2 Having customized plan

Visitors have the opportunity to choose their own tour route according to their interests.

### 3 Making the visit more interesting

Using new technology to provide visitors with a multi-sensory experience when visiting the caves.

### 4 Providing more ways to share and interact

Enabling visitors to share the journey and leave a lasting impression.

# User Flow



# Wireframe



# Final Deliverables

## 1 Open the app

Jiang opens the homepage, logs in and then buys tickets or visits the community's travelogues to get a preview of how to visit the Mogao Caves.

### Home page

I want to learn about the Mogao Caves and plan my trip in the app.

- Introduction
- Tour guide
- Explore and learn
- Community Online shop
- Protection
- My account

### Special events

### Popular travelogue



### Log in

#### Tips

Please log in to continue exploring.



莫高窟  
2018.09.15

注册

登录

Logo (Traditional Chinese calligraphy)

ID  
Password

Log in  
Sign up

### Creating a character



Choose a virtual character of the Mogao Caves

Name  
Gender  
Birthday

OK

### My account

Users can upload their own photos and choose a favorite mural to create a special photo

Number of visits/caves that have been visited

Users' tags (Food / Culture / Travel Blogger...)

Brief Introduction (Residence / Age / Number of followers...)

My tickets / Friends Cart / Massages

My travelogues / Album / Diary / My routes



## 2 Book the route

After completing ticket purchase, Jiang can book a route according to her preferences.

### Ticketing complete



My character

E-tickets

我的路线

还没有预约路线吗?  
访问路线预约系统，游客可以选择跟随官方推荐的路线，也可以根据自己需求来选择特定的洞窟。

现在预约!

My route

Access to choose the route

Click to book

### Select route

Follow the route recommended by the system (A or B)

Generate route based on preferences

Access to custom mode

### Accessible caves

- 根据推荐路线
- 根据喜好生成路线
- 自定义路线

### List of caves with profiles

Publish my route  
Yes Join the list of visitors (same route)

发布路线 确认

### Confirm my route



### List of caves with profiles

With a clear route, I can plan my trip better!

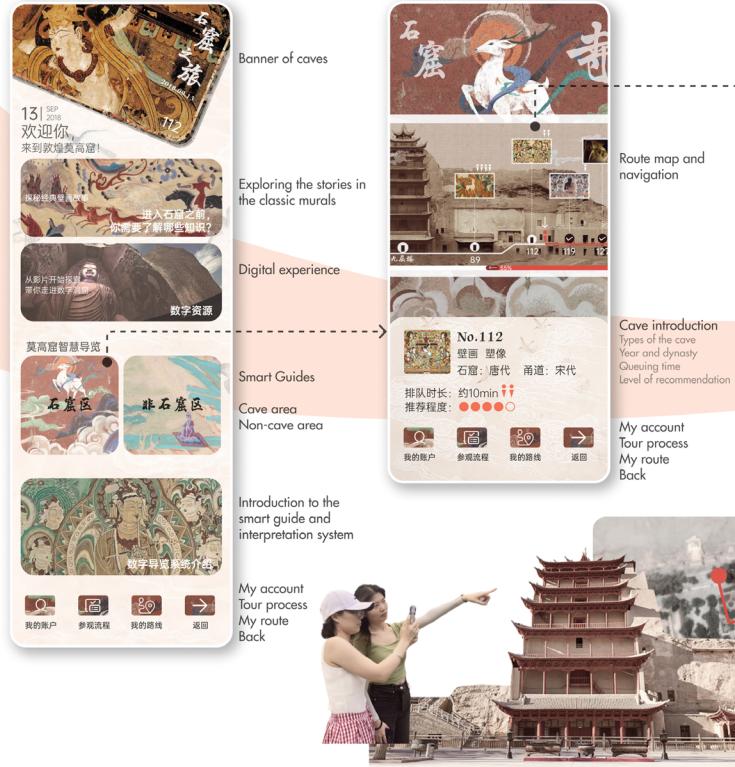
I have the opportunity to meet people who enjoy traditional culture as much as I do!



### Visitors of the same route

- 用户A
- 用户B
- 用户C
- 用户D

## Tour guide



## Cave details

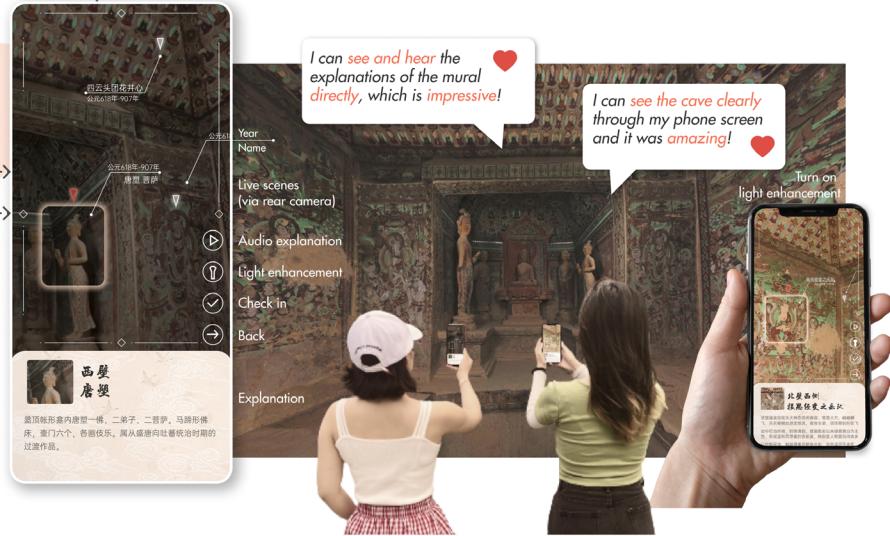


## Visit the cave area

Jiang enters the Mogao Caves, opens the tour guide and follows the pre-booked route to the caves.

3

## AR explanation



4

## Share the experience

The trip is over. Jiang shares the journey card on social media and is ready to post her photos and travelogues in the Mogao community!

The journey card are so beautiful that I don't need to worry about not having anything to share! ❤️

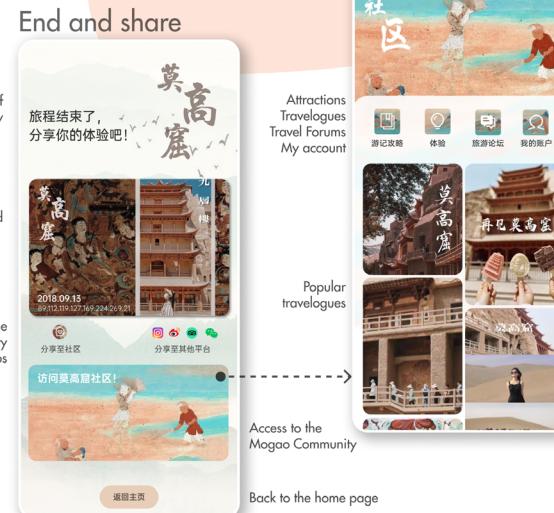


Encourage sharing of the journey



Journey Card

Share to the Mogao Community or other apps



## Community



## Travelogues

## Attraction



## Travel Forums

# Reflection

In further thinking, I reflect on key parts of my design through three perspectives:

## Desirability

Am I solving for the right pain point for my target group?

## Viability

Does my solution contribute to long-term development for the Mogao Caves?

## Feasibility

Is my solution technically feasible?

### Desirability

#### Enjoying convenient processes

Previously visitors had to switch between platforms to complete their visit, which lacked instructions and flexibility. This has led to a poor impression of the Mogao Caves.



By using this **versatile and informative** app, our users can **plan their trips better** and **visit more easily**.

#### Having customized plan

Tourists have different interests among the caves, which is a main reason why the caves can be too crowded to offer a good experience.



By **previewing the caves**, our users have the opportunity to **choose their most interested caves** and **plan their route in advance**.

#### Enjoying the Mogao Caves in more ways (multi-sensory)

The caves are the best part of the Mogao Caves, but visitor access is restricted for reasons of heritage form and conservation.



Through **augmented reality** and **audio explanation**, our users can **gain a better understanding** of the caves as they visit.

#### Gaining satisfaction through sharing and interacting

The no photo rule and unpredictable routes make it difficult for visitors to be impressed with the Mogao Caves and to share their trip with others.



By sharing journey cards, visitors can gain **timely social interaction**. In the online community, visitors can **participate** in discussions and interactions at any time to **meet their social needs**.

### Viability

#### Better management and service

#### Better management and service

### Feasibility

Visitors can use *My Disney Experience* to enjoy almost all services related to visiting Disneyland.

Disneyland has launched the **MAXPASS** service in their app to give visitors the opportunity to make **FASTPASS** reservations from their smartphone.

**HUAWEI** released a partnership with the Mogao Caves in 2020, which allows users to experience AR navigation and scene explanation through Huawei phones. It shows this is a real trend.

**The Forbidden City community** provides a platform for people who love the Forbidden City to share and exchange ideas, forming a regular circle of cultural audiences.



# What's Next?

## 1 Creating more immersive experiences through VR and AR

Make better use of digital resources to develop more immersive experiences such as VR tours of virtual caves, interactive games, etc.

## 2 Fostering conservation awareness among visitors

Encourage visitors to spend less time in the caves and to experience other facilities instead; encourage visitors to engage in conservation cultural activities.

## 3 Design app versions in other languages

Providing multiple language versions for non-Chinese speakers.

# 04. Other work

Landscape design/urban design

January. - May 2019 Team work(2): Site research, user research, landscape design

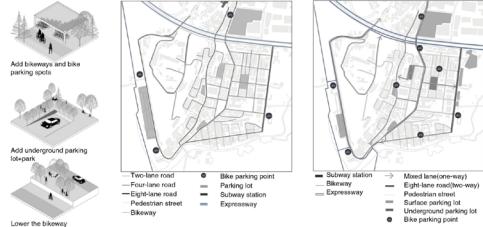
Excellent Graduation Design of Huazhong Agricultural University (Top 5%)

## STRATEGY

The community was renovated from four aspects: traffic, facilities, public space and age-friendliness.

### TRAFFIC

Current situation → Planning



Two-lane road

Bike parking point

Parking lot

Subway station

Bikeway

Expressway

→

Mixed lane(one-way)

Bike lane(two-way)

Eight-lane road

Pedestrian street

Bikeway

→

Subway station

Bikeway

Expressway

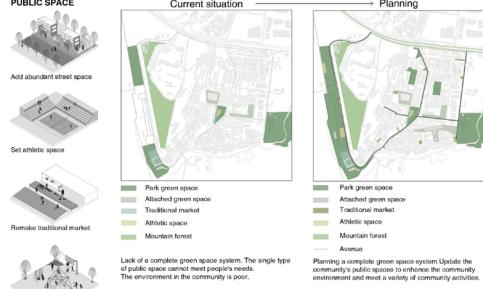
The road is narrow and cars go both ways, however, the utilization rate of the roadway is low. Lack of sidewalks and bikeways.

Re-planning the car route.

Increasing pedestrian space by changing most two-way streets to one-way streets. The parking lots were converted into a community park and underground parking lots were built to meet the parking demand.

### PUBLIC SPACE

Current situation → Planning



Park green space

Attached green space

Traditional market

Athletic space

Mountain forest

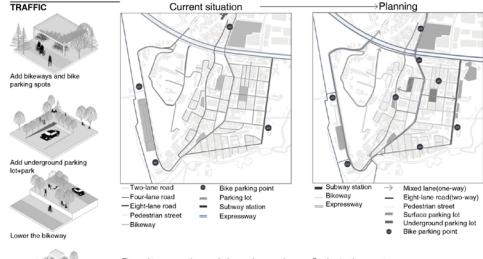
Avenue

Planning a complete green space system. Update the community's public spaces to enhance the community environment and meet a variety of community activities.

The community was renovated from four aspects: traffic, facilities, public space and age-friendliness.

### TRAFFIC

Current situation → Planning



Two-lane road

Bike parking point

Parking lot

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→

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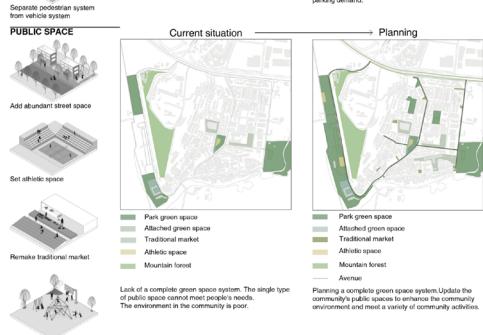
Expressway

The road is narrow and cars go both ways, however, the utilization rate of the roadway is low. Lack of sidewalks and bikeways.

Re-planning the car route. Increasing pedestrian space by changing most two-way streets to one-way streets. The parking lots were converted into a community park and underground parking lots were built to meet the parking demand.

### PUBLIC SPACE

Current situation → Planning



Park green space

Attached green space

Traditional market

Athletic space

Mountain forest

Avenue

Planning a complete green space system. Update the community's public spaces to enhance the community environment and meet a variety of community activities.

The environment in the community is poor.

