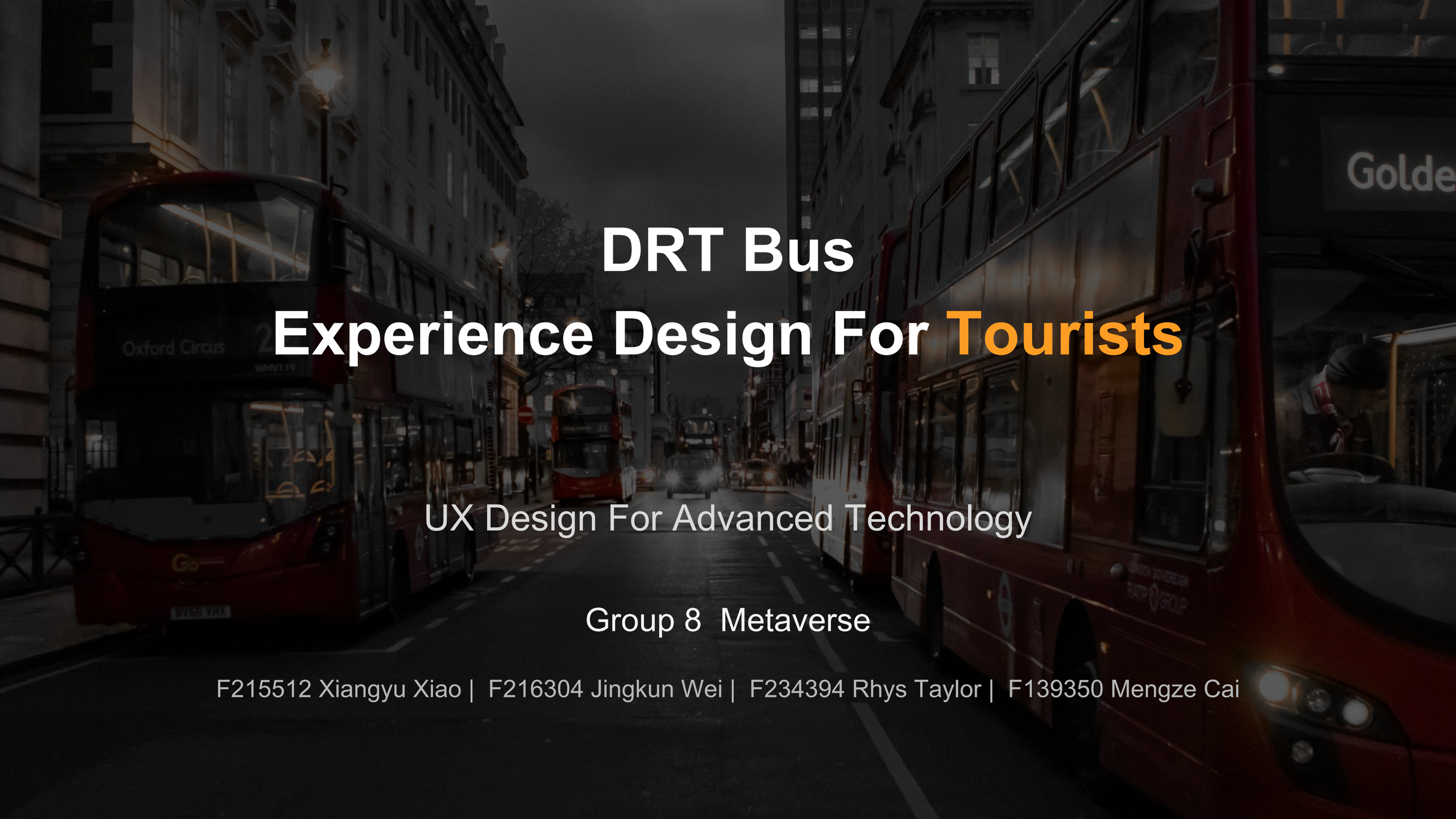


DRT Bus
Experience Design For Tourists

UX Design For Advanced Technology

Group 8 Metaverse

F215512 Xiangyu Xiao | F216304 Jingkun Wei | F234394 Rhys Taylor | F139350 Mengze Cai

Design Outlines

Discovery

UN Goal

Secondary Research

Primary Research

- Pilot Study
- Quantitative Research
- Qualitative Research

Analysis

- Persona
- Com-B Model
- Journey Map

Define

Ideation

- Mind mapping
- Brain storming
- Crazy 8s

Develop

Initial Idea

- Co-Design
- Key features
- Story board
- Body Storming

idea development

- Refine key features
- Journey Map Iteration
- Low-fi prototype
- User Test

Deliver

prototype iteration

- Context Scenario
- Mid-fi prototype

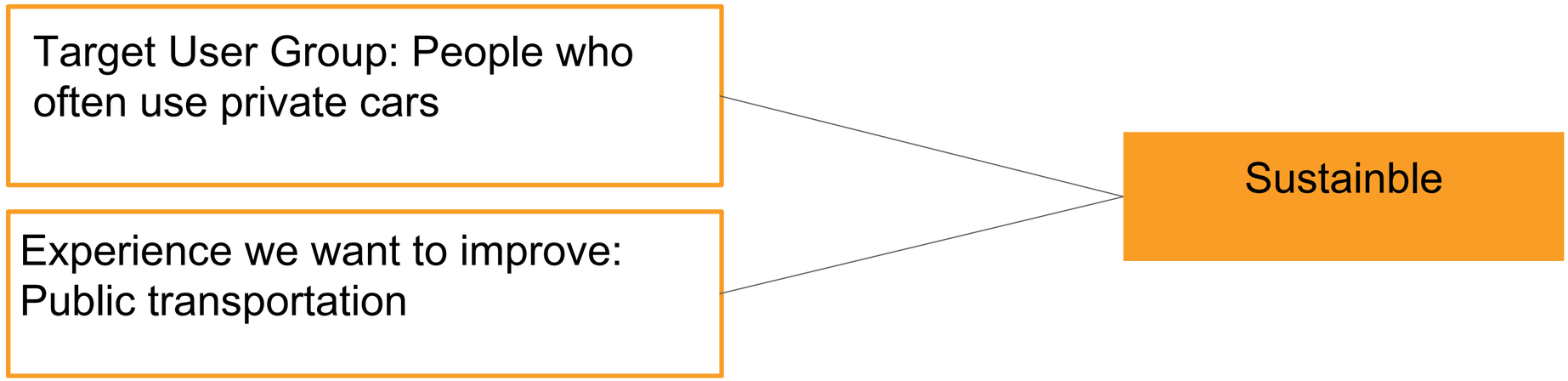
final solution

- Video
- Emotional Experience

Reflection

- **limitation**
- **Future Iteration**

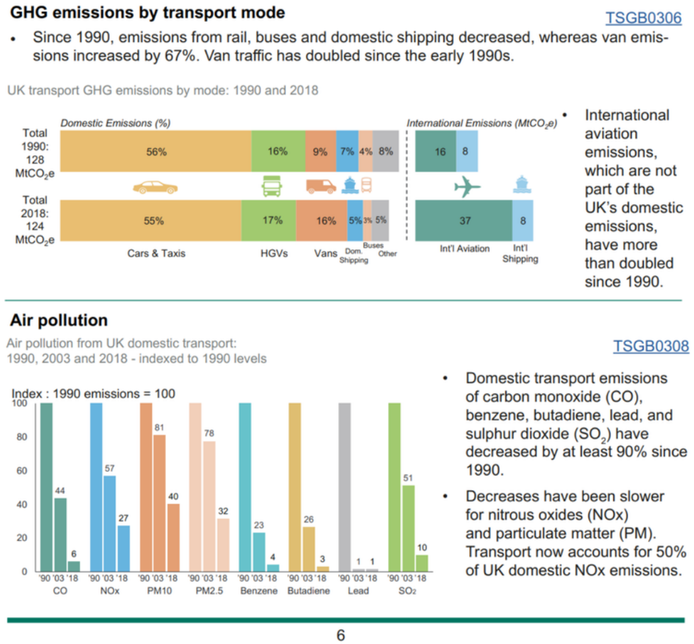
Initial Goal



“How might we design a public transportation experience that utilises advanced technology to encourage more people to travel by public transportation?”

Transportation status in UK

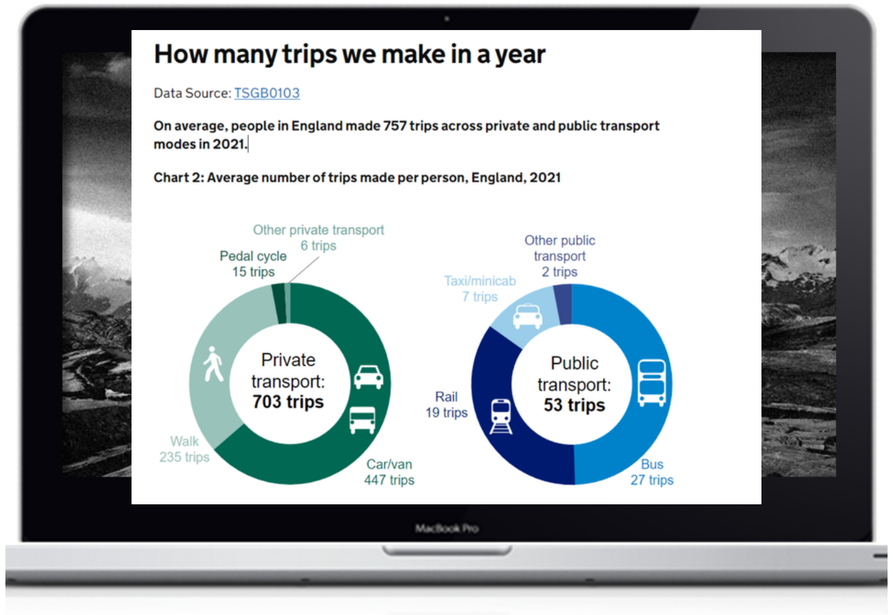
- The pollution caused by private transport
- British public transport status
- Bus safety factor & car safety factor



resourse:GOV.UK
https://www.transportfocus.org.uk/

Insight

- When traveling, private transport is chosen far more often than public transport.
- Citizens are very dissatisfied with public transport, especially buses.
- More than half of the domestic transportation pollution comes from cars and taxis.



Research Method

Pilot Study

Mind mapping
Focus group
As - is scenario

Understand the initial problem, Define the target users, find out the core user

Quantitative Research

Online Survey

Understand the traffic usage status, pain points and motivations of core users

Qualitative Research

Focus Group

Gain insight into core user behaviors, attitudes, emotions and the reasons behind their actions

Findings & Insights

Some people still choose public transport **because of the price**, but it does have the disadvantage of being **inconvenient.**

People are **not** particularly concerned about **time costs** when travelling and it is acceptable to travel a little slowly or even overstay.

Most people will play on their mobile phones or listen to music to **pass the time** on the way, which is partly to blame for the **risk of overstaying.**

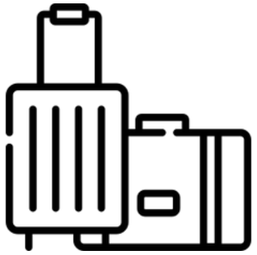
Most people don't like traffic jams, they prefer to **plan their routes in advance** and **choose routes with good views**, but there are taxi apps that sometimes can't **judge traffic conditions**.

Source: Quantitative Research & Qualitative Research

Findings & Insights

Unfamiliarity with the route, fear of getting lost, and having luggage are the main reasons why users choose to take a taxi.

They won't choose to take the bus for environmental reasons because there's nothing to **quantify their environmental actions**, and they're not willing to pay for abstract concepts with concrete actions.



Long walks, luggage and other factors can add to **fatigue**.

Persona

Sarah Wright

27-year-old, Freelance
lives in Scotland, UK

Background

- Has been to several countries before
- Always been fascinated by other cultures and ways of life
- Always carrying a backpack, a camera, and a lagguge to navigate the city
- Doesn't feel the impact on their life so she doesn't have a strong environmental awareness

Pain Points

- Is afraid of getting lost, so she decided to take a taxi instead of a bus.
- Worried about the cost of the taxi
- Concerned about the traffic and the possibility of getting stuck in it
- Doesn't know how to operate the local public ticketing system
- Have difficulty finding an exit at the airport to take public transport

"I'm so excited to explore this new city, but I'm also a bit nervous about getting lost."

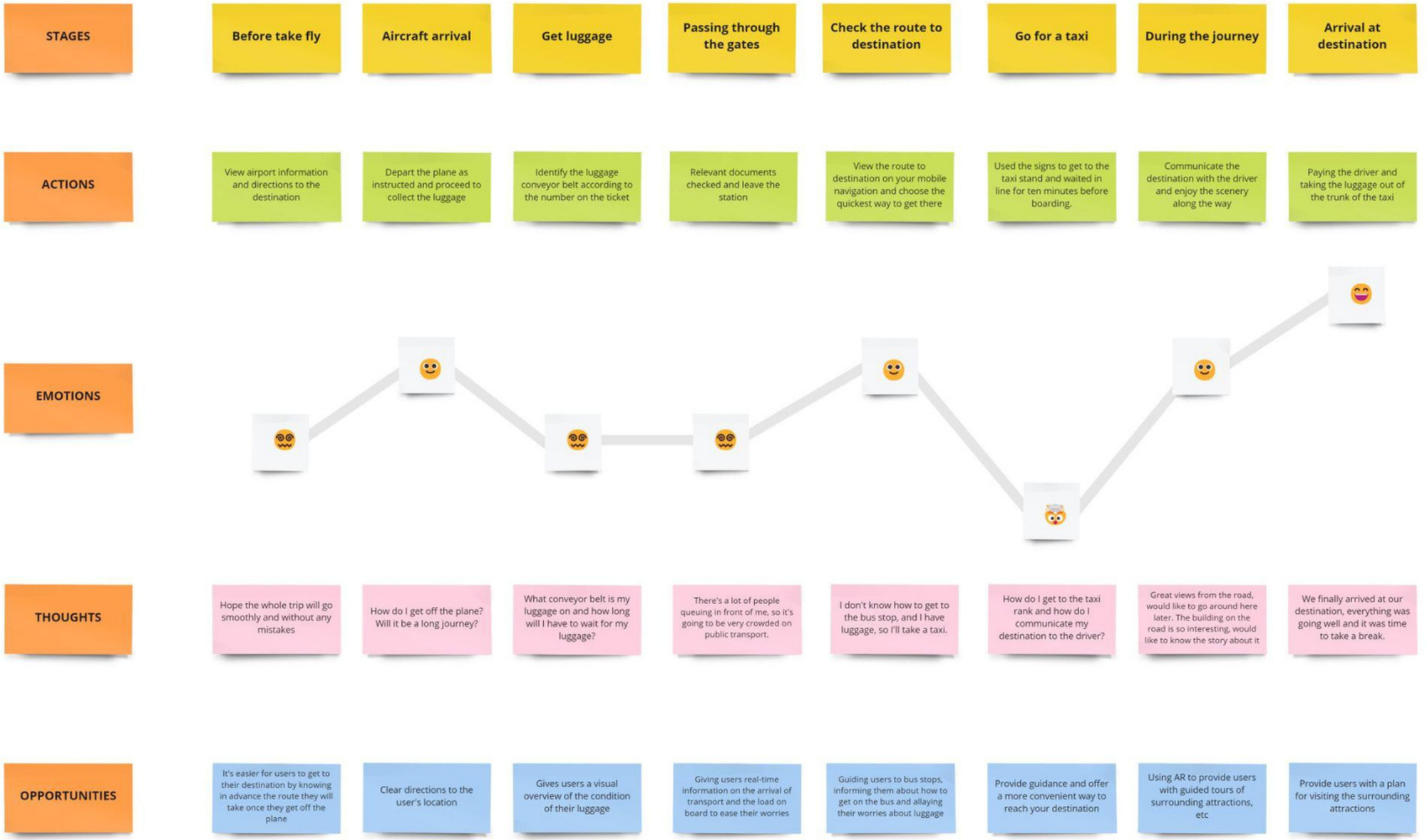
Experience goals

- Wants to broaden her horizons
- Don't want to worry about directions and destination
- Move around quickly and conveniently
- Wants the trip make her comfortable
- Feel rewarded for choosing public transport

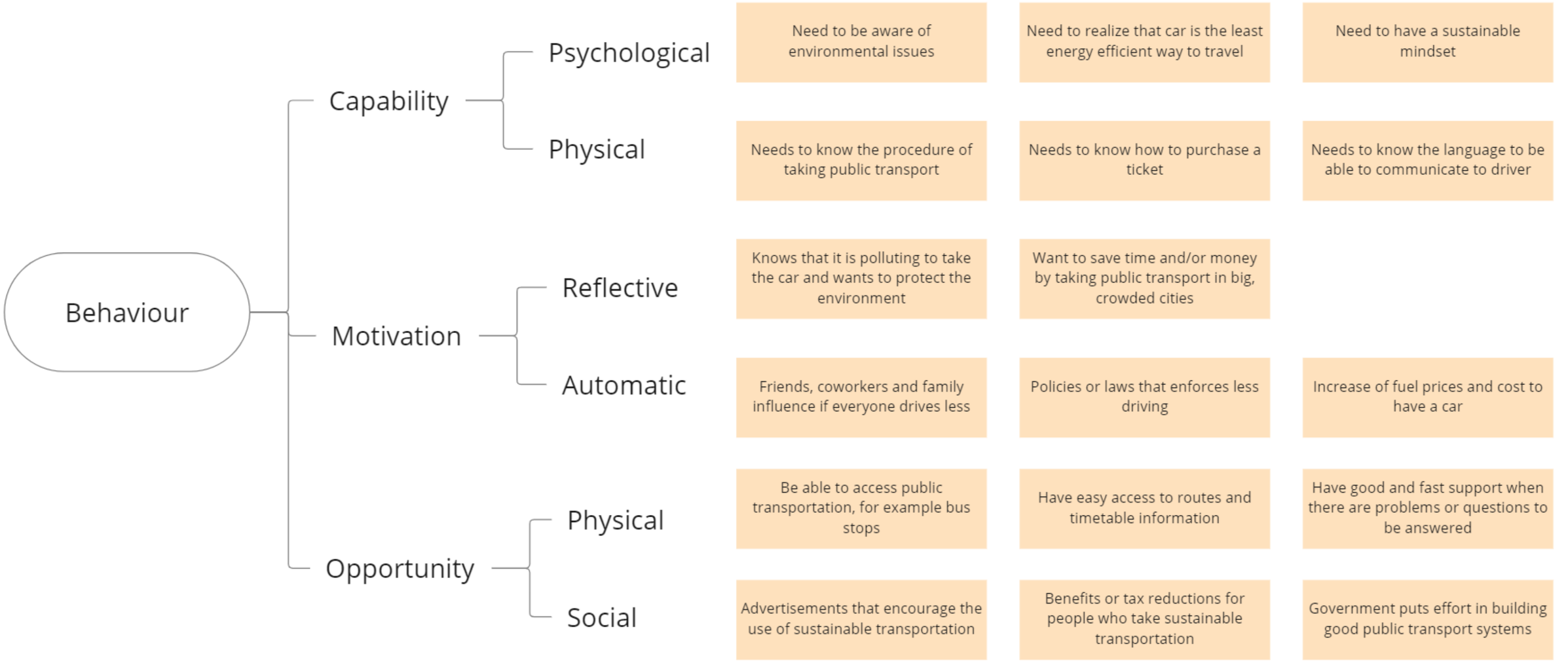
End goals

- Gain a new perspective on the world
- Wants to broaden her horizons
- Become more open-minded and empathetic towards others
- Satisfaction for helping the environment
- See all the famous landmarks and attractions

Journey Map


STAGES
Before take fly
Aircraft arrival
Get luggage
Passing through the gates
Check the route to destination
Go for a taxi
During the journey
Arrival at destination
ACTIONS
View airport information and directions to the destination
Depart the plane as instructed and proceed to collect the luggage
Identify the luggage conveyor belt according to the number on the ticket
Relevant documents checked and leave the station
View the route to destination on your mobile navigation and choose the quickest way to get there
Used the signs to get to the taxi stand and waited in line for ten minutes before boarding.
Communicate the destination with the driver and enjoy the scenery along the way
Paying the driver and taking the luggage out of the trunk of the taxi
EMOTIONS
THOUGHTS
Hope the whole trip will go smoothly and without any mistakes
How do I get off the plane? Will it be a long journey?
What conveyor belt is my luggage on and how long will I have to wait for my luggage?
There's a lot of people queuing in front of me, so it's going to be very crowded on public transport.
I don't know how to get to the bus stop, and I have luggage, so I'll take a taxi.
How do I get to the taxi rank and how do I communicate my destination to the driver?
Great views from the road, would like to go around here later. The building on the road is so interesting, would like to know the story about it
We finally arrived at our destination, everything was going well and it was time to take a break.
OPPORTUNITIES
It's easier for users to get to their destination by knowing in advance the route they will take once they get off the plane
Clear directions to the user's location
Gives users a visual overview of the condition of their luggage
Giving users real-time information on the arrival of transport and the load on board to ease their worries
Guiding users to bus stops, informing them about how to get on the bus and allaying their worries about luggage
Provide guidance and offer a more convenient way to reach your destination
Using AR to provide users with guided tours of surrounding attractions, etc
Provide users with a plan for visiting the surrounding attractions

Com-B Model


Behaviour
Capability
Psychological
Physical
Motivation
Reflective
Automatic
Opportunity
Physical
Social
Need to be aware of environmental issues
Need to realize that car is the least energy efficient way to travel
Need to have a sustainable mindset
Needs to know the procedure of taking public transport
Needs to know how to purchase a ticket
Needs to know the language to be able to communicate to driver
Knows that it is polluting to take the car and wants to protect the environment
Want to save time and/or money by taking public transport in big, crowded cities
Friends, coworkers and family influence if everyone drives less
Policies or laws that enforces less driving
Increase of fuel prices and cost to have a car
Be able to access public transportation, for example bus stops
Have easy access to routes and timetable information
Have good and fast support when there are problems or questions to be answered
Advertisements that encourage the use of sustainable transportation
Benefits or tax reductions for people who take sustainable transportation
Government puts effort in building good public transport systems

User Need Statment

As the tourists in UK

Who are
Unfamiliar with the bus routes in the new city

We need a way to
Guide them to the correct transit route and have a better transit experience

So that they can
Travel in a sustainable and efficient way

HMW Metrics

Source:
secondary research
As-is Scenario
survey
Focus group

HMW let user know the contributions they provide for choosing bus

HMW make users feel less stress than driving

HMW AR to offer interesting entertainment for people in public transport.

HMW make tourists feel more engaging when taking public transport.

HMW make passsengers feel bus are reliable

HMW create distract users and make them forget about time anxiety

HMW enhance the user's perception that buses are accessible

HMW let users know that the bus is faster than they thought

HMW enhance the view of the scenery outside of the bus.

HMW make better service and environment for public transport.

HMW inform users of their previous journey history

HMW use XR to sympathies and combat areas such as harrassment on public transport.

HMW make public transport more comfortable

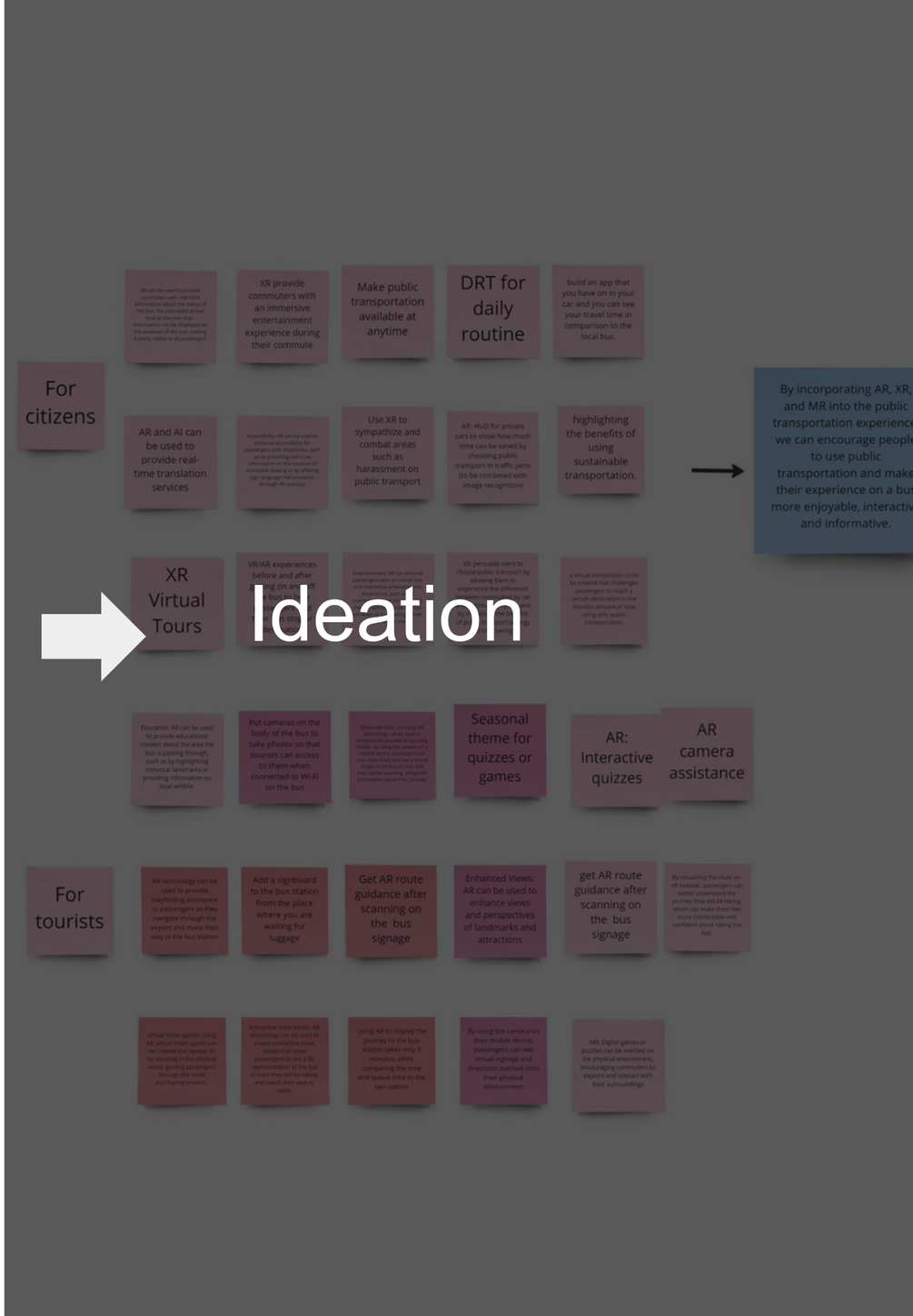
HMW make passsengers feel safe in public transport

HMW make public transport available at anytime.

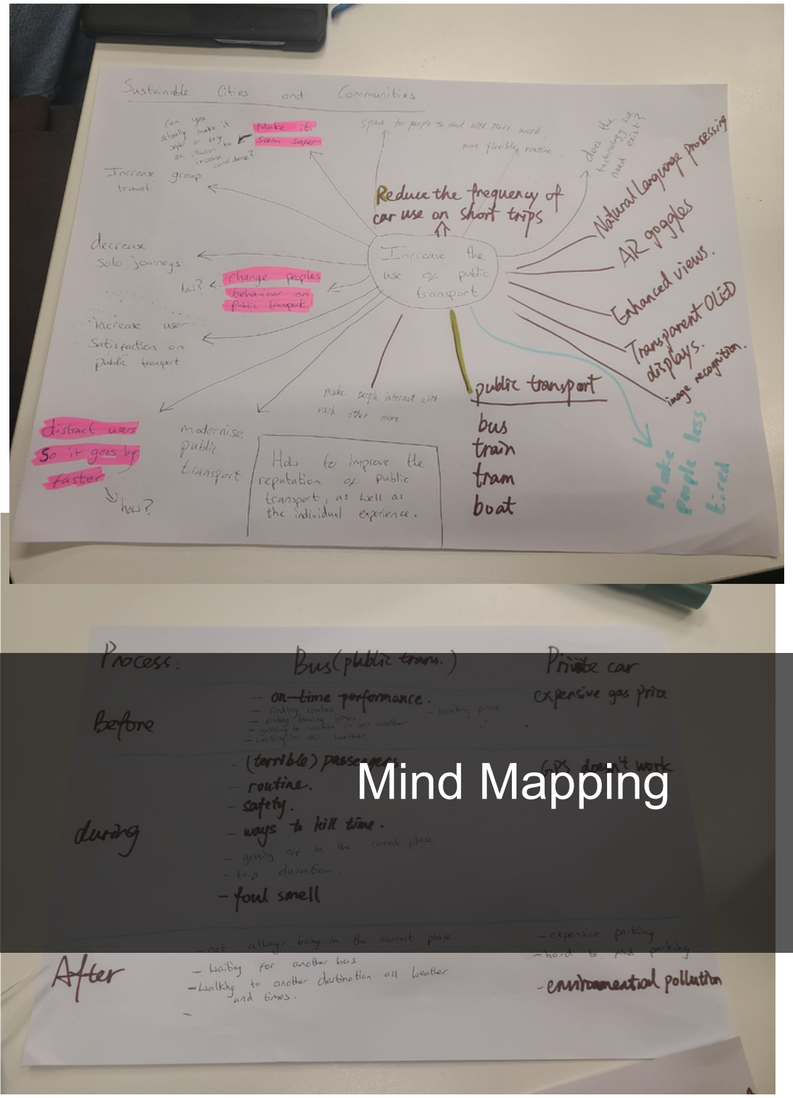
HMW let users know that busses cleaned more often

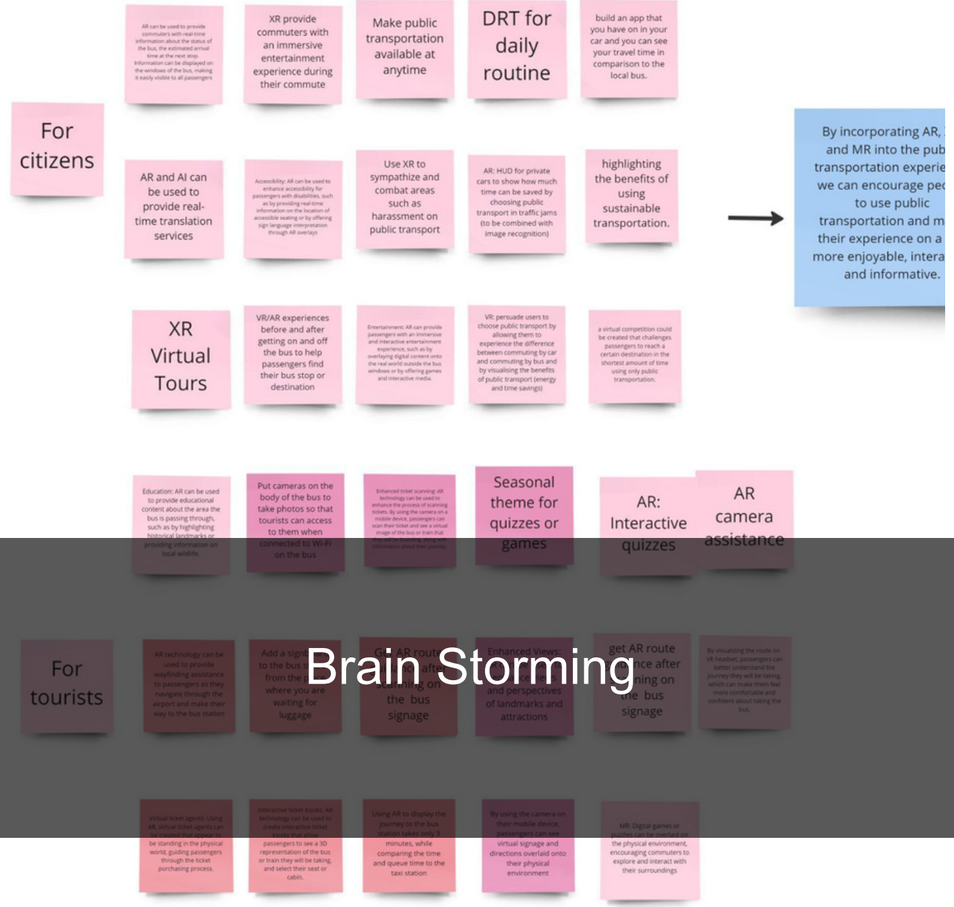
HMW offer enough facilities for babies, disable people, and pregant women

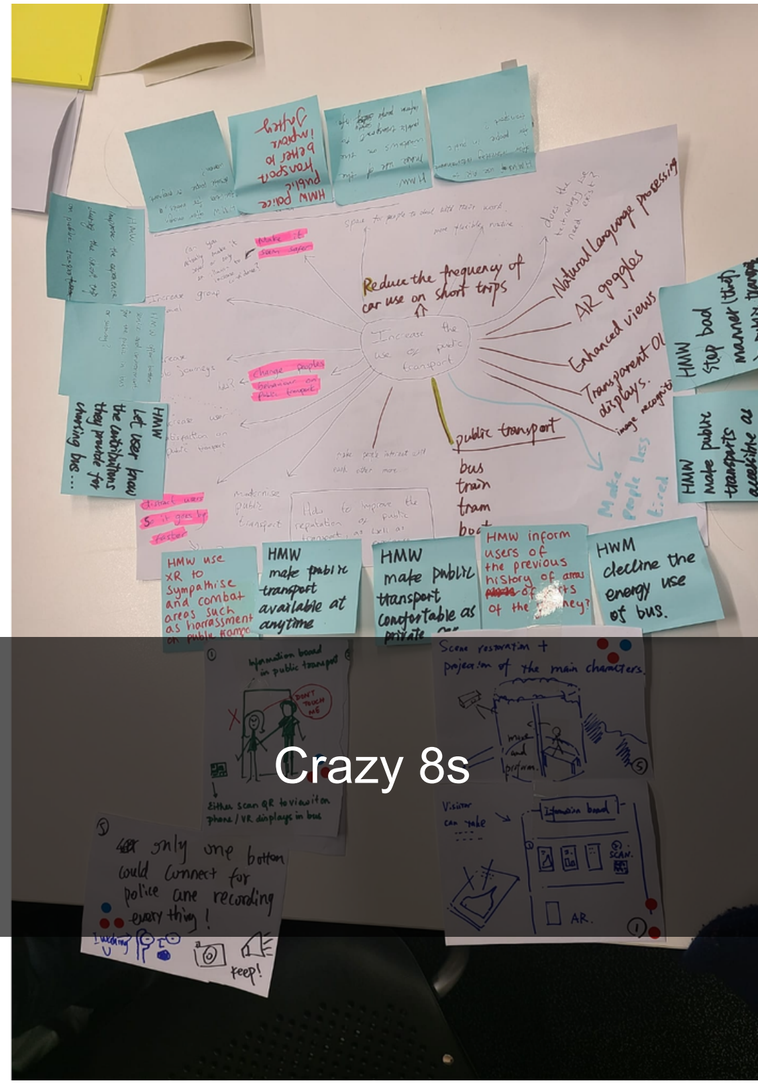
HMW let users realize that public transportation can save money



Ideation Methods





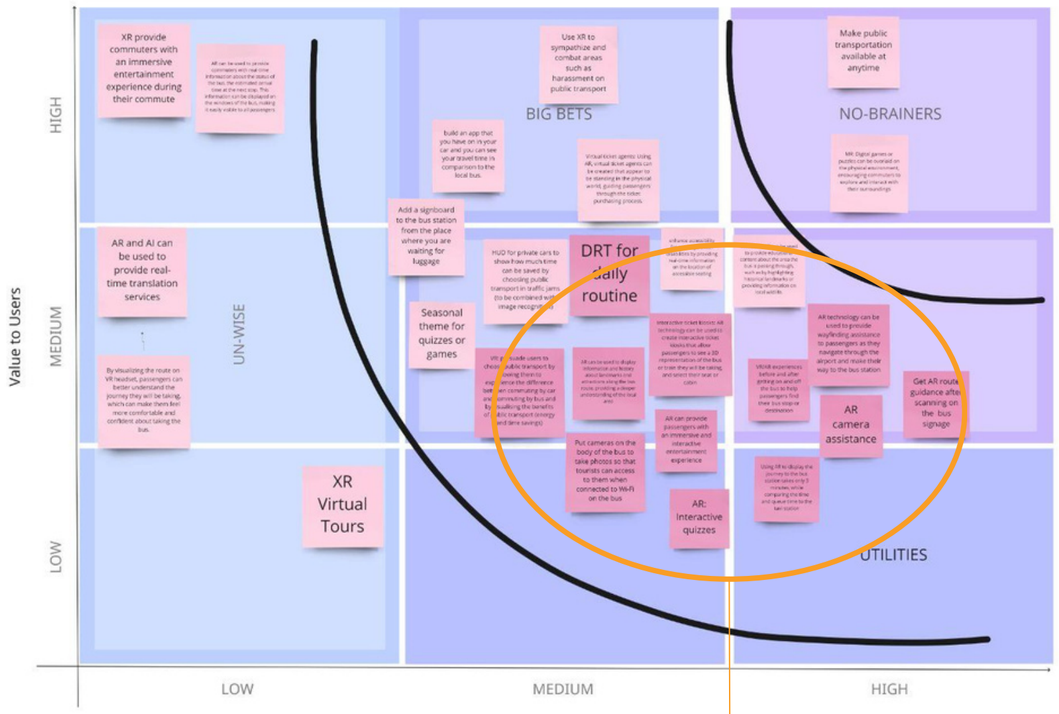


Mind Mapping

Brain Storming

Crazy 8s

Evaluation Initial Idea



Prioritization Grid

available functions

Idea	Reduces anxiety	Rewards me	Nostalgia	Design aesthetics	Badge value	Wellness	Therapeutic value	Fun	Entertainment	Provides access	Total
Visualizing the impact of different transportation options through VR					✓	✓		✓	✓	✓	5
AR technology can be used to provide wayfinding assistance to passengers as they navigate through the airport and make their way to the bus station	✓					✓				✓	3
AR: Interactive quizzes and photo taking		✓	✓	✓				✓	✓		5
DRT bus	✓				✓					✓	3

Idea Emotional Comparison Table

key functions

Technology Selection

Selected Technology

Our Target

Rejected Technology

- **AR** ..... **Clear reality guidance**
- **VR** ..... **Immersive experience**
- **AI** ..... **Optimize DRT bus information**
- **DRT** ..... **Provide convenient service**

- MR
- AR goggles
- Transparent OLED displays

Vision Statment

We believe, there is an opportunity to design an advanced technology experience for tourists in UK to encourage behavior change from choosing taxi to DRT buses, which helps overcome unfamiliarity and inconvenience so that tourists can experience sustainable and efficient bus trips.

Key Components

VR Visualising Environment Changes

AR Wayfinding Assistance

DRT (Demand-Responsive Transit) Bus

Key Features

Predictive analytics

DRT buses can use AI-powered predictive analytics to anticipate demand patterns and adjust their routes and schedules accordingly

Voice-activated assistants

AI-powered voice-activated assistants can be used to provide passengers with real-time information about bus schedules and routes

Combine DRT bus with AI

Smart ticketing and payment systems

AI-powered smart ticketing and payment systems can be used to streamline the payment process for DRT buses

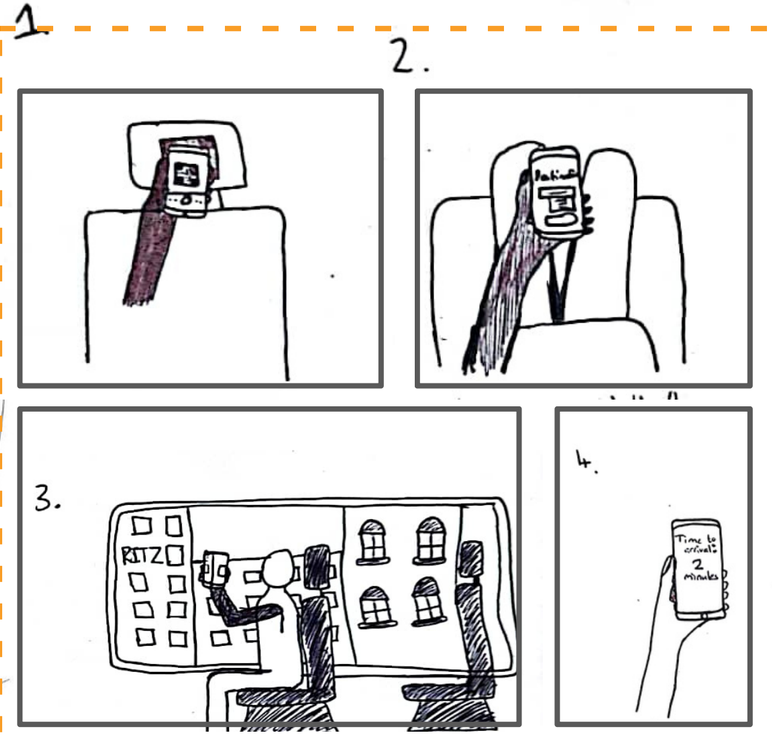
Real-time monitoring and maintenance

AI-powered sensors and monitoring systems can be used to track the performance of DRT buses in real-time

Initial Idea

STAGE 1
On the plane

STAGE 2
After arriving at airport



STAGE 3
During the bus journey

Refine Key features

STAGE 1
On the plane

- Visualizing the impact of different transportation choices through VR
- Advertise the DRT bus experience

STAGE 2
After arriving at airport

- AR guide from baggage claim to the DRT bus stop
- GPS tracking
- Book ticket

STAGE 3
During the bus journey

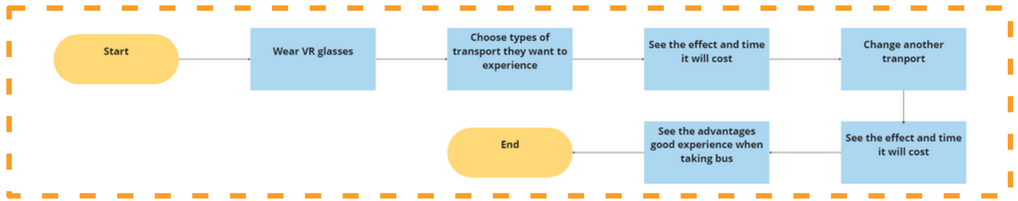
- DRT bus
- AR photo assistant
- AR quiz
- Intelligent transportation systems (ITS)

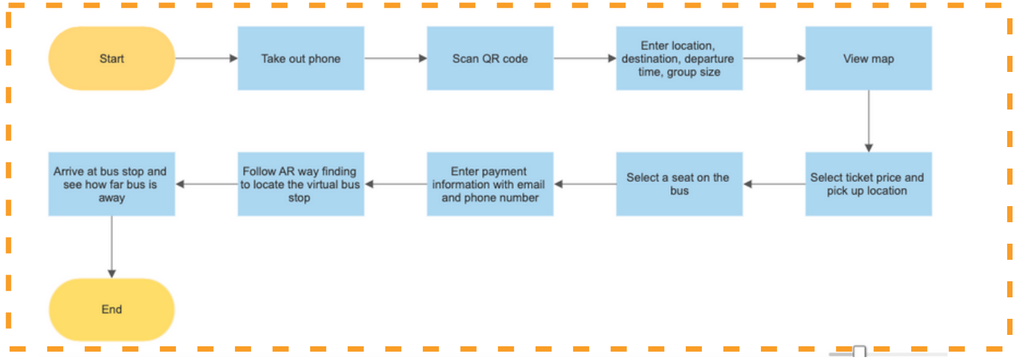
STAGE 4
After finishing the journey

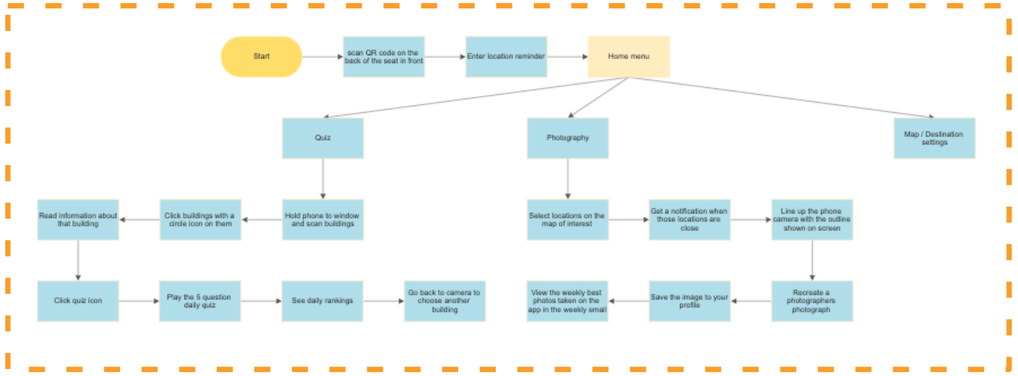
- Summary their CO2 and energy savings
- Offer possible coupons

Prototyping

Task flow



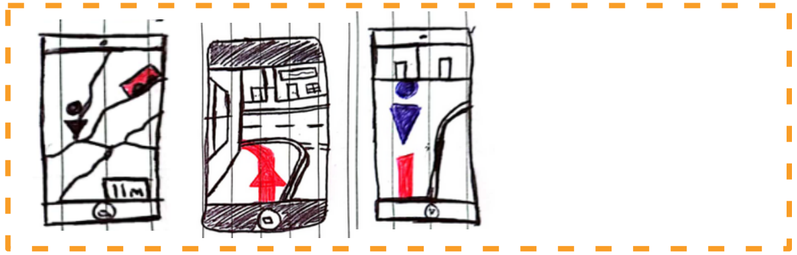


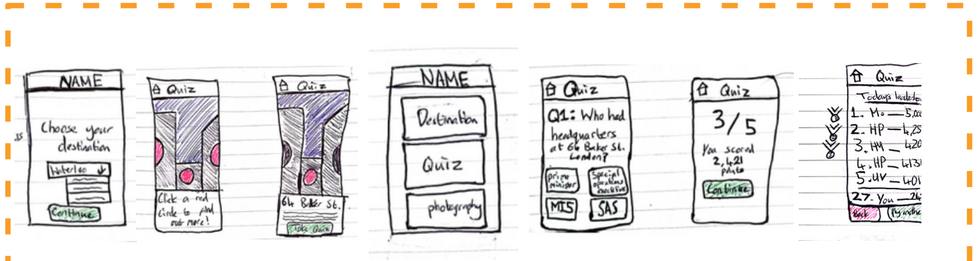


Low-fi prototype

VR: Compatible with head tracking devices
Tools: Spoke, PR

AR: Compatible with **iphone14**
Tools: Sketch





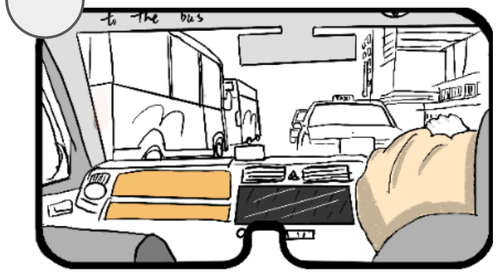
Context Scenario

STAGE 1
On the plane

1

Provide VR goggles in flight to explain the features of a DRT service

2

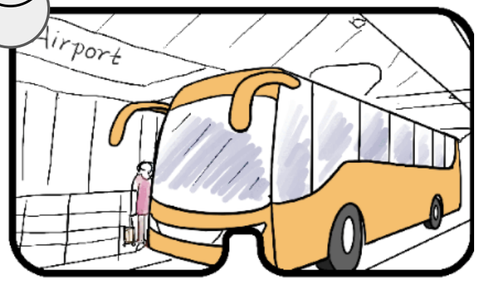


Encourage the user to imagine the amount of CO2 that would be emitted if every person took a taxi.

3

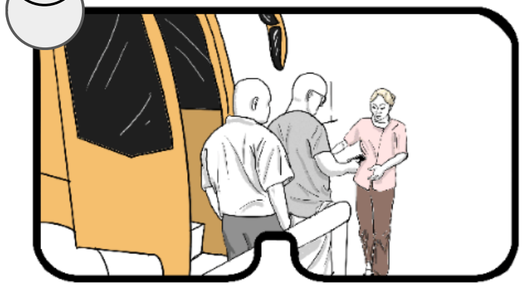
Explain how we can help the Earth if everyone takes buses

4



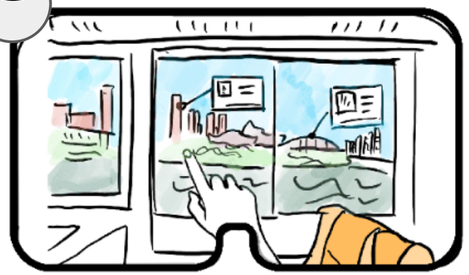
Explain the environmental benefits of taking DRT buses

5



Explain the process of using DRT bus services

6



Explain using AR to learn about attractions

7

Explain using AR to take the best photos

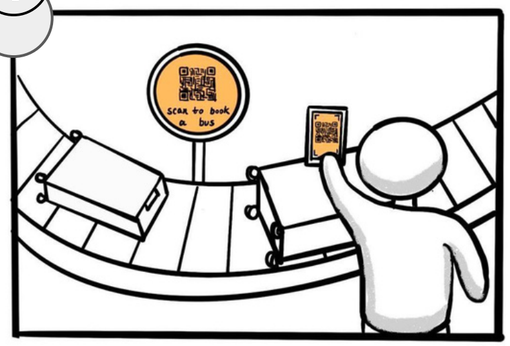
8

Show how much carbon emission we can save by taking DRT buses

Context Scenario

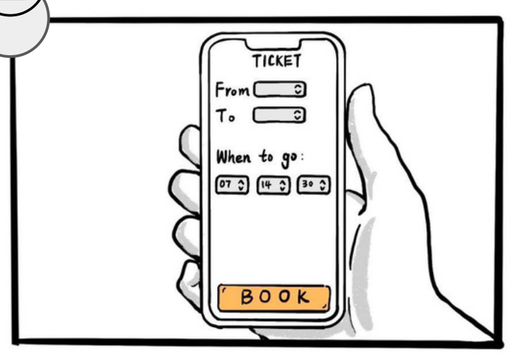
STAGE 2
After arriving at airport

1



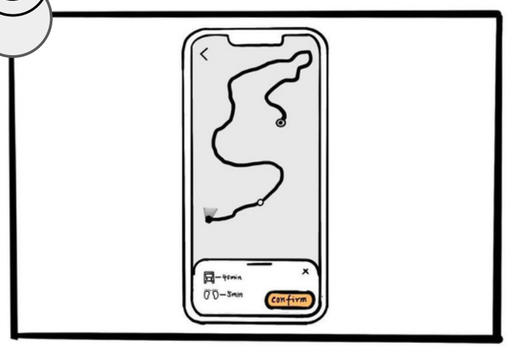
Scan QR code while waiting for luggage

2



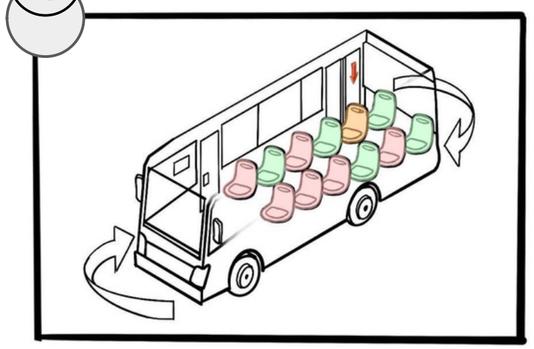
Choose destination and time

3



Confirm bus route

4

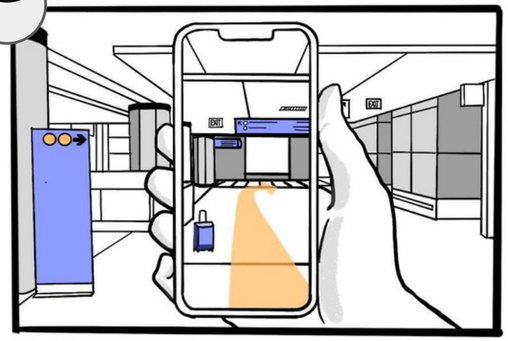


Choose seats on a 3D bus model

5

Confirm details and buy tickets

6

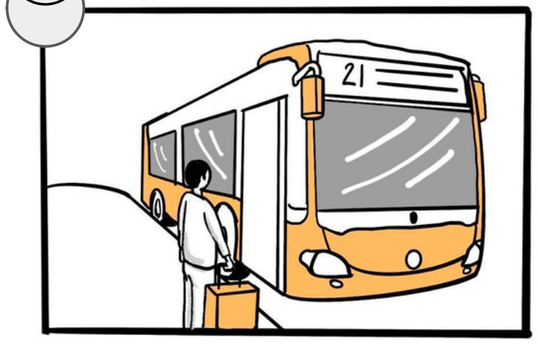


AR guidance to the bus stop

7

Arrive at the bus stop

8

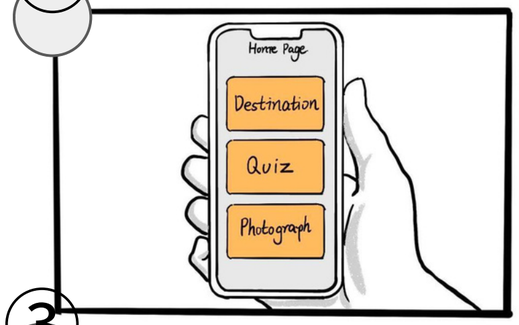


Hop on the bus!

Context Scenario

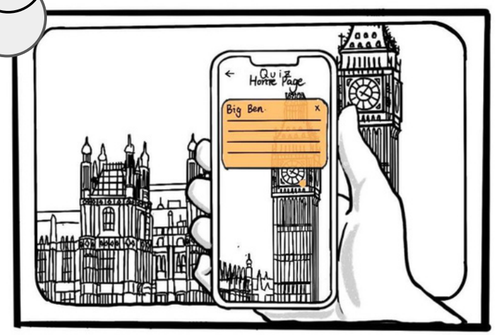
STAGE 3
During the bus journey

1



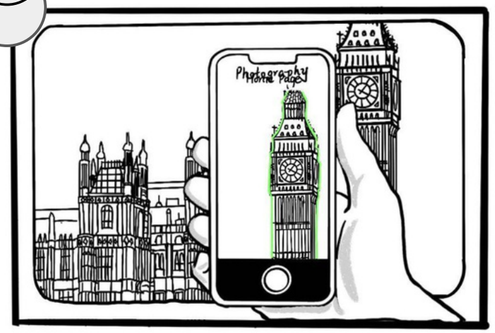
Check the three functions of the DRT bus

2



Jsing AR to spot andmarks and get nformation

3



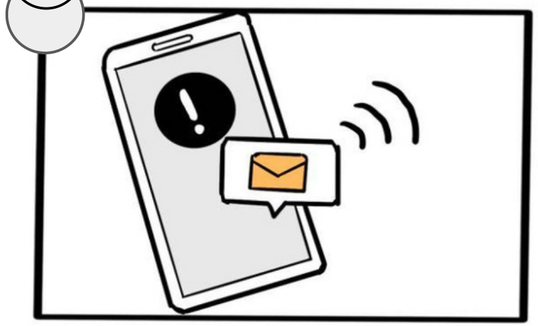
Jsing AR uidance to apture the best hots for the andmarks

4

Notifies you when you are arriving at your destination

STAGE 4
After finishing the journey

1

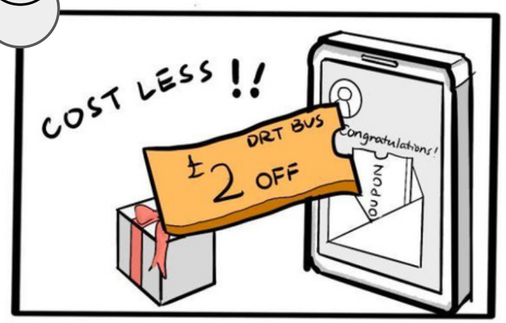


Receive message notifications from DRT bus company

2

Journey summary allows you to see how much time and energy you have saved

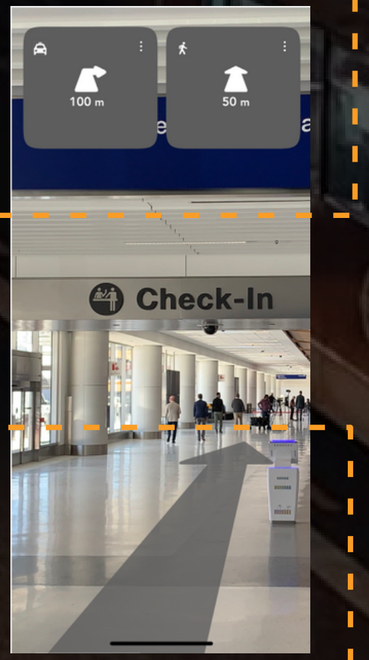
3

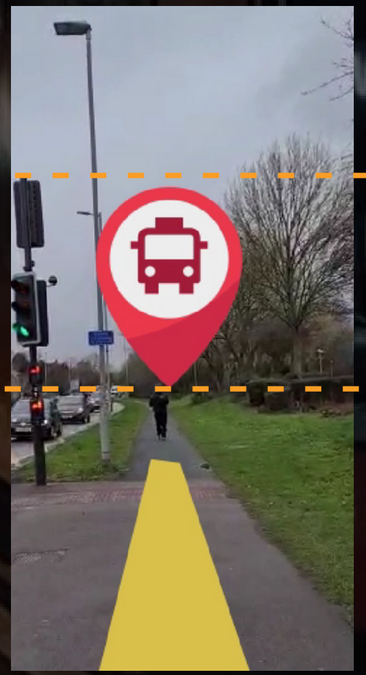


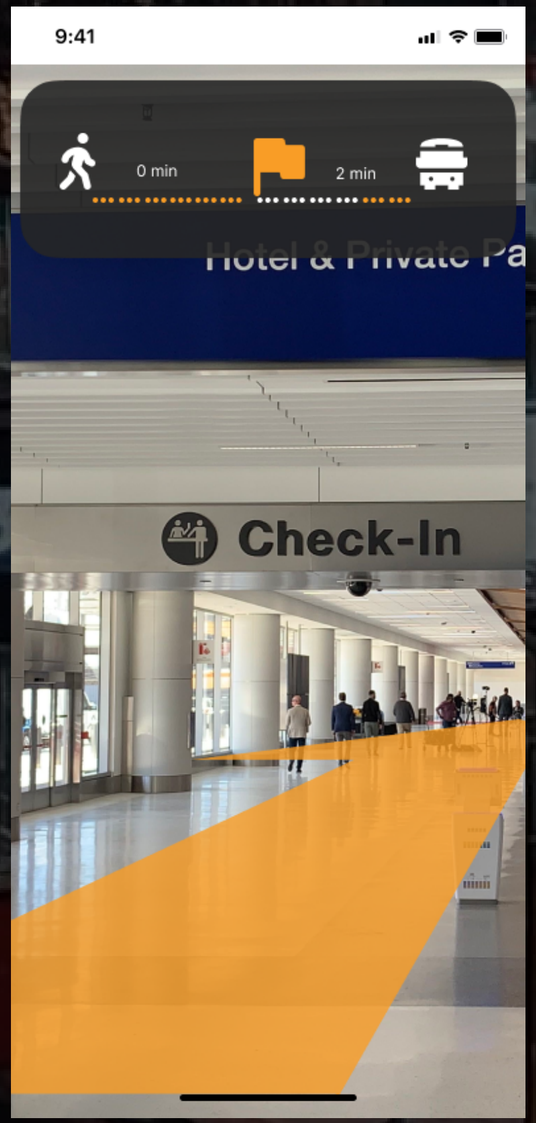
oupons and iscounts for our DRT travels

Refine Key Pages

Bold, clear line
Use bright colours
Make arrow transparent
Change bus stop icon
Make the bus stop green



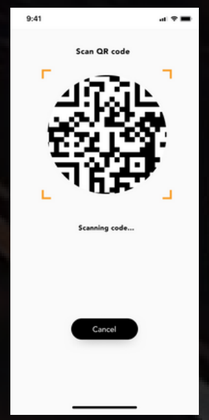


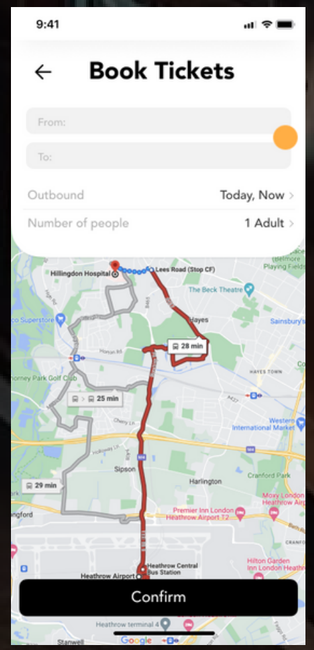


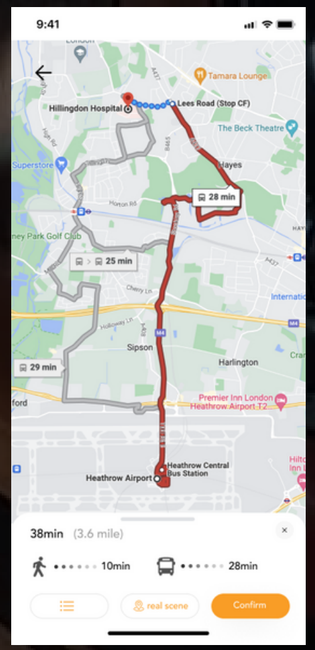
Refine Prototyping

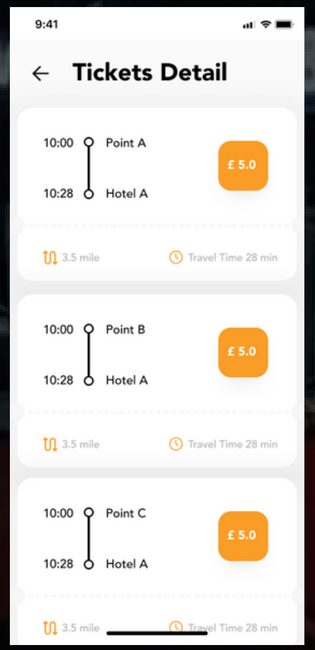
STAGE 2- AR part
After arriving at Airport:

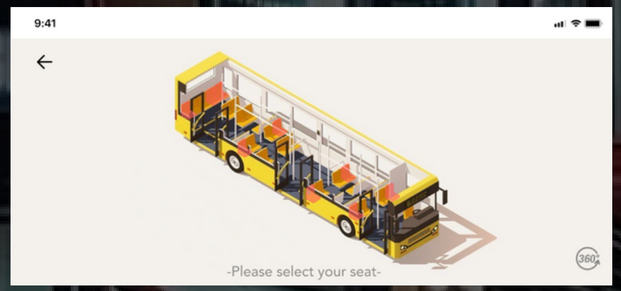
scan the QR code when waiting for the luggage

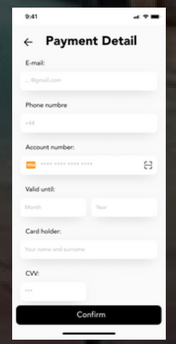


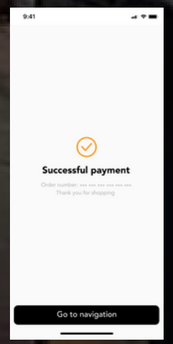


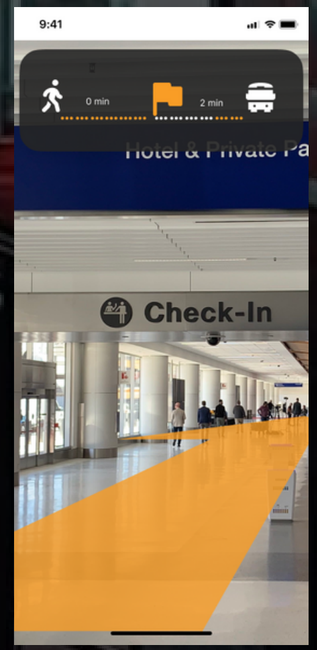


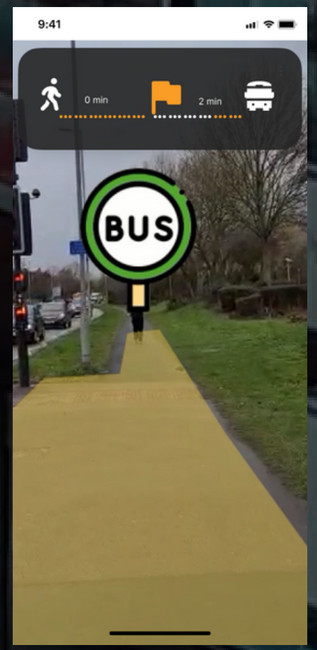






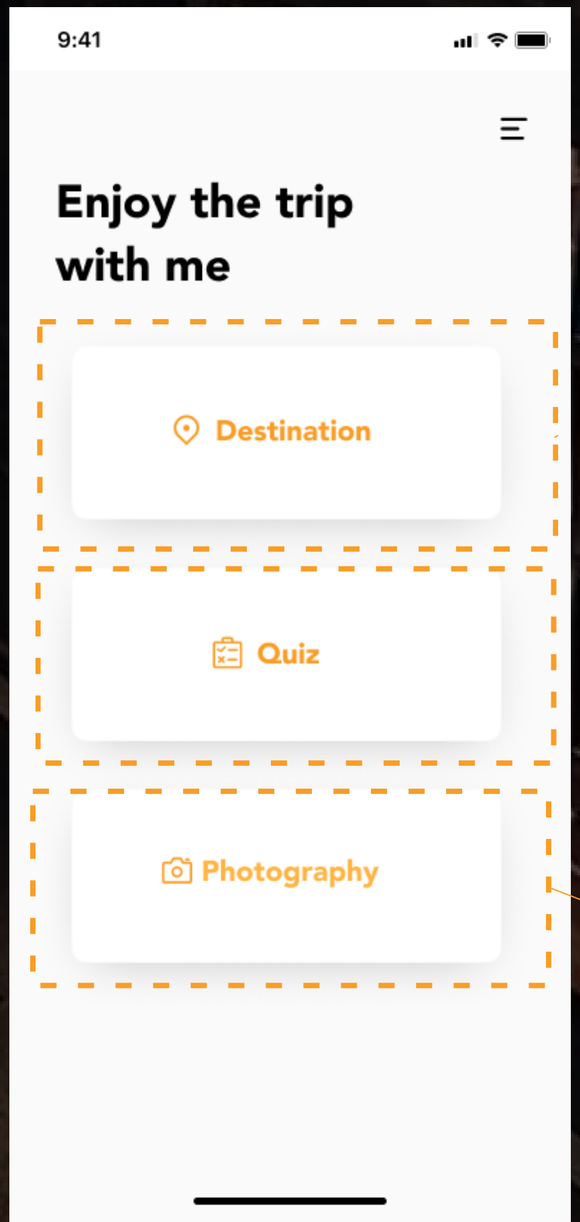


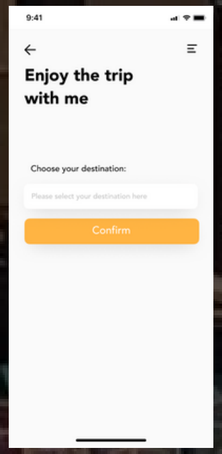


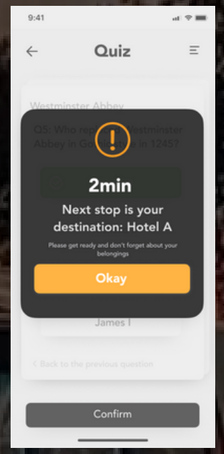


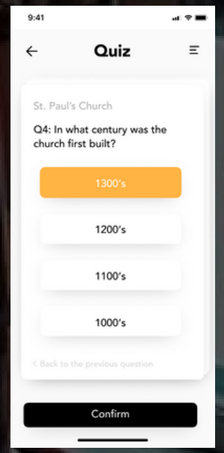
Refine Prototyping

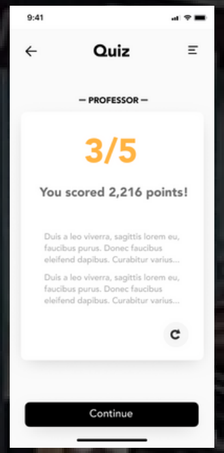
STAGE 3- AR part
During the bus journey:

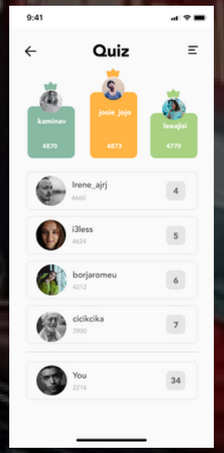


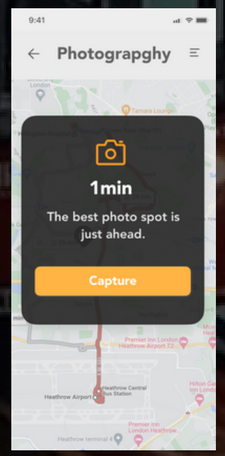


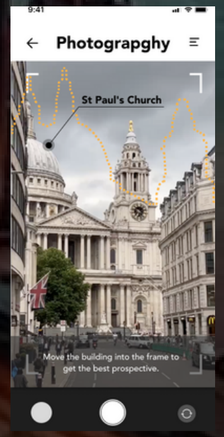


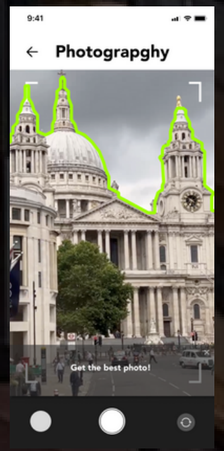


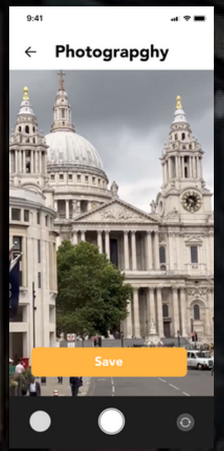












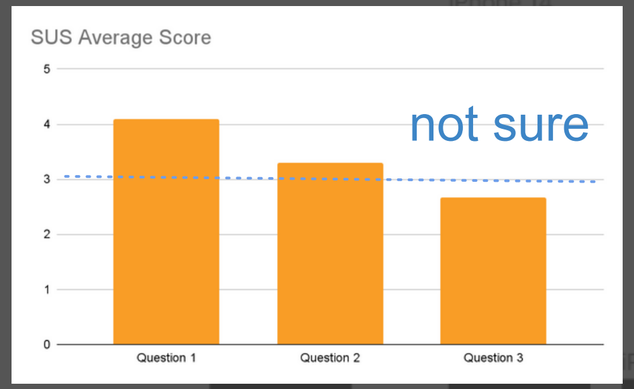
Final Solution

https://youtu.be/j5l3cnqbYq8 Tools: AE, PR, Figma, Spoke

User Test of the First App Design

Methods: 4
Sample size:3

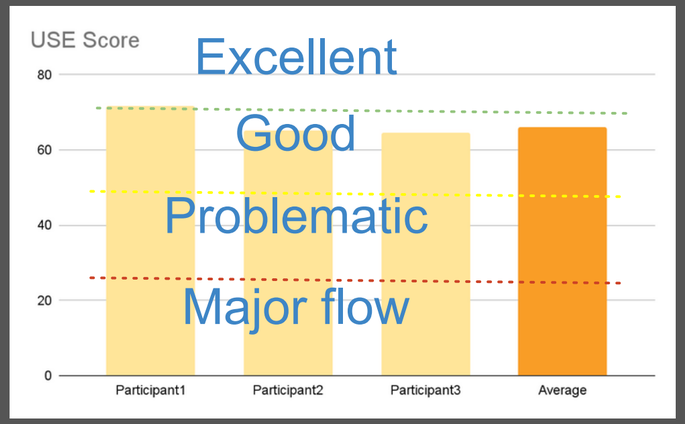
Slater-Usoh-Steed (SUS)



Critique

- “clear yellow line is great at a glance”
- “green would be better to show the bus stop is the right place”
- “sat navs show with a line so a solid line is what we are used to”

The USE Scoreboard



Interpretation: good

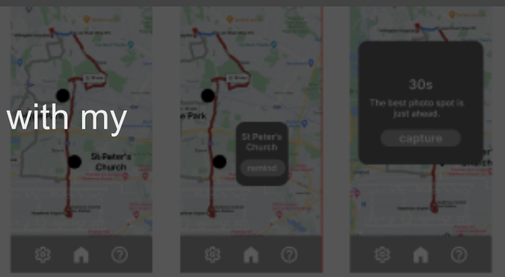
Solution interview

- “It’s nice to see how much energy I saved after the trip”
- “They give me vouchers so probably I’ll continnue to choose bus next time”
- “An email is better than a receipt I think”

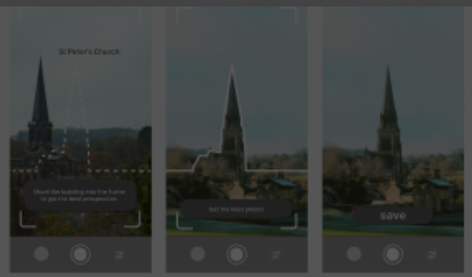
STAGE 1
On the plane

“It feels a bit inconsistent with my real past experiences”

STAGE 2
After arriving at airport



STAGE 3
During the bus journey



“The quiz is so fun, I know more about the historial buildings in london”

STAGE 4
After finishing the journey

THANKS FOR LISTENING

Group 8 Metaverse