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Business
INSPIRING INNOVATION

DESIGN THINKING BUSINESS CASEBOOK 2020

Design Thinking Business Casebook 2020

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BUSINESS DISCIPLINE

+

DESIGN THINKING

CONTENTS

FOREWORD

The interconnected world is redefining the skills that students need to acquire. To empower students with new skills and competencies required for a smart workforce, Business Discipline has launched many new initiatives to strengthen the work-readiness of students, including the promotion of Design Thinking skills, Project-based Learning (PBL), Workplace Learning and Assessment, and Technology-enhanced Learning.

According to the Future of Jobs Report 2020, complex problem solving, analytical thinking, and innovation are the top three required skills, growing in demand, by 2025.

To nurture creative talent with 21st century skills, the Discipline has stepped up its efforts to embed Design Thinking - a "Think and Do" approach - in a PBL pedagogy. Integrating the Design Thinking framework in PBL provides authentic learning scaffolding and guidance to students. More importantly, it encourages students to go deeper with their learning in a true environment, where empathy with real-world audiences helps them identify driving questions that inspire creative solutions.

This casebook presents basic concepts and step-by-step instructions on how Design Thinking is put into practice. It is an effective guide to promote learning concepts, inspire innovation and achievable solutions that can ease business challenges.

Dr Wallace Lam
Academic Director
Business Discipline
Vocational Training Council

01 DESIGN THINKING METHODOLOGY

WHAT IS DESIGN THINKING?

Design Thinking empowers innovative projects with outcomes of user-centered practicability and sustainability.

Among problem-solving skills initiated by different professions and disciplines, Design Thinking is an approach with the essentials of interdisciplinary and divergent thinking. It is prototype driven to generate workable solutions to real problems.

Stakeholders participate from the beginning till the end of the innovation process, in which a cycle of Empathize, Define, Ideate, Prototype and Test emphasized.

Source: Lam, W., Wong, E., & K. Cheung. (2017). Design Thinking [Teaching and Learning Package]. Retrieved from https://clt.vtc.edu.hk/wp-content/uploads/2017/05/DT_TLP2.0_20170612.pdf

TRADITIONAL THINKING VS DESIGN THINKING

Avoid mistakes		Learn from mistakes
Thinking & Planning		Doing
Rigorous analysis		Rigorous testing
Focus on solution		Focus on human value
Give the right answer		Ask the right questions
Periodic		Continuous (Iterate)
Telling		Showing

BENEFITS

Inspires innovative solutions

Solves human problems

Gains competitive advantages

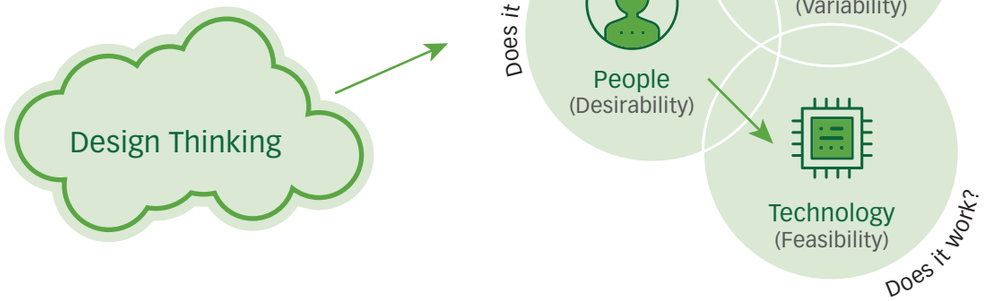
Generates higher profits

Strategic problem solving

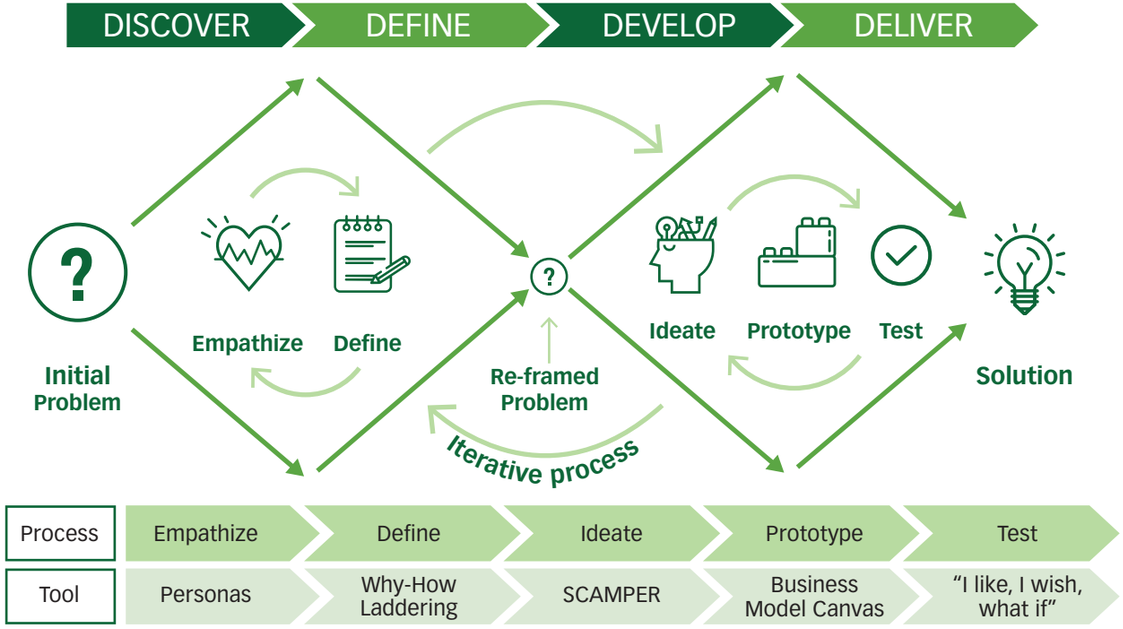
Encourages team collaboration

ESSENTIAL ELEMENTS FOR SUCCESS

The ultimate goal of Design Thinking is to create an ideal solution, for business and users, that meets user needs, business goals and technical constraints.



DESIGN THINKING PROCESS



Personas are semi-fictional characters that represent different types of users. Creating personas can help recognize the needs and expectations of identified customer segments.

STEPS

1. Conduct research on target customers.
2. Segment target customers.
3. List important details of individual customers.
4. Create separate user personas for each segment.

Business Customer

Name Customer
Age 26
Work Executive
Family Single

Friendly Clever Smart

Bio

Personality

Introvert — Extrovert
Analytical — Creative
Passive — Active

Preferred Channels

Mobile
Email
Traditional Ads

Goals

Pain Points

Brands

Why-How Laddering is an interviewing technique to discover goals and the root cause of problems.

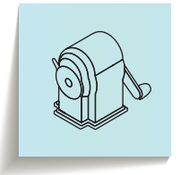
STEPS

1. Identify initial problem statement.
2. Ladder up from that need by asking "why?".
3. Ask "why" again and continue to ladder from that need.
4. Climb back down the ladder, asking "how?".

WHY

Because I want to sharpen my pencil anytime, anywhere

Because I want to sharpen my pencil quickly

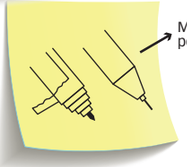


? Design a better pencil sharpener

HOW

Design an electric pencil sharpener

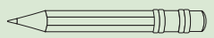
Design a sharpening-free pencil

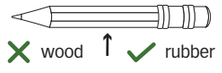
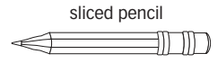
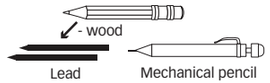


SCAMPER is a creative brainstorming technique that helps teams generate ideas, for new products and services, by encouraging people to think of ways to improve existing ones.

STEPS

1. Identify an existing product to improve.
2. Ask questions about the product using all seven components.
3. Evaluate ideas from each component and choose a preferable solution for implementation.
4. Repeat the process on the same product to get more innovative ideas.

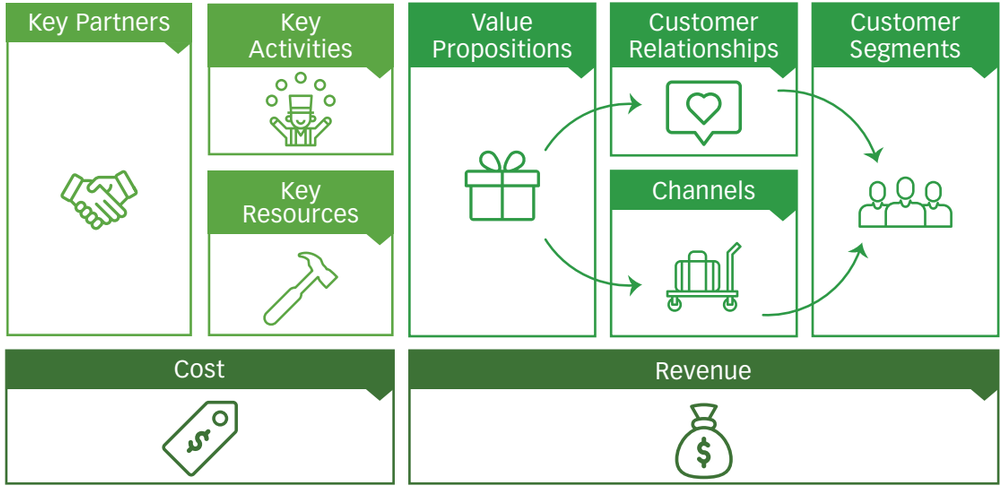
Existing Product 

Substitute		What could be used instead of existing components?
Combine		What could be added?
Adapt		How can it be adjusted to suit a purpose?
Modify		How can it be made larger or smaller?
Put to another use		Can this be applied to a new need?
Eliminate		How can it be simplified?
Rearrange		How can it be placed opposite of what it was?

Business Model Canvas describes the rationale of how an organization creates, delivers, and captures value.

STEPS

1. Fill out the nine components of Business Model Canvas.
2. Visualize the interaction of all components on Business Model Canvas.
3. Create alternative, iterate, and refine your business model.



"I like, I wish, what if" is a structured method of organizing feedback. It frames the feedback in a constructive and positive manner, encouraging open discussion or absorption of user comments.

STEPS

1. Invite users to provide open feedback according to three kinds of statements.
2. Gather and synthesize all feedback from users.
3. Brainstorm new ideas with the integration of user feedback.
4. Keep iterating prototypes by constantly testing.

02 BUSINESS CASES

THE HYGIENE-BOOGIE

Hip Hing Construction Company Limited

Organization Background

Established in 1961, Hip Hing Construction Company Limited ("Hip Hing") has grown to become one of the leading contractors in Hong Kong. The comprehensive, excellent construction services provided by Hip Hing Construction Group have contributed to the development of Hong Kong and its economy, and have helped to shape a better living environment for the people of Hong Kong.

Challenges – Site Sewage Facilities

Sewage collection facilities, such as mobile container toilets and flushing toilet systems, are essential provisions at construction sites. These temporary facilities have several significant benefits, mostly related to their portability. They are self-contained or can be placed almost anywhere. However, they are not plumbed and usually keep the sewage underneath, or in tailored tanks. This may lead to a foul smell and cause severe hygiene problems in the workplace.

Stage 1 Empathize

By engaging with construction workers, experiencing what they experience, and observing their behavior, we identified that workers tend to stay away from the Sewage Collection Tank/ Mobile Container Toilet when it was foul smelling and hygiene was bad. Workers didn't use the surrounding area for storage, even if there was limited space in their workplace.

Stage 2 Define

The project team defined the following how-might-we statement to find opportunities for design: "How might we design a mitigation device for the sewage collection facilities, in order to minimize possible hygiene nuisance to neighboring environment, and ensure a healthy work environment?"

Stage 3 Ideate

The team brainstormed the common approaches adopted to tackle odor and/or hygiene problems and adopted the technology of photo-catalytic oxidation[1], used for the gas purification processes, delivered the ultimate feasible solution, named "The Hygiene-Boogie". This can be used in all types of on-site sewage storage facilities, including (i) Container-type Toilets and (ii) Stand-alone Sewage Collection Tanks.

Stage 4 & 5 Prototype and Test

Several prototypes were built and tested. The final one was adopted after the measurement of ammonia gas at the vent pipe of a mobile container toilet, with and without the use of Hygiene-Boogie, confirmed effectiveness. The measure was selected as the urinal smell is notorious, and detecting the concentration of ammonia is relatively simple, using the Draeger-Tube system[2].

[1] The Photocatalytic Oxidation process combines UVC irradiation with a substance (catalyst) titanium dioxide (TiO2). This results in a reaction that changes malignant contaminants into water, carbon dioxide and detritus, which are all harmless substances.

[2] Draeger Gas Detection Tubes (Draeger-Tubes®) are used to detect hundreds of different gases. The tubes are glass vials filled with a chemical reagent that reacts to a specific chemical or family of chemicals.

Conclusion

Hygiene-Boogie was able to remove 97% of ammonia gas emissions arising from the vent pipe of a mobile container toilet. The tangible and intangible benefits are:

1. The Hygiene-Boogie resolves the problem of unpleasant odors at construction sites.
2. Healthy working environment for over 20,000 workers in 20+ ongoing projects.
3. Enables idle areas on construction site to be released for construction activities.
4. Saving ~$4,000,000 for the company per year ($17,000 for each project per month).

Hygiene-Boogie for use in Container-type Toilets

Hygiene-Boogie for use in Sewage Collection Tanks

We would like to thank Hip Hing Construction Company Limited for sharing their expertise and experiences. Their contributions are invaluable and gratefully appreciated.

CREATING A MEMORABLE EXPERIENCE TO RETAIN VALUED BANKING CUSTOMERS

David Chung

The majority of traditional bankers believe that offering high interest rates is one of the most effective strategies for acquiring customers from their competitors. However, new customers with a "reward-seeking" mindset lack loyalty or long-term commitment to the bank. Up to 95% of reward-seekers withdraw their savings once the term deposit reaches maturity.

The bank's regional CEO argued that an increasing number of reward-seekers would create irreversible problems for the bank. The customer acquisition approach that attracts reward-seekers is costly, involving low customer engagement and creating high fluctuations in the bank's total deposit amount.

Challenge Statement

How to create a memorable experience to retain valued customers.

Key Performance Indicators

- Customer retention rate
- Volume of bank deposits

Stage 1: Discover

The innovation team conducted different types of research with potential, current and lost valued customers. They explored unmet, hidden and potential demands for retaining customers after their preferential interest rate returned to the normal rate.

Empathy Interviews

Discover customer pain points, expectations and aspirations for banking services in daily life, according to their lifestyle.

Empathy Mapping

Determine the emotional state of customers by analyzing behavior, feelings and attitudes during their interaction with banking services.

Customer Immersions

Stimulate the logical and emotional reasons behind customer decisions at different stages of interaction with banking services.

Customer Message Analysis

Analyze customer compliments and complaints.

On-site Observations

Observe critical scenarios between customers and the bank, such as opening/closing an account, interaction with customer services representative and branch relationship managers.

Industry Benchmarking

Benchmarking customer acquisition and retention practices with those of other financial institutions and hospitality industries.

Stage 2: Define

First, the innovation team collected hundreds of queries or needs from high-end customers that were either met, under-met or unmet. They also collected needs that customers did not express or could foresee.

Then, the innovation team identified three major sub-segments of high-end customers and developed a detailed Persona Map for each sub-segment. Based on the three different results at the end of the privilege period, the innovation team developed three sets of customer journey maps for each sub-segment.

The innovation team identified approximately ten disengagement scenarios and two critical disengagement scenarios (described below). They were further recognized as the most influential factors to stay or to leave a bank.

1. Insufficient or slow responses from banking services, for unexpected but urgent situations, regarding wealth management issues.
2. Uncongenial communication by bank representatives, either through face-to-face interaction, customer service hotlines or electronic messages.

Stage 3: Develop

The innovation team, led key staff from different departments, conducted a series of ideation and iteration sessions. They generated hundreds of solutions. They prioritized the best possible solutions to eliminate pain points, and enhance the customer's experience, based on the following criteria.

1. Advanced real-time support for selected customers through mobile applications.
2. Relationship managers, service hotlines and electronic promotion systems to receive customized conversations, scripts and wordings, based on four types of communication styles.

Stage 4: Deliver

After three months of creating new mobile applications, and equipping staff with new skills and communication methods, the first prototypes were launched in Q1 of 2017.

When the final solution was launched, customer retention rates rose to double digits and helped retain billions of dollars in bank deposits and investments.

We would like to thank Mr David Chung, Founder, InnoEdge Consulting for sharing his expertise and experience. His contributions are invaluable and gratefully appreciated.

03 STUDENT PROJECTS

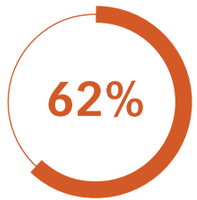
POSITIVELY IMPACT CUSTOMER EXPERIENCE IN RETAIL APPAREL

BACKGROUND

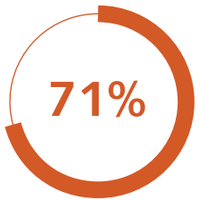
Waiting in line for extended periods can negatively affect how customers feel about a business. This project aimed to enhance queue design and boost the customer shopping experience.

EMPATHIZE

The student team conducted a survey and face-to-face interviews to understand user experiences and problems.



Waiting about 4 minutes in line



Feeling annoyed with long queues

Buying product after fitting

EMPATHIZE

To find users with different needs and expectations, the team built simple Buyer Personas.

Customer A	Customer B	Customer C
		
Age 18 Gender Female Job Student	Age 21 Gender Male Job Executive	Age 22 Gender Female Job Student
Satisfaction:	**Satisfaction:**	**Satisfaction:**
Staff Services: ★★ Product Quality: ★★★★ Fitting Room Services: ★	Staff Services: ★ Product Quality: ★★★★ Fitting Room Services: ★★	Staff Services: ★★ Product Quality: ★★★★★ Fitting Room Services: ★
Pain Point: Long waiting in line at fitting room	**Pain Point:** Limited number of staff	**Pain Point:** Long and boring fitting room queue

DEFINE

A refined problem statement, in a user-centered manner, was developed.

Cultivate a positive customer experience in queues for retail apparel.

IDEATE

The team used the SCAMPER creativity technique to develop ideas to improve existing problem.

Substitute	Combine	Adapt	Modify	Put to another use	Eliminate	Rearrange
Ticket machine	Smart fitting rooms	Increase women's fitting rooms	Expand space of fitting rooms	Pay after fitting	Reduce number of items for fitting	Renovate fitting rooms

PROTOTYPE

The team made use of drawings and role-playing to create preliminary models to validate the ideas.

Queueing System 1.0

Reduce waiting time and simple and easy to use.

Smart Mirror 1.0

Customers can virtually try on clothing in a short period of time.

TEST

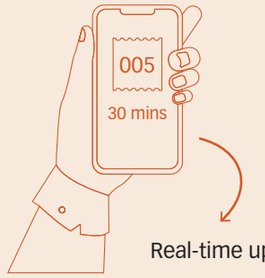
The team invited users to comment on the prototype for further improvement.

1. People need to get the "Pager" physically in the shop.
2. Customers did not know the real-time updates after getting the "Pager" until their turn.

1. The functions of the Smart Mirror (e.g. language and product description), were not sufficient.
2. Limited number of Smart Mirrors.

PROTOTYPE (After Test)

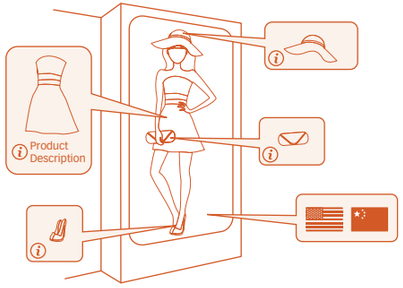
Queueing System 2.0



Real-time update

The virtual queue was managed through customer mobile phones with real-time updates, such as the customer's place in line, expected waiting time etc.

Smart Mirror 2.0



Install Smart Mirrors in the store as well as fitting rooms, and enhance function to recommend other items for customers to buy based on what they are trying on.

UNMANNED AIRPORT SOUVENIR STORE

BACKGROUND

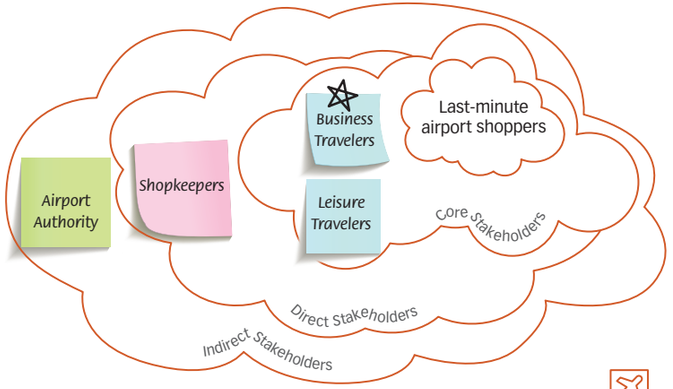
Modern travelers are often looking for exciting and relaxing shopping experience. This goal was to design a comfortable, last-minute airport shopping experience.

EMPATHIZE

The student team conducted research to understand user needs.

Project 2

A Stakeholder Map was developed to identify, prioritize and understand key users.



DEFINE

An Empathy Map was designed to synthesize knowledge about user behavior and attitudes.

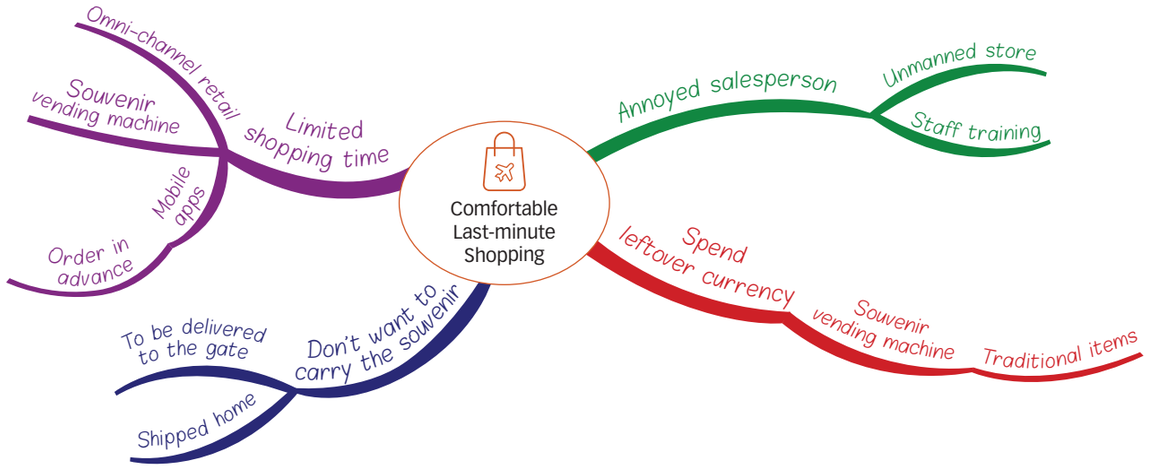
DEFINE

After stepping into user shoes, the team developed an actionable problem statement.

How might we able to reinvent the Airport Shopping Experience for Business Travelers in order to give them a comfortable, last-minute shopping experience?

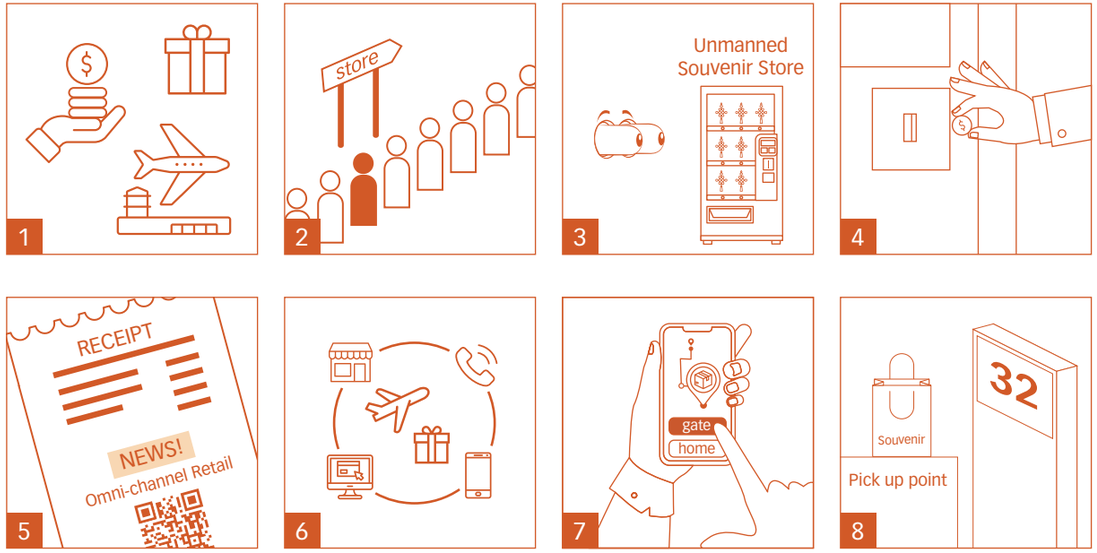
IDEATE

A mind map was developed to display ideas systematically and visually.



PROTOTYPE

A storyboard was designed to display how the idea would be presented.



CREATING A COMFORTABLE JOURNEY ON PUBLIC TRANSPORT

BACKGROUND

Tuen Mun Road often causes traffic congestion. The team observed that Tuen Mun residents, going to Central and Western District, spent a lot of time stuck in traffic. This project aimed to suggest alternative transportation, with a comfortable journey, for Tuen Mun residents.

EMPATHIZE

A customer journey map was developed to understand customer pain points.

Customer Journey Map

Activity	Wait for a bus	Get on the bus	On the bus
 Office lady, Female	"I hope to get a seat."	"The bus is very crowded."	"The traffic jam happens every other day."	"I will be late for work again."
Feeling	Hope	Frustrated	Depressed
Barrier	Long waiting time	No seat	Long travelling time

DEFINE

After identifying customer pain points, the student team re-framed a problem statement.

Provide alternative transportation and a comfortable journey for Tuen Mun residents.

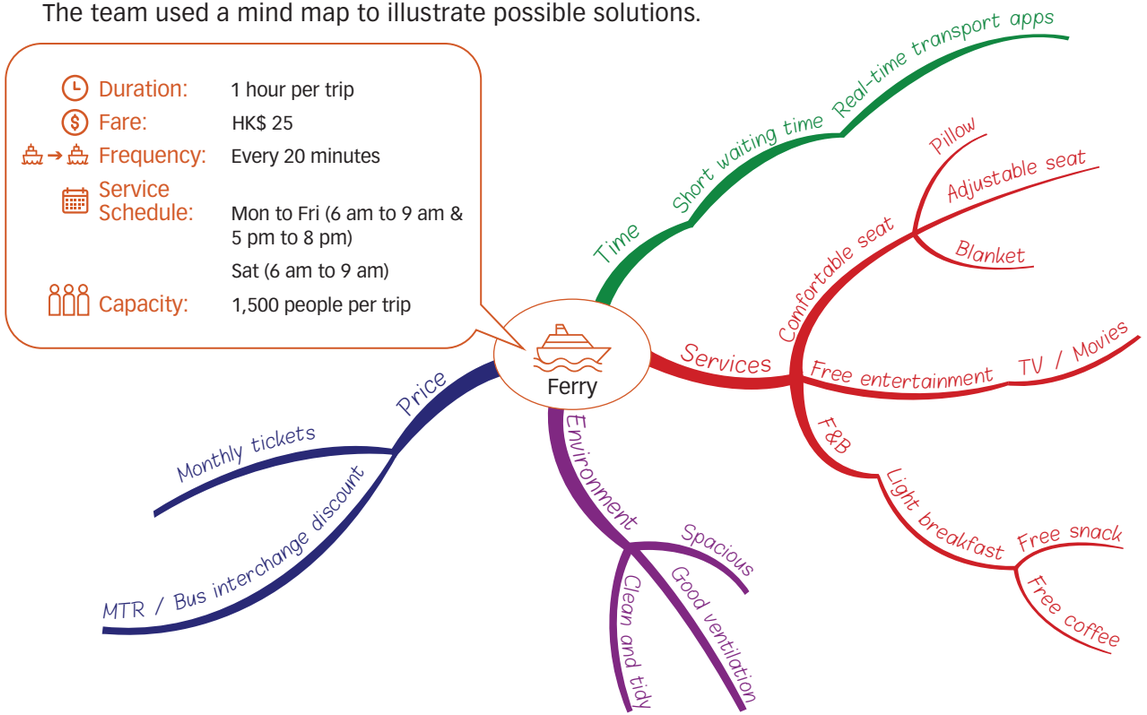
IDEATE

Possible ideas were proposed and evaluated.

	Investment Cost	Capacity	Fare	Feasibility
Cross Harbour Tunnel	↑↑	↑	↓	✓
Helicopter	↑	↓	↑↑	✗
Water Taxi	↓	↓	↑	✗
Ferry	↓	↑	↓	✓

IDEATE

The team used a mind map to illustrate possible solutions.



PROTOTYPE

A storyboard, with simple drawings, illustrated how to implement the idea.

TEST

Comments were collected from Tuen Mun residents, and an operations officer from a Ferry Services Limited, for further improvement.

I want to use the ferry services.

If there were transit interchange discounts, I would use the ferry services.

IMPROVING CUSTOMER EXPERIENCE IN REAL ESTATE

BACKGROUND

Customers have unpleasant experiences with the services provided by real estate agencies. This project aimed to identify the root causes and provide practical solutions for improving customer experience.

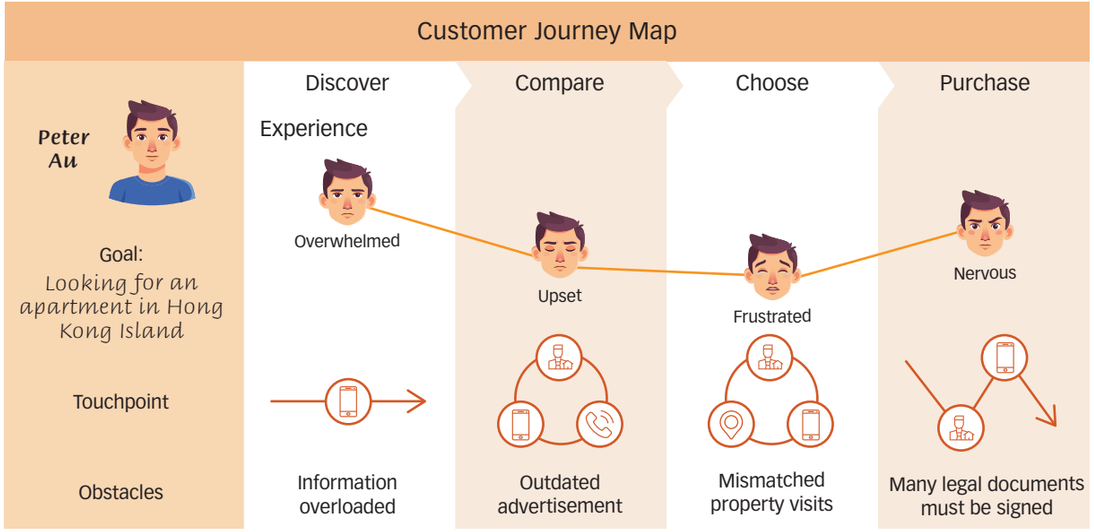
EMPATHIZE

The student team conducted semi-structured telephone interviews with 25 people who have experience in buying, selling or renting through real estate agencies.

The services of my agency are not up to standard.
5:18 PM

My agency disregards my preferences when arranging property visits.
5:20 PM

A Customer Journey Map was developed to provide a visual story about how customers interact with real estate agencies.

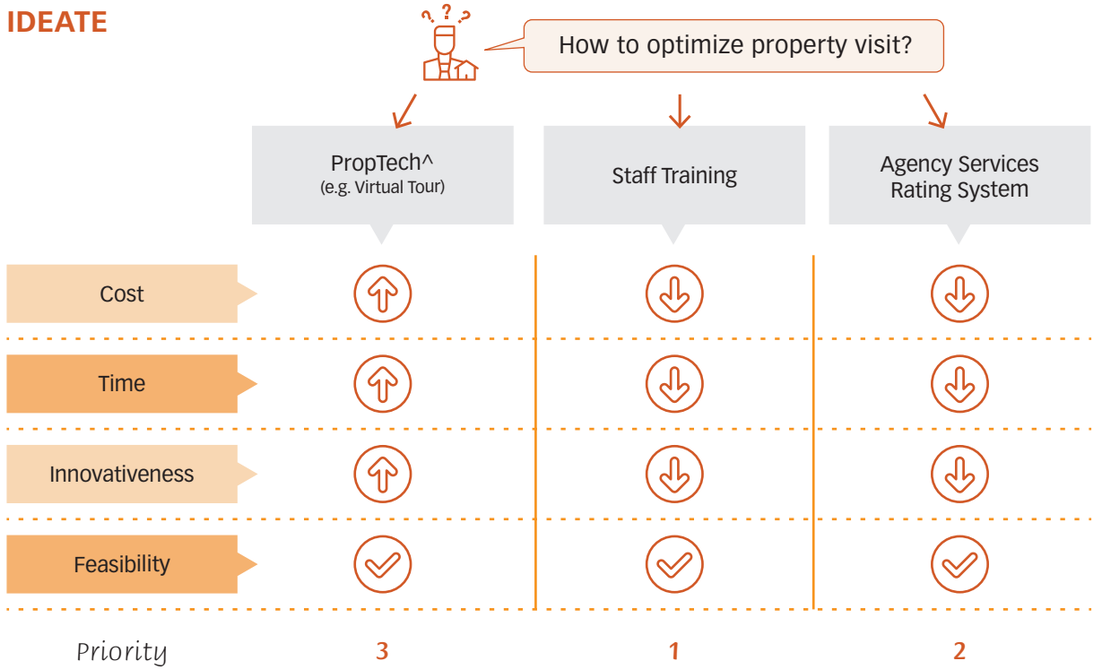


DEFINE

After identifying customer pain points, the team developed a problem statement.

Help real estate agencies to optimize property visits that improve customer experience.

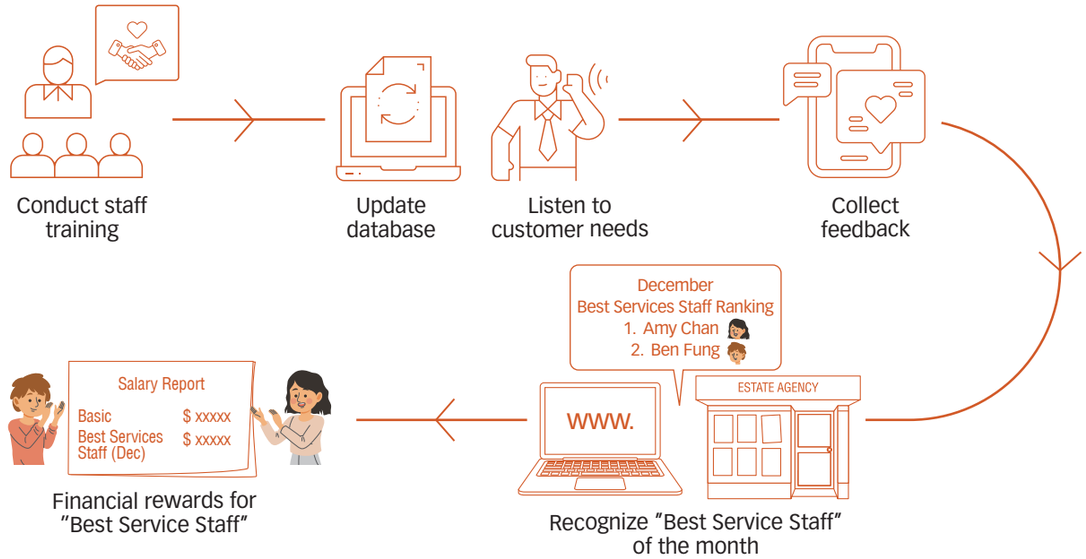
IDEATE



^Property technology (PropTech) is an application of information technology creating new opportunities in the real estate market.

PROTOTYPE

A storyboard, with simple drawings, illustrated how to implement solutions.



TEST

The team invited the Senior Account Manager of a real estate agency to comment for further improvement.

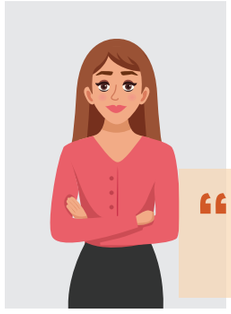
MAXIMIZING EMPLOYEE RETENTION IN AN AVIATION COMPANY

BACKGROUND

According to the 2017 Hong Kong International Airport Workforce Survey, the turnover rate of airport staff is 16.9%, considerably higher than the median rate of 10%. This project's goal was to improve employee retention.

EMPATHIZE

The student team created Personas, based upon their research, to represent the goals and behavior of user groups.



Mary Wong

Age 23
Location Kwun Tong
Education Higher Diploma
Job Title Customer Services Representative

"Time with friends and family is as important as time at work."

Goals
- Travel the world
- Meet new friends

Pains
- My compensation package is unattractive.
- I need to spend more time travelling to work.

Frequently Used Apps

EMPATHIZE

A Customer Journey Map was developed to understand how new staff go through the employee lifecycle.

Customer Journey Map

Mary Wong

Characteristics:
Work-Life Balance, enjoy travelling

Stage	Search	Interview	Appointment	Orientation	At work
Feelings	Worried	Tense	Stressful	Forward-looking	Tired
Experiences	Search job advertisemens from various channels	A long recruitment process	The compensation package is uncompetitive	Satisfied with the training of new staff	1-hour commute

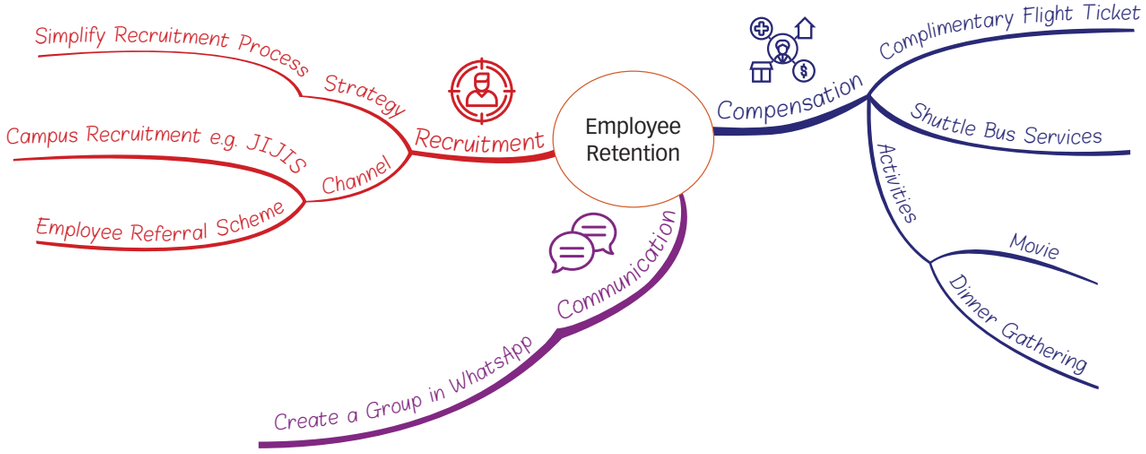
DEFINE

The team drafted an actionable problem statement to define the challenge.

Creating an Effective Employee Retention Strategy for Customer Services Representatives in a Hong Kong Aviation Company.

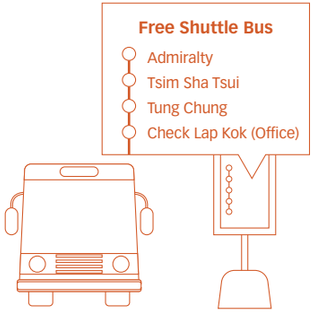
IDEATE

A mind map was created to represent ideas and concepts.



PROTOTYPE

Engagement activities were organized / planned to improve employee morale.



TEST

Comments were collected from current customer service representatives.

The activity builds a sense of connection with my co-workers.

I can balance my work and life.

I can save a lot of money and time travelling to work.

REDEFINING CUSTOMER EXPERIENCE IN RIDE-SHARING SERVICES

BACKGROUND

The increasing number of drivers infected with COVID-19 highlighted safety and health concerns in using public transport. This project aimed to propose measures that create a comfortable ride-sharing service for users.

EMPATHIZE

The student team conducted research to understand the travel experience from a user perspective during the coronavirus pandemic.

Expectation

Contactless Service

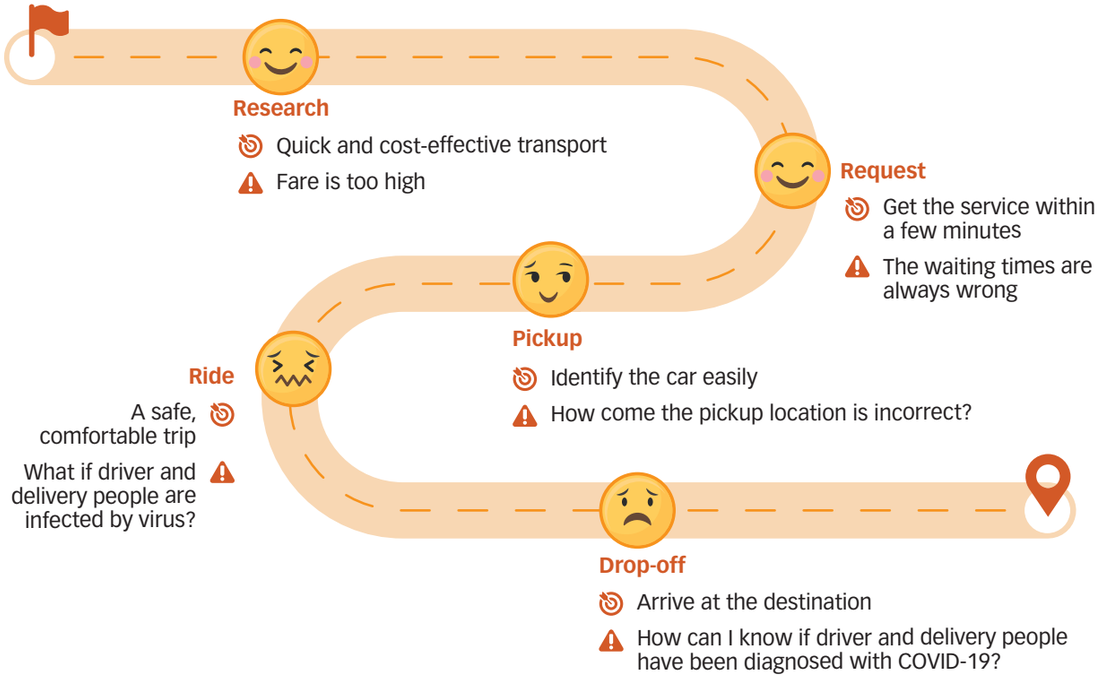
Worry

Driver has been infected with COVID-19

Project 6

EMPATHIZE

The team created a customer journey map to gain a deeper understanding of the way users see, understand, and interact with the world around them.



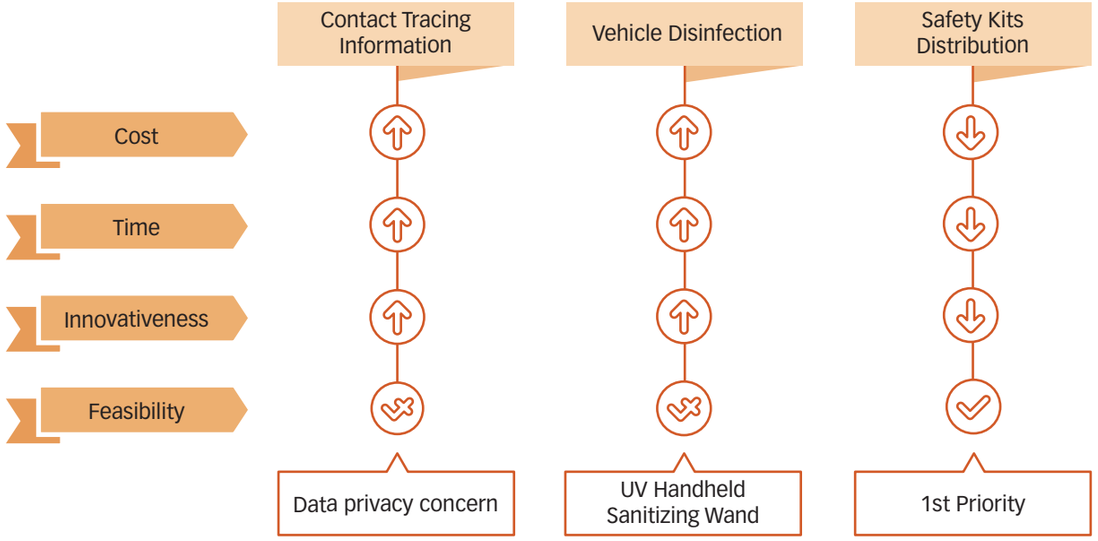
DEFINE

After identifying customer pain points, the team re-framed a problem statement.

How to create a Comfortable Customer Experience in Ride-sharing Services during the COVID-19 pandemic.

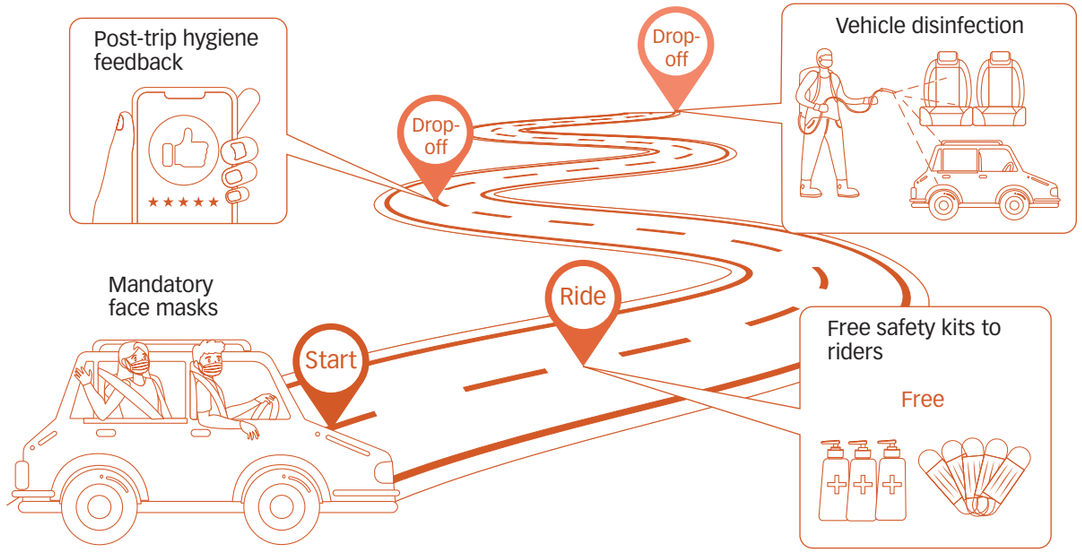
IDEATE

The team used divergent and convergent thinking to generate potential solutions.



PROTOTYPE

A simple drawing was used to show ideas to users.



TEST

Comments were collected from different users.

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Positively Impact Customer Experience in Retail Apparel

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Improving Customer Experience in Real Estate

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Unmanned Airport Souvenir Store

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Chen Yu Shan
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Yau Mei Lam

Maximizing Employee Retention in an Aviation Company

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Creating a Comfortable Journey on Public Transport

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Tse Yun Hang
Wong Tsz Shing

Redefining Customer Experience in a Ride-sharing Services

Chan Kwok Po
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