



Happy ride

# SD5112

# Strategic Design

## Regional Case studies

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# Design process

In this project, we used the design approach  
“Discover-Define-Develop-Deliver”  
to conduct the whole design procedures.



Discover



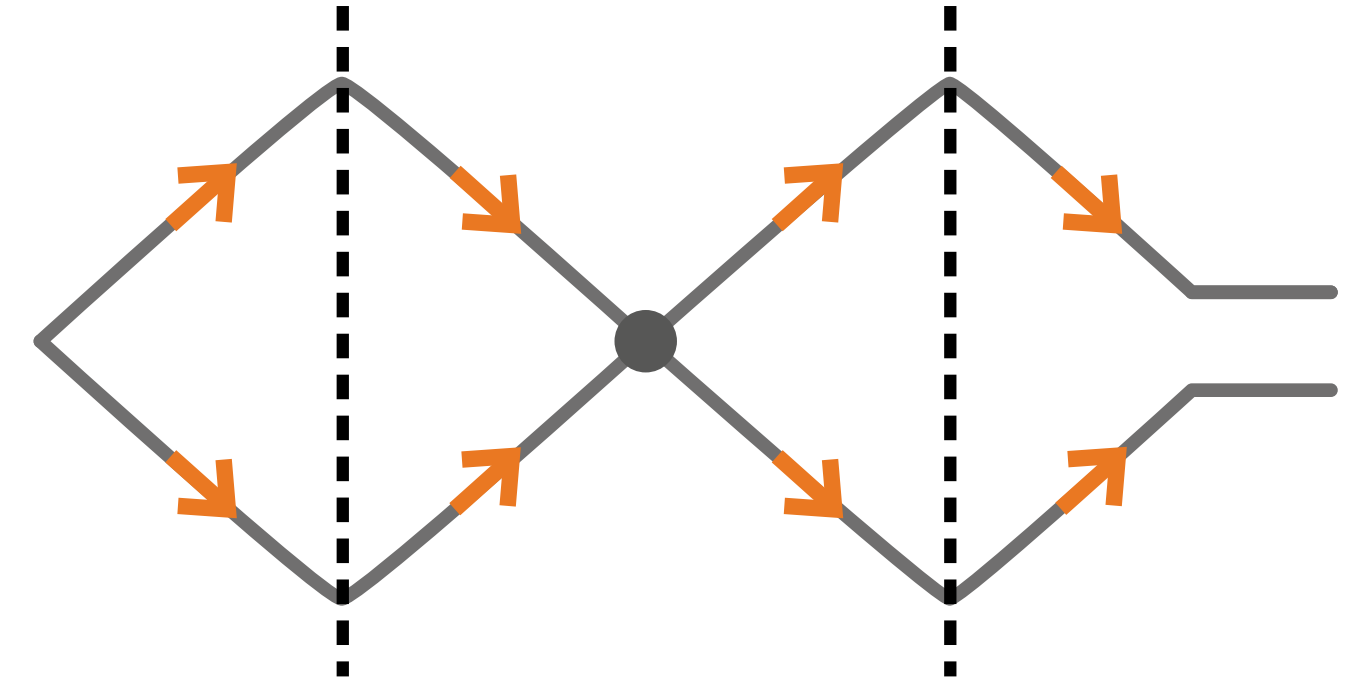
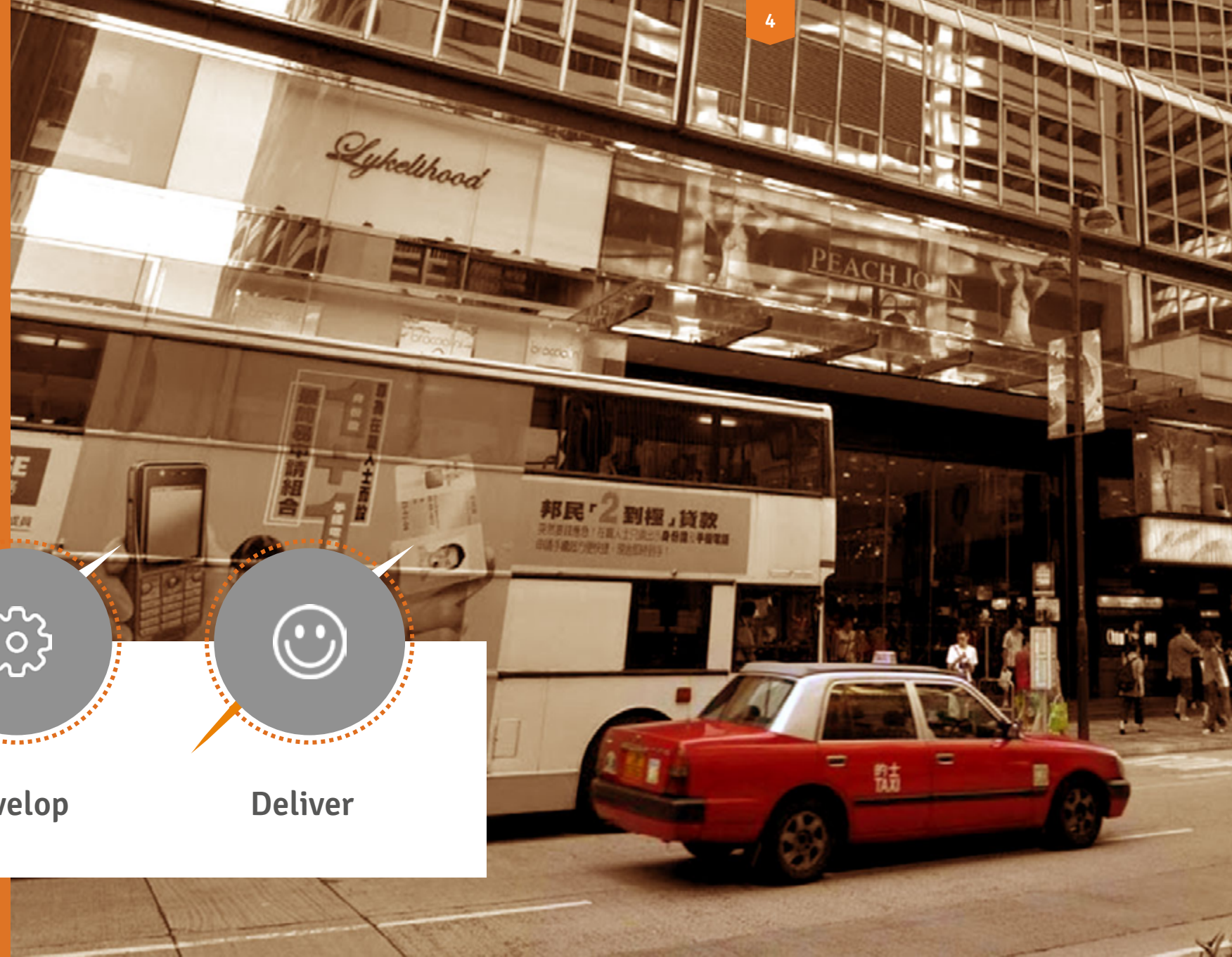
Define



Develop



Deliver



**Discover**

Behaviour-led  
design research

**Define**

Creative work  
shops and idea  
generation

**Develop**

Review idea  
through culture  
thinking and design

**Deliver**

Prototyping  
selection and  
mentoring



# Discover



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## Context

Most taxis in Hong Kong are independently owned and operated. But taxi companies own some of the taxis, and the drivers are employees. There are 18,500 taxi licenses in the market, and it costs 7.6 million to have a license. In Hong Kong, taxi licenses are treated as a kind of property.

As of 2003, there were 18,138 taxis in Hong Kong, of which 15,250 were urban taxis, 2,838 were New Territories taxis, and 50 were Lantau taxis. Every day they serve about 1.1 million, 207,900 and 1,400 people respectively.

There are just over 36 million visitors to HK in 2010, with a 21.8% increase over the previous year, 22.5 million Mainlander arrivals, 8.2 million short-haul (excluding Mainlanders) arrivals, and 4.8 million long-haul arrivals.

Currently there are 751,183 expats living in HK. By “Expats”, it means people temporarily or permanently residing in a country other than that of the person’s upbringing (Wikipedia).

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## Project Brief

To develop a strategic design proposal target to innovate for the HK taxi. In regards to the lifestyle of the target group selected as well as the sustainability of the industry and economy, students are expected to draw on and integrate knowledge and insights acquired to conduct research and analysis on the current situations and future trends in HK, or specifically on a selected company/ organization and its customers related to this area, then seek to propose for it an elaborate design-driven proposal for creating new products / services / business models. The proposed solution could operate as a new business or for the government, NGOs or a selected company.

## Intent Statement

*“This study focuses at a newly designed taxi service system that could meet the requirements of non local / expats in Hong Kong by addressing their pain points thereby enhancing the user experience through a sustainable design approach.”*





## Descriptive value web

We have used the descriptive value web to visualize the existing set of relationships among the stakeholders in the current context and see how the value is exchanged and flows through the system. There are 6 stakeholders in the system presently namely users, taxi drivers, taxi owners, taxi association, Toyota, and the government.

**Users:** This includes the passengers who use the transportation services.

**Taxi drivers:** People who rent taxis to make living on offering taxi service.

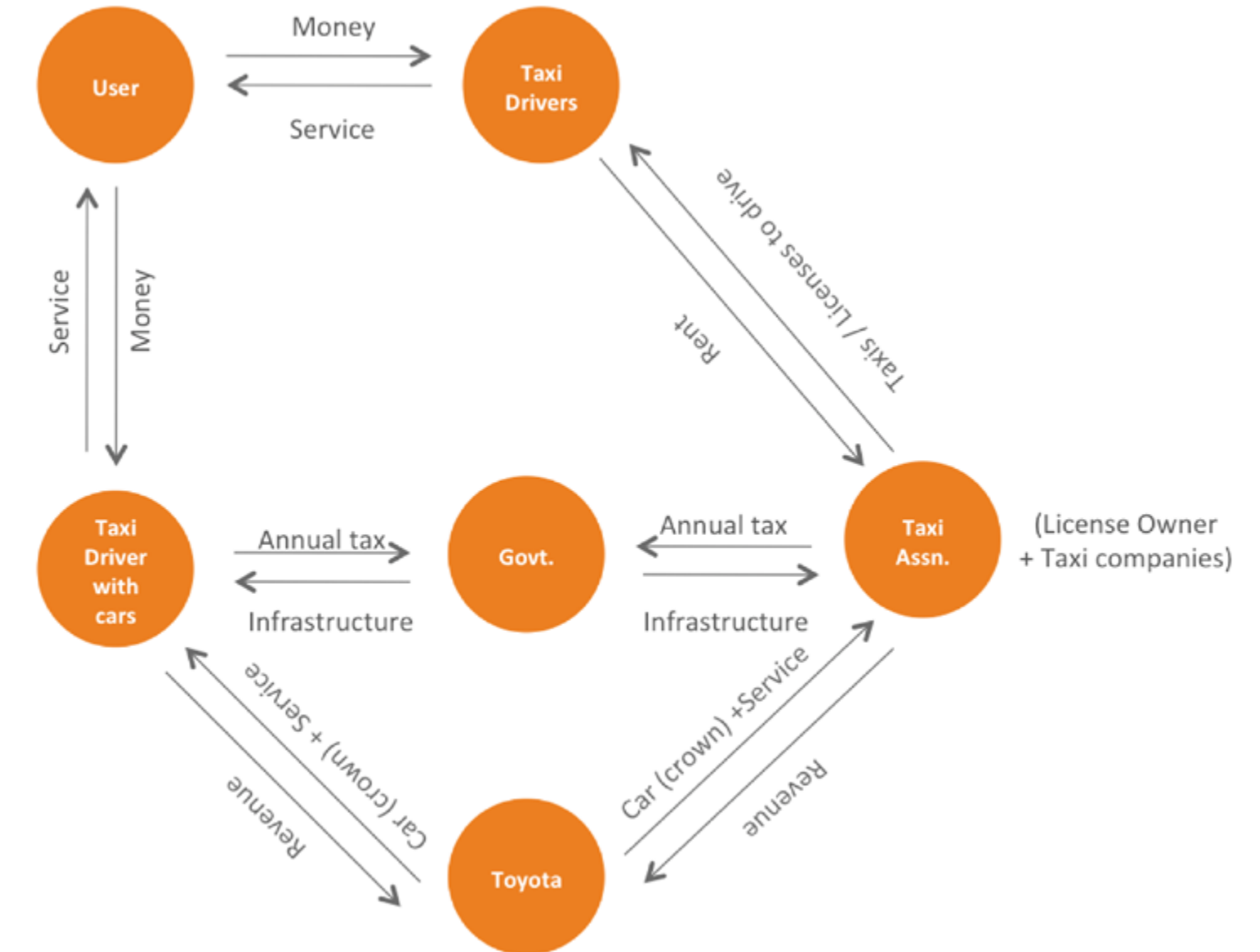
**Taxi owners:** People drive the taxi and at the same time own the car.

**Taxi association:** Companies that run taxi service business and have the ownership of the taxi licenses. They include taxi license holders and taxi companies.

**Toyota:** Globally known brand for automobiles.

### The relationships and value flows are as described in the value web.

- Users pay the taxi drivers to exchange transportation service.
- Taxi drivers pay the rent to the taxi associations to earn money.
- The government provide infrastructure for taxi services and collect taxes from taxi/taxi license owners.
- Toyota makes revenue by selling the taxi owners and taxi associations cars and services.







# Trend matrix

In order to design a more sustainable system, we used trend matrix to analyze the changes happening today that lead to the future direction of Taxi service from five perspectives: technology, market, people, culture, and business.



## TECHNOLOGY

Formerly	Currently	Emerging
Diesel and petrol engine	LPG engine Cash Payment	EV / Hybrid, Flexible payment, Automatic cars
Nissan Bluebird, Sunny along with Crown	Toyota Crown comfort (99%), Taxi Hailing app (Taxi Hero), Barrier free service (Diamond cab)	Smart taxis, Shared Vehicles Cross sector partnership
Surviving	Living and living well	Living well and doing good
Physical world	Digital world	Technology driven world
3000 licenses , License as investment	Revenue driven, 18500 licenses, License as investment	Responsible business, Sustainable, Conscience

## MARKET

## PEOPLE

## CULTURE

## BUSINESS

## TECHNOLOGY

The LPG engine cars will eventually be replaced by Hybrids and EVs in the near future. And the current cash payment method will be seen more flexible in the near future.

## CULTURE

With a high expat population, the use of technology seems to be influencing the culture, attitude and behavior of people. Social interaction through digital media is on the rise and this trend shall grow in the near future.

## MARKET

Taxi service in Hong Kong is still very conventional. Innovative transportation services will be seen in the future for instance, smart taxis, vehicle sharing service, and cross sector partnerships.

## BUSINESS

Licenses today are used as an investment option for many. The limited supply and growing value contributes to its significance even in the niche market. We expect to see a more people driven and responsible business practices in the future.

## PEOPLE

In the recent times we see a more acknowledged use of technology in various ways in the society. With digital savvy consumer the market is adapting itself to flexible digitized time saving innovations. Sustainability awareness is on the rise and in the near future the focus from living good to living well.





## Desk research

Desk research primarily involves our secondary research from papers, books and research done by many designers including Fred's report and interview conducted.

It is found that most taxi run on an average of 5km/ride with most occupied by single passengers in a rush. With the high expat population using this service many struggle with language communicated with the driver. The lack of understanding English often create confusion. The average age of drivers here is about 45yrs of which about 50% own a taxi. Apart from the communication barrier the use of LPG is considered not as a long time solution for pollution. Over all there is an opportunity for a product service system shift.



- Stop and go ride (average ride is 5 kms)
- Demand is high
- 1 or 2 people hiring taxi in maximum cases
- English language understanding is limited
- Most drivers speak Cantonese and Mandarin
- LPG engine is a not the long term solution
- Average age of the drivers in HK is 45yrs
- Government's passive role in taxi transport system
- Expensive licenses
- Less than 50% taxi drivers own the taxi
- Availability sign on top of the taxi is weak
- Rigid payment system, only by cash

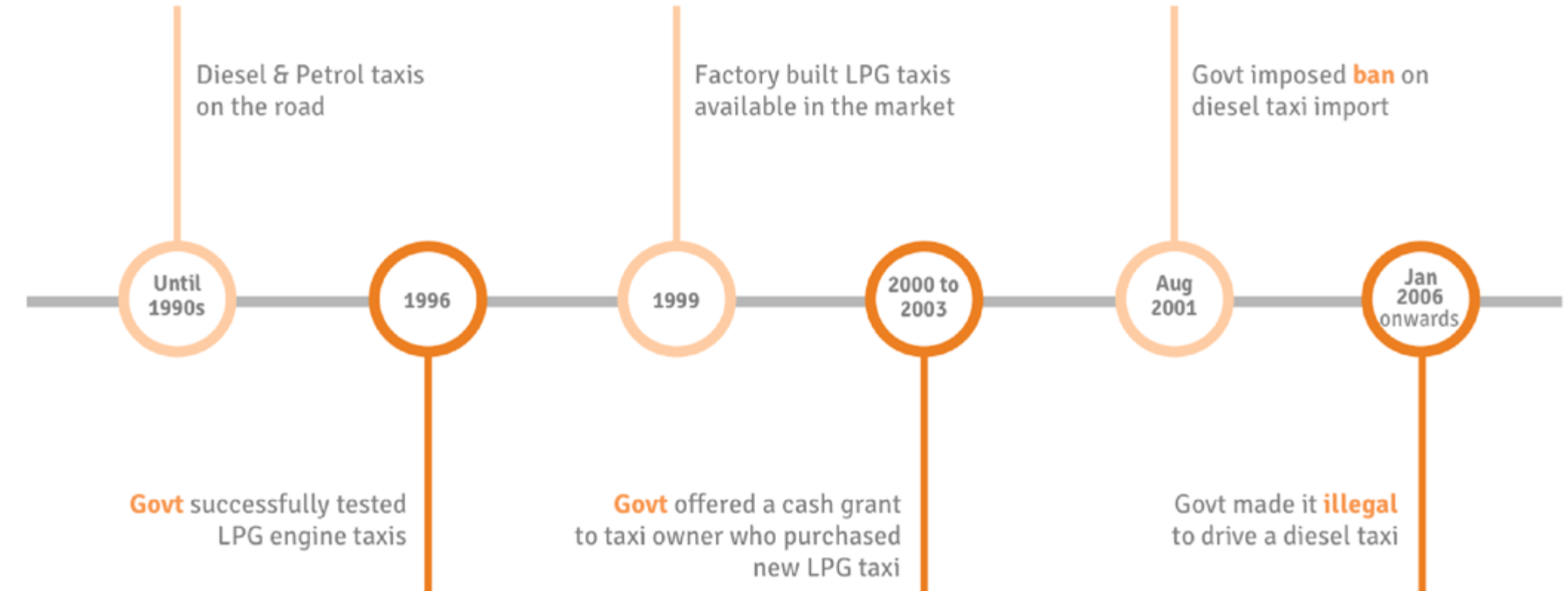




## Government's role

Further, we investigated the government's role in Hong Kong taxi system in the past years. Until 1990s, only diesel & petrol taxis were found on road. From 1996 to 1999, the government successfully tested and implemented taxis with LPG engine.

From 2000 to 2003, the government offered a cash grant to taxi owners who purchased new LPG taxis. On August 2001, the government imposed ban on the diesel taxi import. Since January 2006, the government made it illegal to drive diesel taxis in Hong Kong.







## Driver's needs

The taxi is the driver's workspace where they spend long hours, but the current driver environment does not provide the necessary comfort and amenities



## Passenger's needs

Passengers only spend a short time in the cab and have different physical, mental, visual and cognitive needs

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## Interviews

We conducted a field visit, taking a trip down to Wanchai to interview drivers and users. We interviewed two groups, Cantonese speakers and non-Cantonese speakers to understand their pain points and experience of using a taxi in HK. Among them one of the expat expressed his view saying - "It took me a long time to explain my destination to the drivers." And another user saying: "I was not sure about how much time it will take for me to reach my destination and the route was confusing. I was afraid they were taking longer distance than it originally needed."



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## Ethnographic Interviews

\_ "It took to me a long time to explain my destination to the driver."

\_ "I was not sure about how much time it will take for me to reach my destination and the route was so confusing."



# The Customer Journey Canvas

## PRE-SERVICE PERIOD

Four factors determine a user’s expectations: advertisements/ public relations, social media, world of mouth, past experience.

Customers see advertisements of various taxi services through flyers & signage at various public spaces and many also receive information online. Some prefer to use the taxi call center to book a cab.

Customers also absorb information on Taxi services from blogs & forums, taxi websites, social networks.

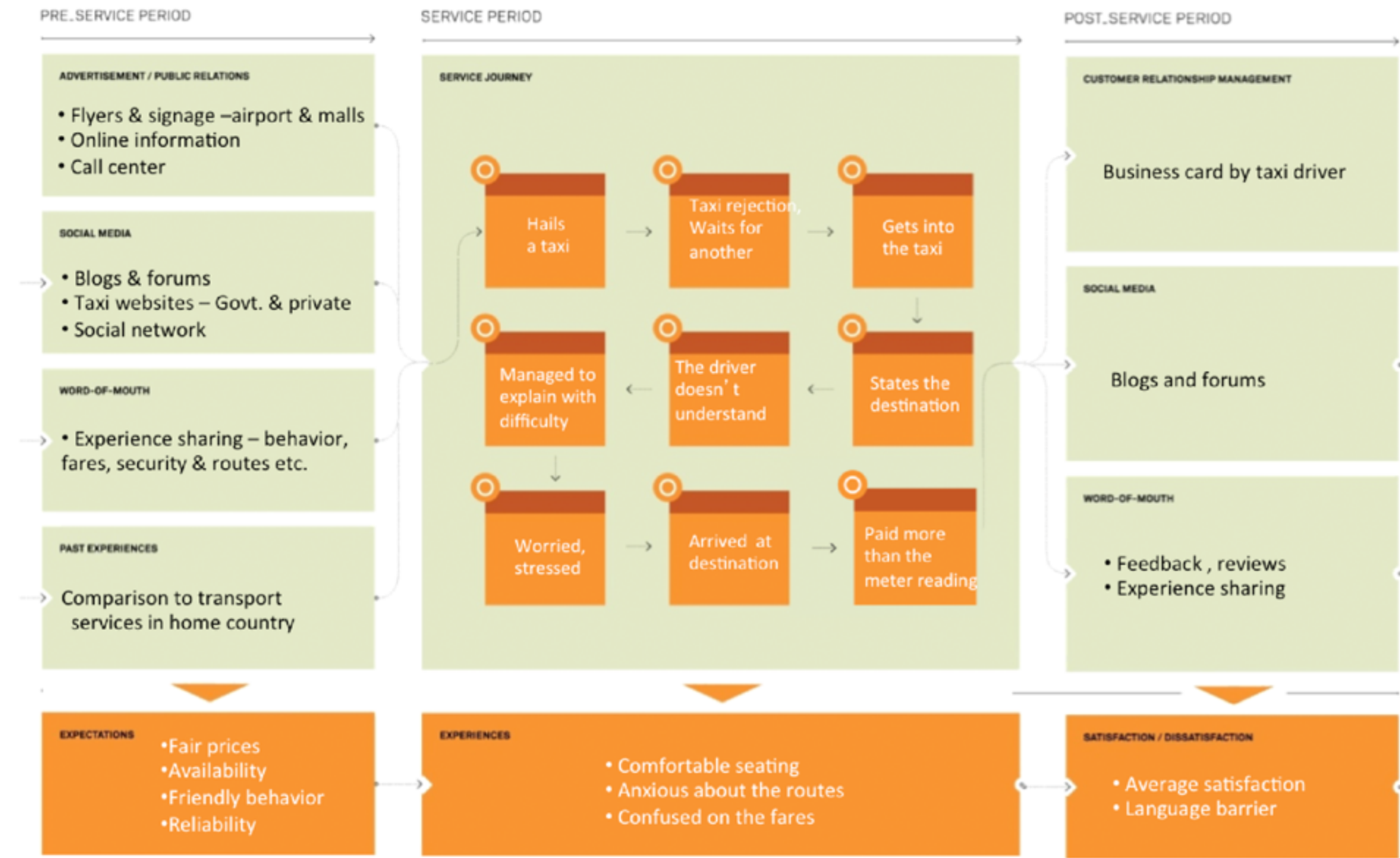
People compare the taxi service in Hong Kong with their past experience of taxi service back to their hometown and share their experience with each other through social media/network.

## SERVICE PERIOD

The various touch points mapped in the journey map helps us understand the pain points faced by the passenger. The lack of transparency in the system creates a confusion in routes and fares adding to the problem of communication barrier already existing in the system.

## POST-SERVICE PERIOD

Many taxi drivers develop customer relationships by giving customers business cards . Customers often reflect their satisfaction/dissatisfaction through social media(blogs & forums) and share their experience by word of mouth.



## Five Human Factors

The 'Five Human Factors' is used to study the physical, cognitive, social, cultural, and emotional factors that drive the overall user experience.

For taxi service, the physical part includes all kinds of interactions between the taxi (car) and users, for example, hailing for a taxi, opening the door, sitting inside the car, placing the luggage and getting out of the car.

The cognitive part includes how people associate meanings to things they interact with in the whole process.

For instance, reading the written information inside the car, understanding the driver's gesture, noticing the routes etc.

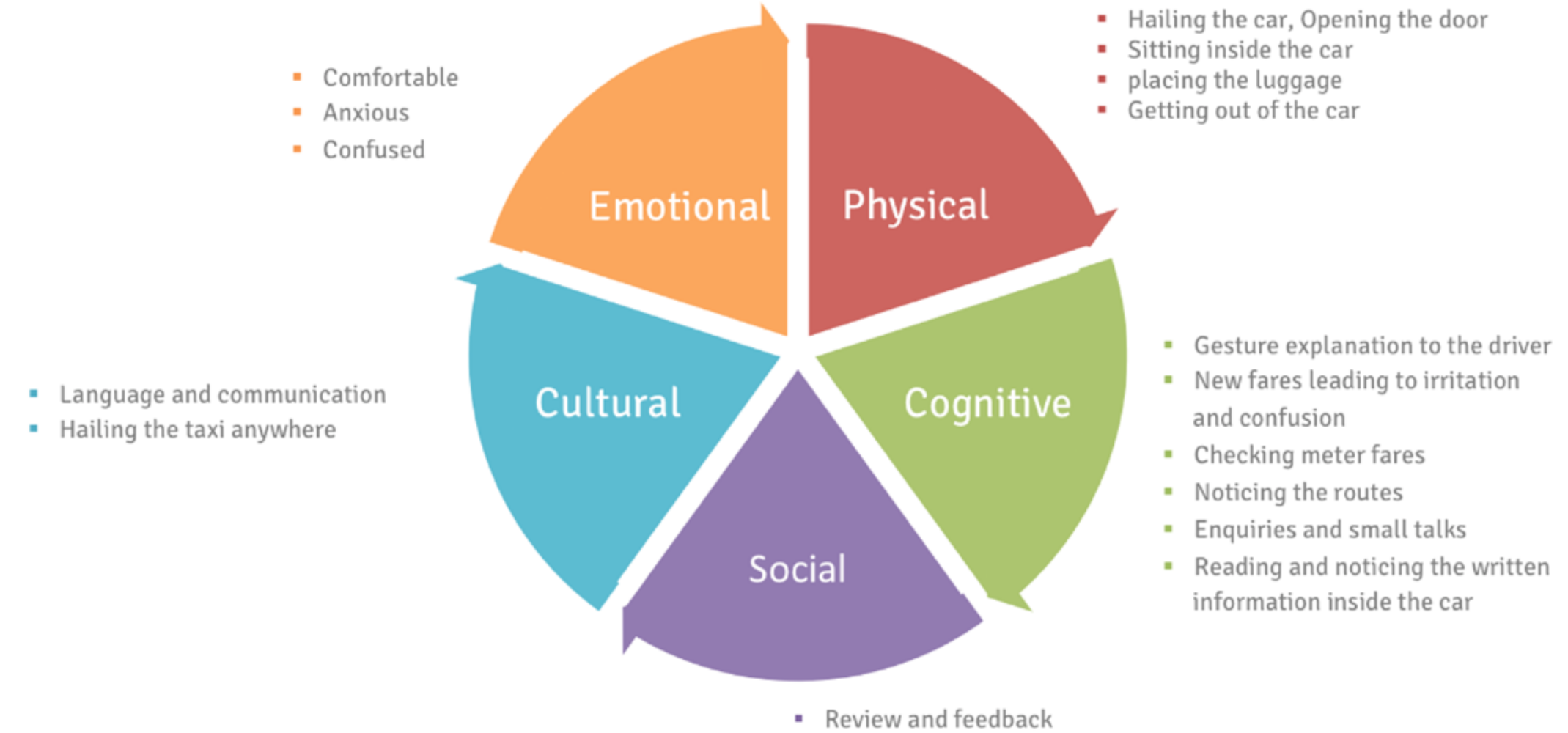
The social factor helps understand people's behaviors in social settings about taxi services.

For example, people making a decision/choice reading posts/ forums online.

The cultural factor analyzes how people experience shared norms, habits, and values, such as people express their feelings, experiences through social media/network. Hailing for a cab is the most commonly practiced behavior to hire a cab in the city.

The emotional factor helps us learn people's feeling and what shapes their emotions to describe the taxi service.

For example, many feel comfortable, some worried /anxious on the routes, a few confused on the fares, and etc.





# Define



## Insights

- Need for easy Communication
- Easy availability of cabs
- Space & storage for driver's belonging
- Need for transparent fares
- Cleanliness & tidiness
- Need to improve the interiors of the car
- Need for routes & navigation options
- Need optimum luggage space
- To address traffic and pollution in the city

## Insights sorting



Need for easy communication



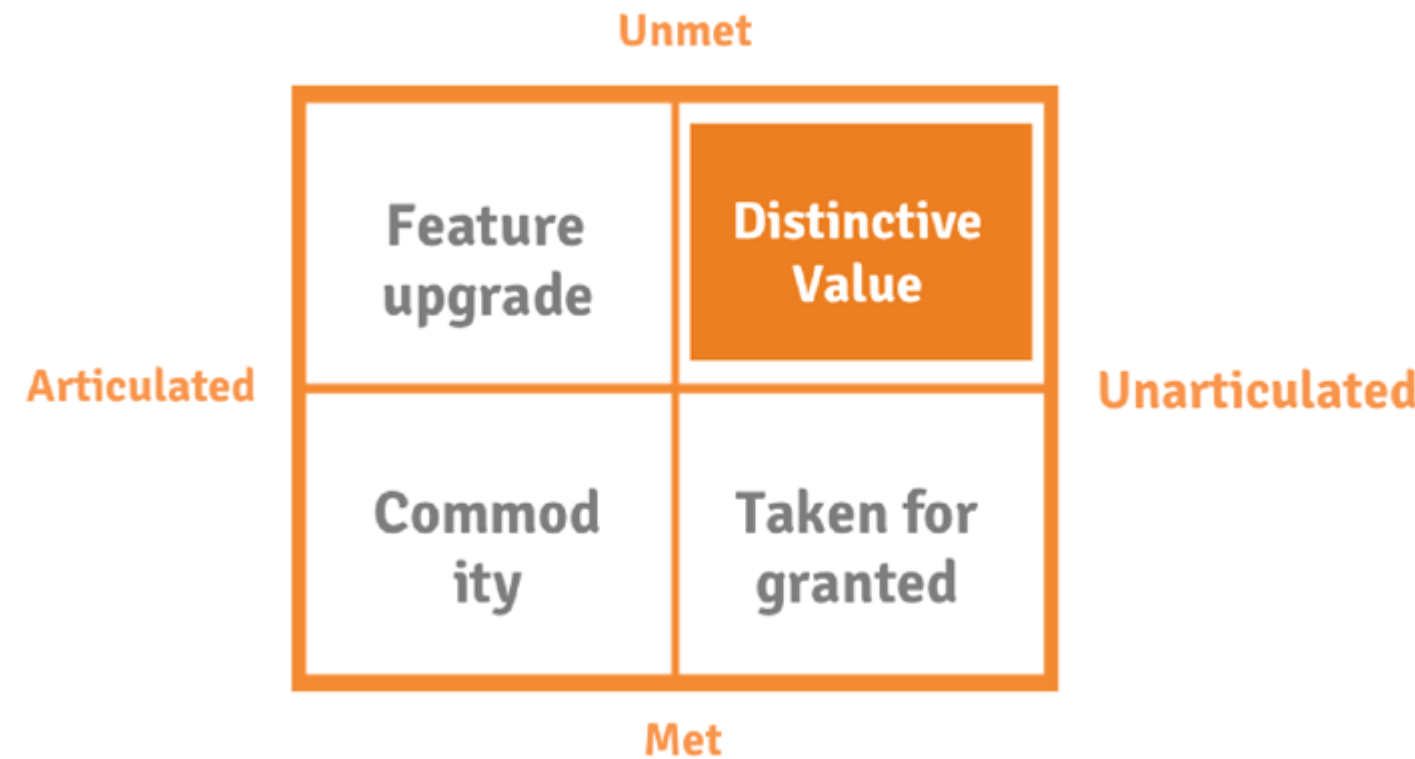
Need for transparent fares



Need for routes & navigation options



To address traffic and pollution in the city



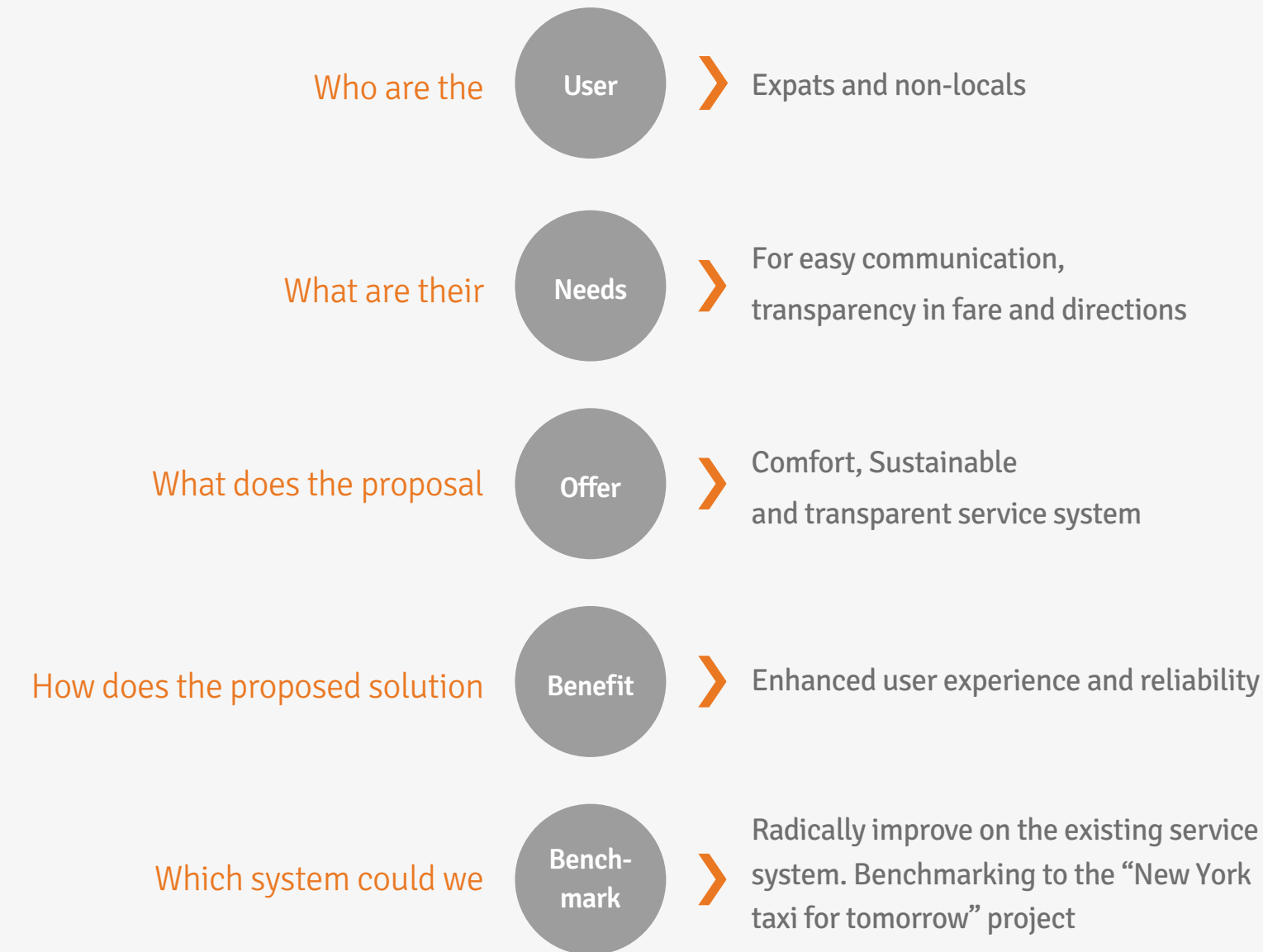
## Needs map

In our proposal we would like to focus on the upper right quadrant where we focus on “Unmet and Unarticulated needs” or their implicit needs. Offering them a distinctive value by understanding and respecting them what they really want, is what we recommend here.

We are neither proposing to upgrade the features in the existing taxi nor just improving the service in isolation. We recommend a product service system shift to create value for users and drivers.

## Intended value

We intend to channel our values by understanding the user and their explicit/implicit needs. Our offering is to focus on the benefits while we also benchmark this proposal to “the New York taxi for tomorrow” project.



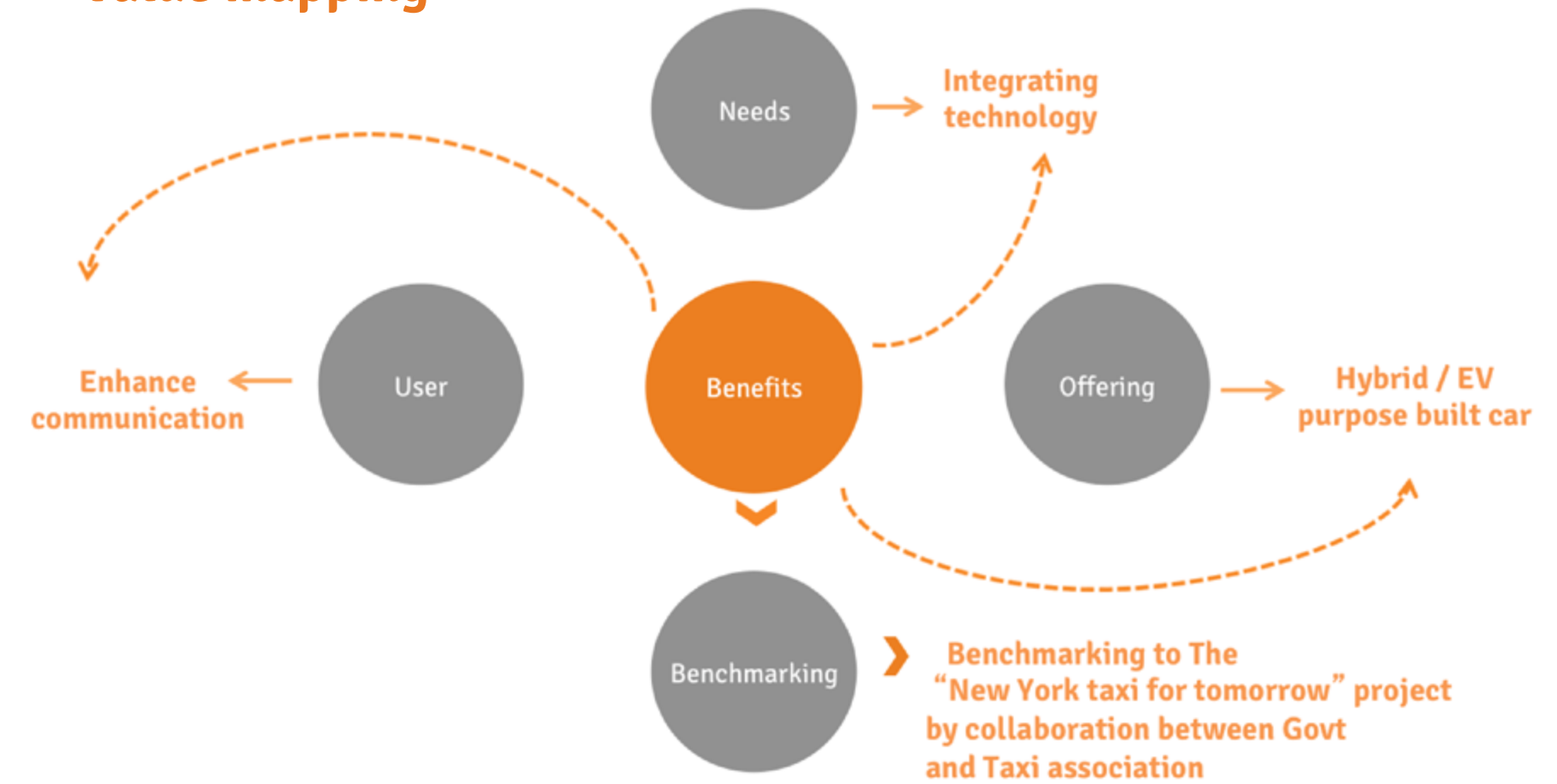


Develop

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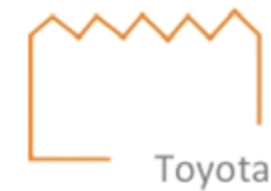
## Value mapping

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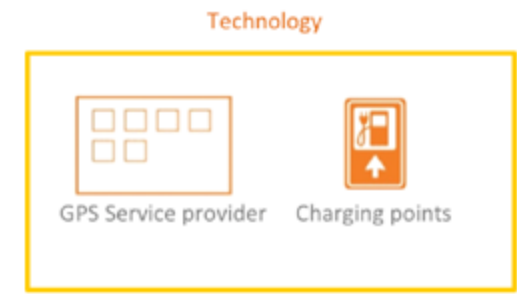




# System map



Toyota plays a significant role by remodeling its existing ‘Sienta Dice’ to meet the needs of Hong Kong market. This new car with hybrid / electric engine is offered to taxi owners at an attractive rebate against the existing Toyota crown. The old car will be sent to Toyota’s recycling unit, making the entire process more sustainable.



Toyota partners with a GPS service provider company to design its navigation device which will be installed in the car providing features like transparent route, fares, and other navigation options. Using their existing technology and government’s support, Toyota provides charging stations for its electric vehicles across the city.



Government

The mutual agreement between Government and Taxi association helps attain support of taxi and license owners to introduce this new vehicle in the system.

This also results in a lowered tax to the association.



Educators

The ‘educators’ in the proposed system provide language skills to drivers to break the communication barrier. Driver receive a certificate as an acknowledgement.

We suggest universities like PolyU to actively participate in training services which is funded by the government.



Taxi Association

The taxi association includes license owners, drivers, taxi companies and taxi owners. Taxi owners receive a new car and a discount against their existing car.

Their active support to the govt. in making the system sustainable benefits them in a lowered tax.



Drivers

This new EV provides Drivers with an enhanced driving experience. Along with the acquired language skills they now enjoy the smooth communication with passengers. The proposed system helps uplift their status and lifestyle.



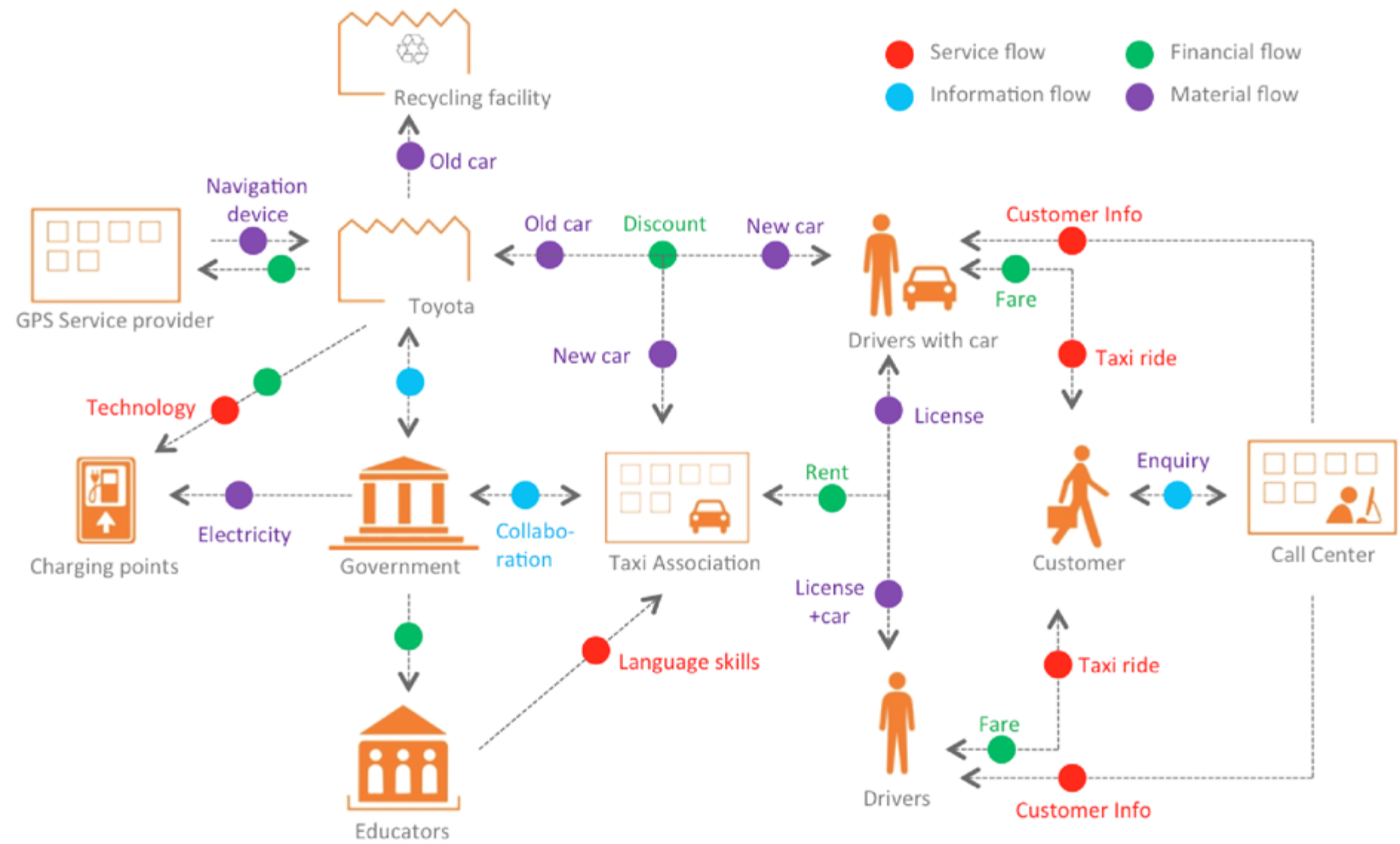
Customer

In the new system we observe easy communication, transparency in fares and routes, comfort, safety, luxury which leads to an enriched user experience.





With the active participation of the entities we see a sustainable product-service-system as proposed below.



# Prescriptive value web

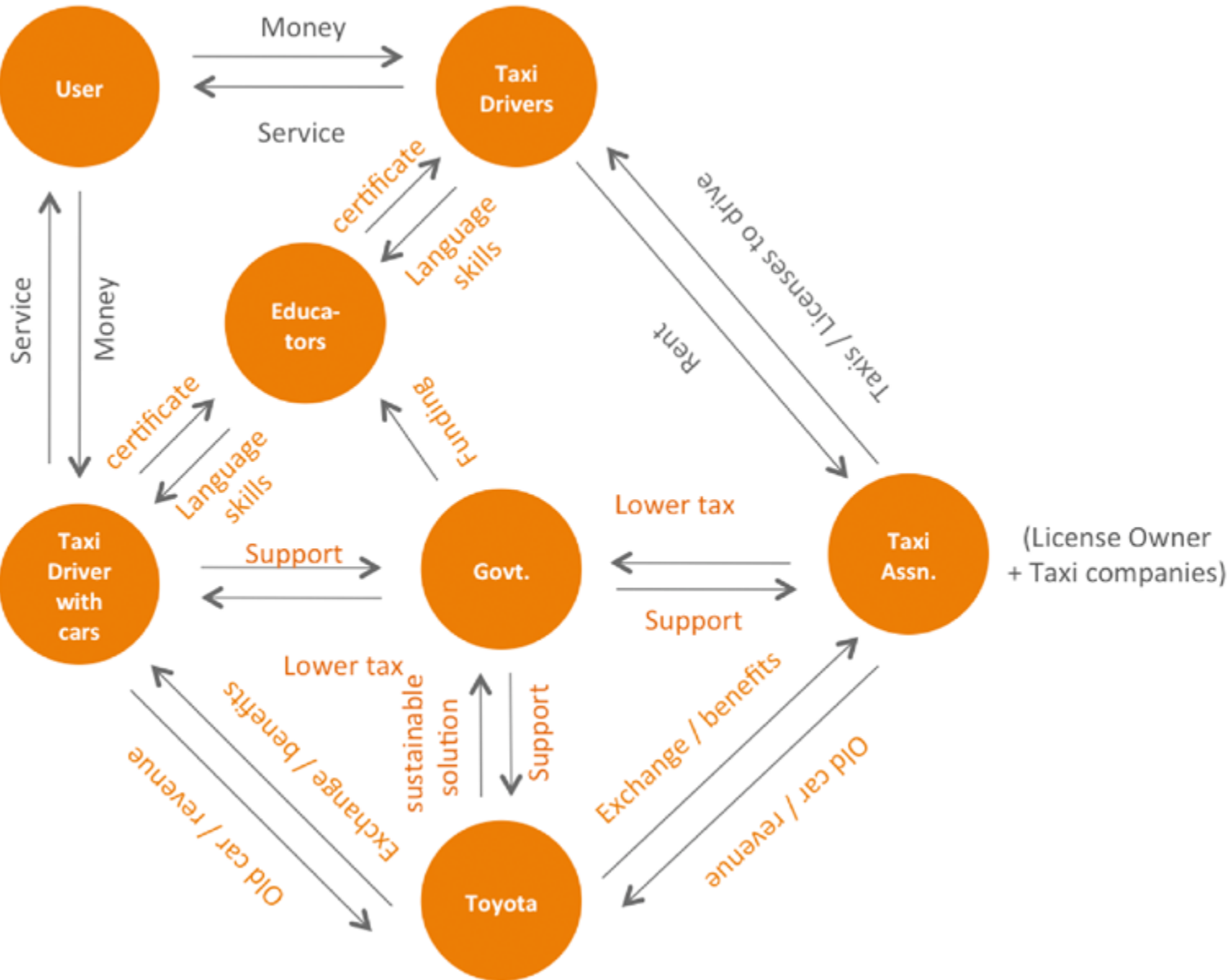
- 1

We introduce ‘educators’ in the proposed system, who will provide the English language skills to drivers to break the communication barrier. Driver will receive a certificate as an acknowledgement. These educators are funded and collaborated with the government. We suggest linguistic department of universities like PolyU to participate in the system.
- 2

The proposed collaboration of taxi association with the Govt. results to a lowered tax. This is achieved through a sustainable hybrid / EV and their constant support.
- 3

Toyota plays a crucial role in remodeling the existing vehicle to a sustainable user friendly taxi. Toyota offers the new proposed vehicle to taxi owners facilitating a reduced prize on the exchange of the existing vehicle (Toyota crown)
- 4

The problem of traffic and pollution is taken care of with the new vehicle redesigned by Toyota. This helps them capture a market, build their brand and receiving constant support from the govt.



Please refer the descriptive value web on page no.11 for the existing value flow



# CONCEPT DEVELOPMENT Case scenario

## Proposed vehicle

The Toyota Sienta Dice is a small five-door car with sliding doors, introduced in 2011. It features avant-garde styling with interior which is highly flexible with the seats able to be knocked down in various configurations to accommodate varying luggage sizes. Multiple compartments are available in convenient areas of the cabin for easy storage of small items.

A perfect car from Toyota's existing pool of cars to suit Hong Kong's taxi requirement.

*SIENTA*  
**MODELLISTA**  
for DICE



# Scenarios

## *Scene 1* Hail for a taxi

The all new vehicle provides the improved taxi availability sign with clear visibility to provide easy identification.



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## *Scene 2* Sliding the door to enter

A vehicle with sliding doors providing easy and smooth access for passengers during peak traffic hours. This sliding door feature also saves space on the road.



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Sliding door





### Scene 3

## Comfortably places the luggage

With highly flexible interiors the car seats can be knocked down in various configurations providing larger space to accommodate varying luggage sizes.

Enough luggage space



### Scene 4

## Stating the address to the driver

With the driver's improved communication skills acquired he is able to communicate with the passenger with confidence and ease. This results in enhancing the user experience by breaking the language barrier.





## Scene 5 Inputs the address

The new GPS system enables the user to locate his address, then approximate time to the destination and the approx fare



Touch screen panel

## Scene 6 Sees the route options, fare details and real time traffic info and selects the route

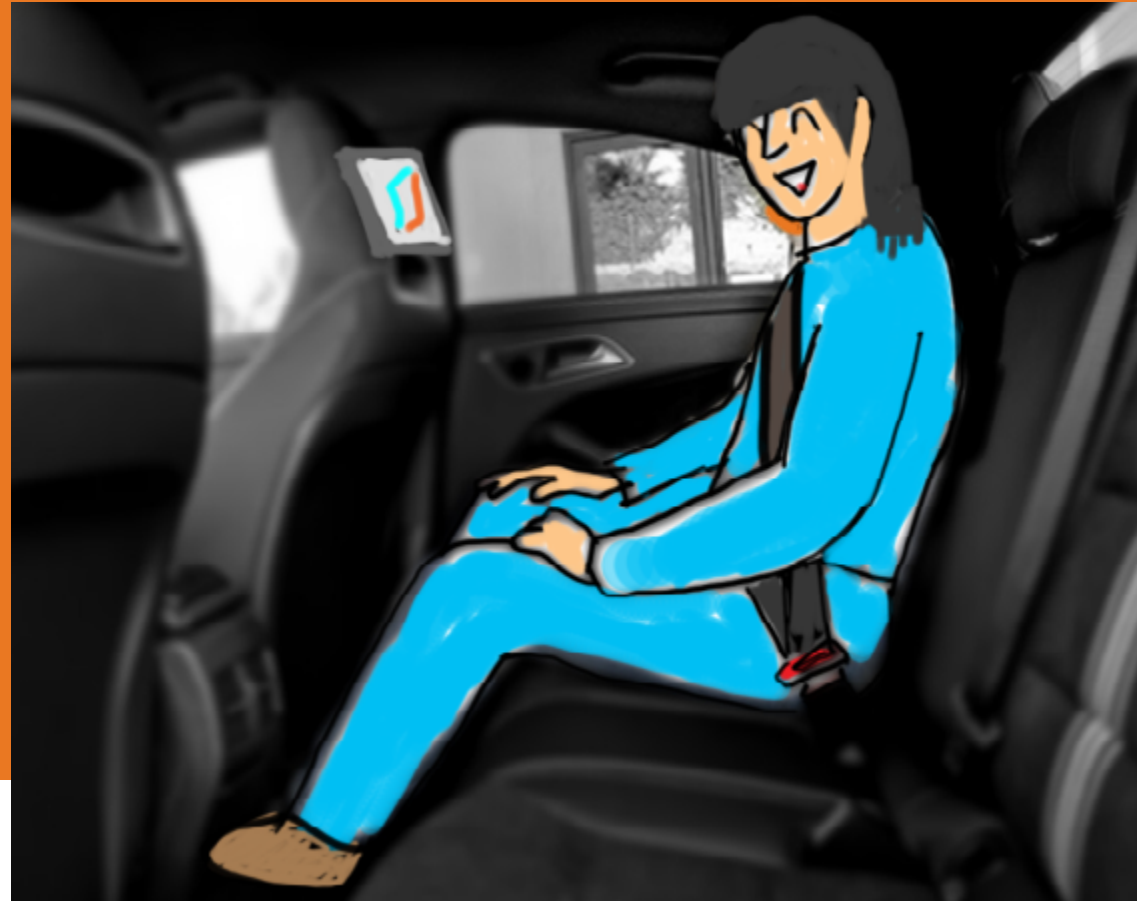
This device provides the real time information on traffic and presents the use with possible routes. This advance touch screen device facilitates transparency and convenience.





## Scene 7 Journey begins

The above services provides the user a stress free atmosphere letting the user sits back and enjoy his ride.



## Scene 8 Enjoying the Hong Kong skyline

The glass roof top provide the a spectacular view of Hong Kong skyline for the user



Transparent roof top



## Scene 9

### Continuous access to information

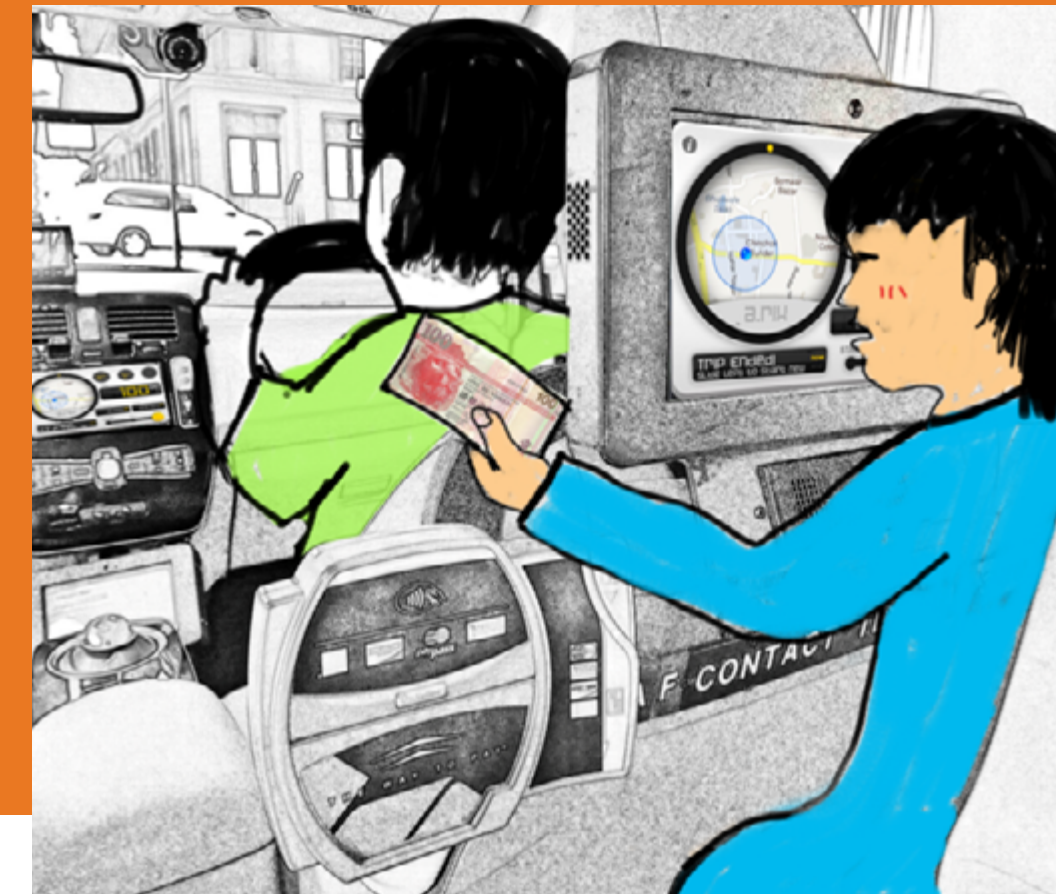
The touch screen panel enables the user to locate the distance covered, various landmarks around and approximate time remaining to the destination.



## Scene 10

### Payment

The auto updated fare meter leaves no room for confusion. The approximate fare in the beginning of the journey leaves the user with no surprises, making his ride joyful.







## Scene 11 Finishes the journey

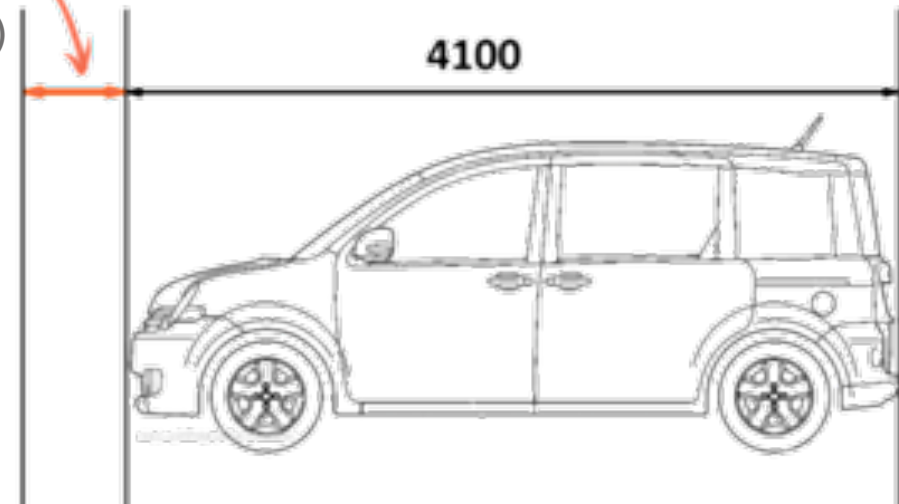
With all the new features  
this vehicle provides the  
user with a hassle free  
and happy ride.

## Size comparison

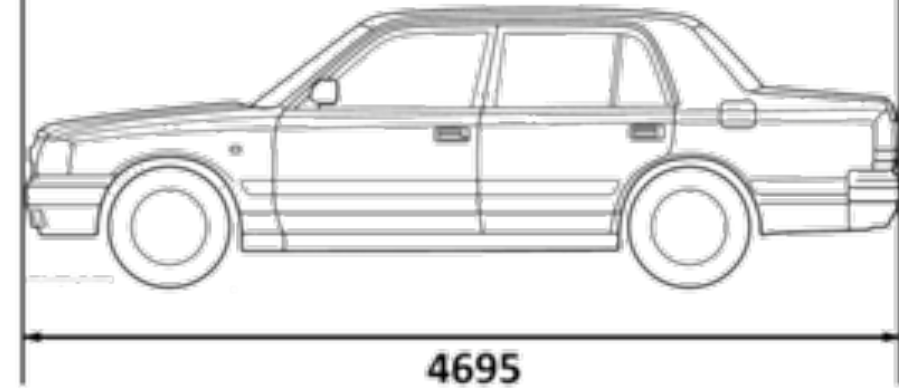
The proposed vehicle, Toyota  
Sienta Dice is approximate 2ft  
smaller saving space on the highly  
congested Hong Kong roads.

12.7% Less  
(2ft approx)

Toyota Sienta



Toyota Crown Comfort





## The modifications

1

Taxi availability sign

2

GPS navigation technology with real time traffic updates

3

Auto updated meter

4

Flexible seating

5

Increased luggage space with ramp facility

6

Wheelchair friendly design

7

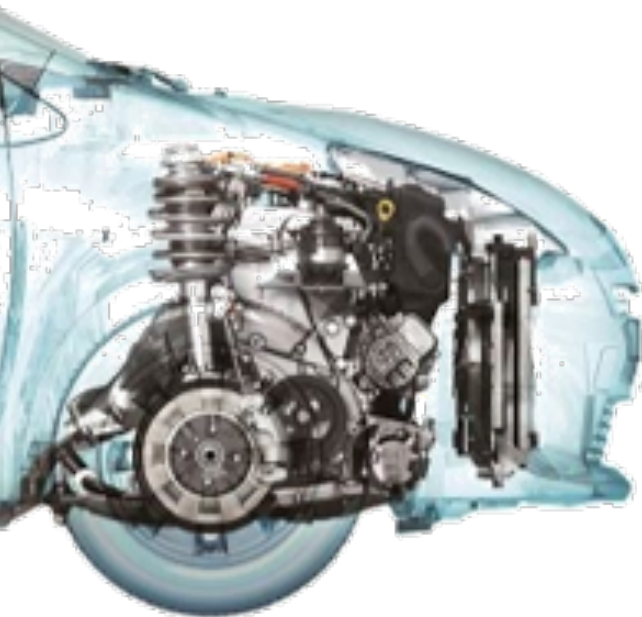
Hybrid / EV engine

8

Sliding door

9

Transparent roof top



## Deliver





# Value Proposition

## USER

There are two types of users in this system, drivers and the passengers. The driver's acquired communication skills, transparency results in a stress free journey for both. They also contribute towards the sustainability of the environment.

## ORGANIZATION

The proposed system provides a new business opportunity for Toyota. helping them strengthen their brand. Their new EV/hybrid engine along with recycling their old cars contributes to this sustainable process

## ECOSYSTEM

Active collaboration among partners and stakeholders results in cash grants and tax rebates. The constant support and participation of the govt. helps making the system work more smoothly.

## SOCIETY

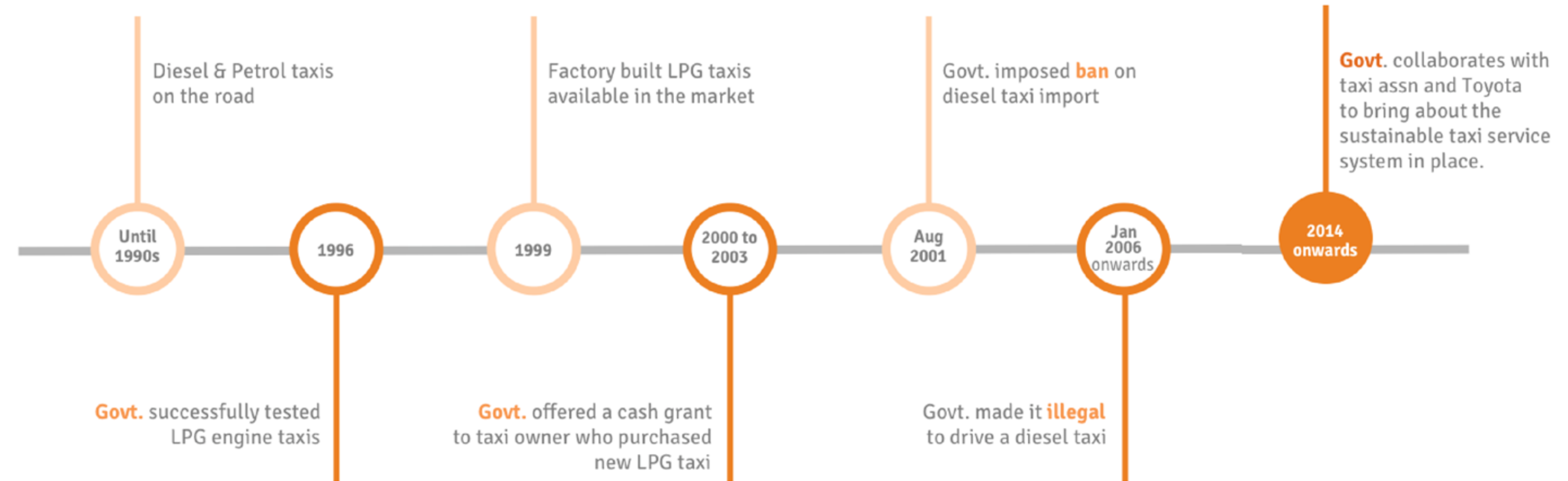
We see a transformation in Hong Kong society by tackling the issues of traffic and pollution. We also notice a pleasant work environment among stakeholders resulting in prosperity and building brand Hong Kong.



## Government's proposed role

As we have seen the Govt's participation in the past has made a difference in the hong Kong taxi system, hence we propose their active engagement in the proposed system to enhance the taxi service industry in Hong Kong. Through their support and control, the big issues of traffic and pollution could be tackled. We suggest that the govt should take the following steps :

- **Mandate** to shift from LPG to EV / Hybrid engine
- **Reducing the tax** on electric and hybrid vehicles
- **Offering cash grant** to promote the concept
- **Providing language skills** training to the drivers.
- **Providing infrastructure** for charging stations
- **Policies and campaigns** to promote 'Brand Hong Kong' through the proposed system





# Road map

## SHORT-TERM (2 YEARS)

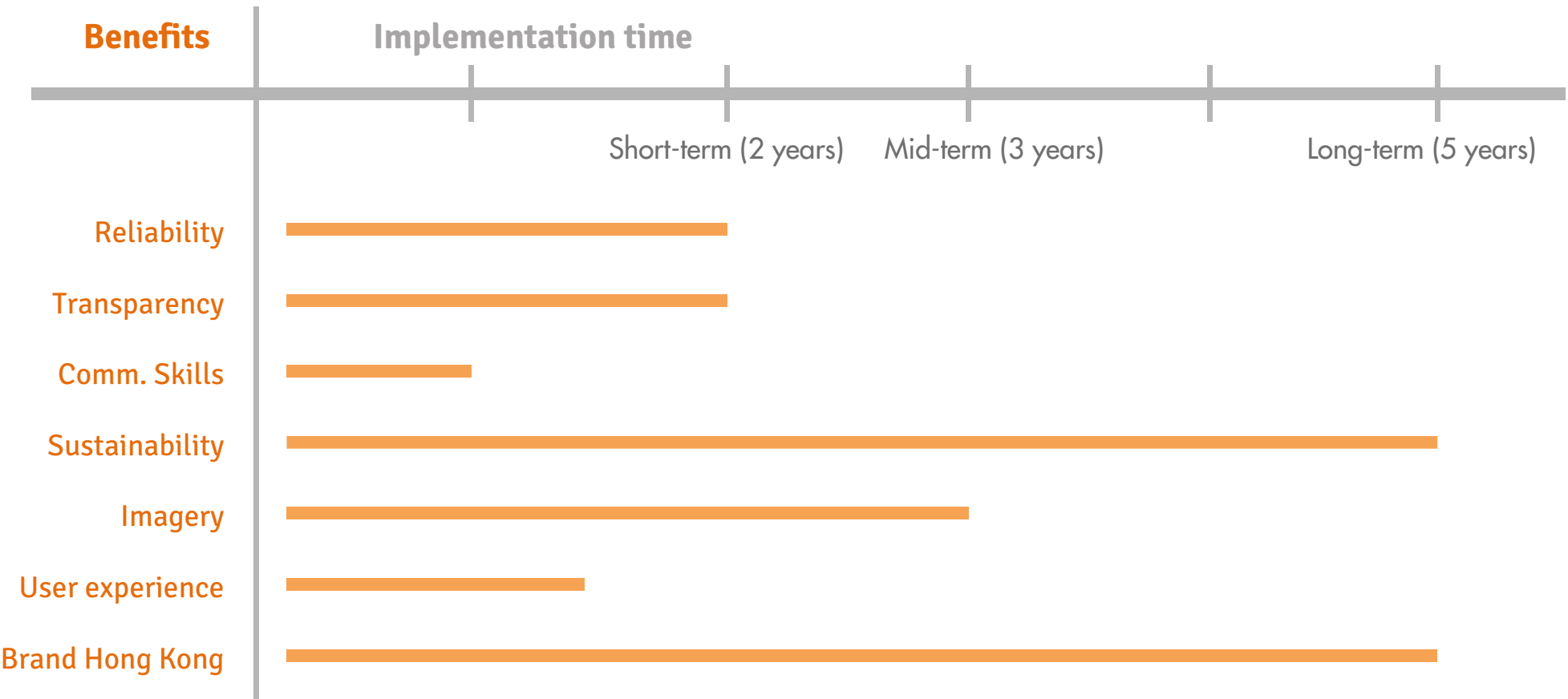
On implementing this proposed system, we see an improved user experience through transparency and effective communication leading to a reliable and sustainable system . We expect this change to take place in a span of 2 years.

## MID-TERM (3 YEARS)

This improved user experience results in enhanced imagery for Hong Kong taxi services. At this stage we see most taxi drivers to have acquired new vehicle.

## LONG-TERM (5 YEARS)

By now we expect all taxis running in Hong Kong are the EV/ Hybrid model. We see a new sustainable system in place which also helps build an imagery of Hong Kong. With large expat and tourist population using this service we notice Hong Kong earning reputation in the global tourism industry.



A nighttime aerial photograph of Hong Kong, showing the dense urban landscape with numerous illuminated skyscrapers and buildings. The Victoria Harbour is visible in the center, reflecting the city lights. The overall scene is a vibrant display of urban architecture and lighting.

# Vision Statement

*“A sustainable taxi service system design for Honk Kong through an inclusive design approach which enhances the user journey experience; benefits the drivers through its aesthetically appealing look and also help promote the ‘Brand Hong Kong’ at the global platform”*

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