
SLOW TRAFFIC SERVICE DESIGN

OF TONGJI UNIVERSITY JIADING CAMPUS

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INTRODUCTION

1.1 BACKGROUND

1.1.1 ENVIRONMENTAL NEEDS

Nowadays, there exists many negative environment problems in modern transportation ways where vehicle domains, which is not just the development issues a certain region faces, but also the crisis many countries all over the world have to tackle with. While university campus, as the important part of education places in the whole urban construction, cannot be avoided to break the silence it should have owned as well, and we have to admit the reality that promoting and developing slow traffic system is imperative.

In 2014, Chinese National State Council promulgated the Notice about the Classification Criteria For Cities in China which divides cities into seven level in five categories according to the regional residential population: small city (type I, type II), medium-sized city, large city (type I, type II), XL large city and megacity (Figure 1.1). In small, medium cities or satellite towns attached to the large, the urban transportation system where walking and bicycle primarily predominate should be promoted, taking full advantages of the systematic multi-level bicycle network. **While university campus traffic plan should learn from slow traffic network in small cities, either in the scale of population or area, to promote campus slow sustainable transport network oriented towards by walking and bicycle system.**

type/features	Small city		Medium city	Large city		XL Large city	Megacity
	I型	II型		I型	II型		
population	20-50	< 20	50-100	300-500	100-300	500-1000	> 1000
traffic mode	"Walking+Riding" Slow Traffic as the Main			"Slow Traffic +Public", like TOD			

Figure 1.1 the Size Classification Criteria for Cities

1.1.2 USER NEEDS

Up to now, the "large" size seems to become the new look for most Chinese University new campus which needs a reasonable campus traffic system (Figure 1.2), due to the function and orientation of university campus different from city. To create a better campus slow traffic services system; we cannot directly duplicate the urban experience, but combine users' needs with all aspects of campus environment to build a reasonable transportation service system for "large" campus.



Figure 1.2 Tongji University Jiading Campus

1.1.3 CULTURAL NEEDS

Slow Traffic (Non-motorized Traffic) usually refers to walking, bicycle or other human-powered transportation means. The "slow" does not only indicate the speed, but also represents a return to the leisurely and carefree lifestyle. "Slow Traffic" culture has had a good development in urban transportation in practical level; therefore building up a reasonable university campus slow traffic system is one of the necessary constitution of Green&Sustainable Campus development, also the urgent need for university teachers and students. (Figure 1.3 Survey results)

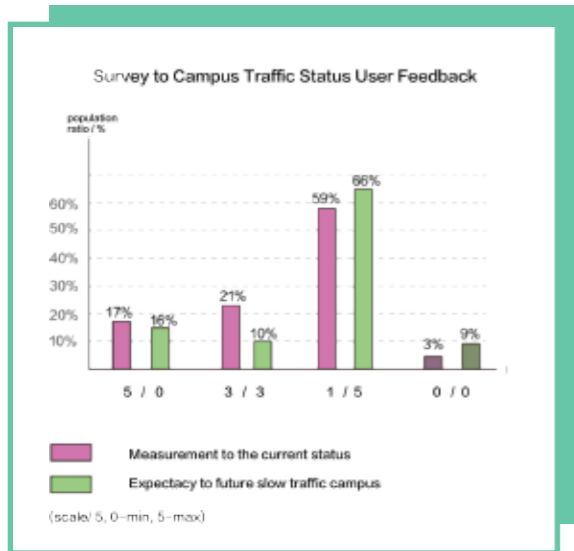


Figure 1.3 Campus traffic status feedback

1.1.4 SOCIAL NEEDS

Service design could explore more forms of sustainable economic development and provide more possibilities of business model.

Service design is a sort of design based on the Method, also a way of thinking. It can offer us more methods, tools and processes, playing a dual role of practice and cognition; it may provide more optimal path with design implementations based on certain values. While the service design in Western countries have made considerable progress in the development, because of **China's unique national conditions**, the development experience in western cannot address all the issues China is facing, which acquires to explore a more sustainable development mode in line with own characteristics in the **guidance of service design**.

1.2 RESEARCH STATUS

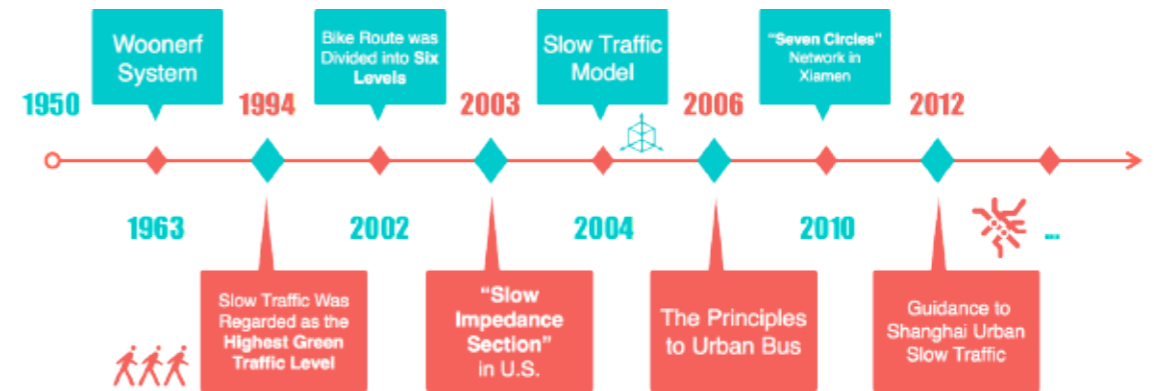


Figure 1.4 Relevant literature timeline

1.2 SLOW TRAFFIC RESEARCH STATUS

"Slow Traffic" is also called as Non-Motorized Transport, mainly refers to walking and cycling transportation, namely the transportation whose speed is less than 15km / h. Sometimes when some cities establish their urban slow traffic system, they will incorporated buses into the system access to walking and bike system, guiding users adopt "walk + bus" or "bicycle + bus" to commute or travel, which acts as an effective solution to solve traffic conflict, traffic congestion and other problems.

The current slow traffic services mostly reflected in the research and practice of public bicycle service system, and one of the key subjects for discussion in this paper is to design a public bicycle service in a campus slow traffic system, the overseas theoretical study in this regard develops systematically.

Year	Author	Literature	Contribution
2003	DeMaio · PJ	Smart Bikes: Public Transportation for the 21st Century.	In 21th Century, bicycle will become the most important transport means
2006	Pinaud · Antonie Santos Canals · Mar	Copenhagen: How Bicycles Can Become An Efficient Means of Public Transportation	combining bicycle with urban public transportation network
2009	Peter Midgley	The Role of Smart Bike-Sharing Systems in Urban Mobility.	extracting main modes of urban public bicycles in European countries
2010	Susan A · Shaheen Stacey Guzman	Bike Sharing in Europe, the Americas, and Asia—Past, Present, and Future	typical urban public bicycle cases in the world

Figure 1.5 Slow Traffic literature research

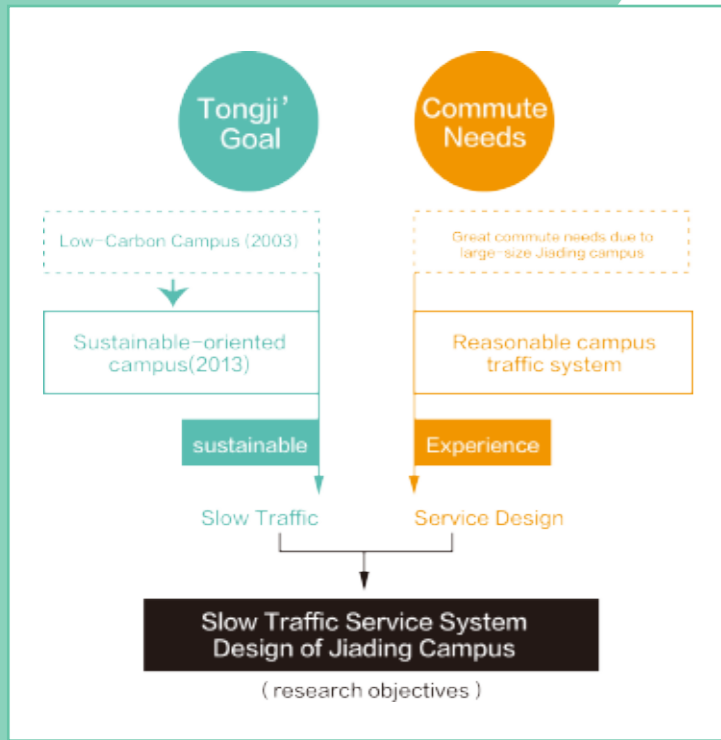


Figure 1.6 Jiading slow traffic service system is reasonable to build

1.3 Research Contents

This paper develops in the thinking framework of “through Ceating to Planning”, combining with **three essential factors of people, environment and activities**, and establishes Tongji Jiading Campus Slow Traffic Service System comprehensively.

Tongji Jiading campus as the typical representative of new university campus in domestic typical holds many features, such as large-scale campus size, location far away from the city center, which has determined the need to establish a reasonable transportation system to facilitate teachers and students daily school activities and travel; Tongji University published "Green Commute, Low-carbon Life " as an important part of Tongji campus culture in 2013,therefore,The establishment of slow traffic service system is the most likely choice to give a satisfactory answer.

1.5 Research Goals

In this paper, the writer conduct the research and transportation design about Tongji Jiading campus and built campus slow traffic service system, in order to use proper methods to tackle with the traffic issues it faced. **Establishing a unique Jiading campus transportation system calling for its own characteristics** is one of the research goals, while providing some reference to other university in the similar conditions during new campus construction is also included. Just as the following specific objectives shows:

firstly, when establishing campuse slow traffic system, designers should take a comprehensive horizon of user, activity and environment these three angles;

secondly, it is desired that this project could be able to form a new possibility for some new university campus holding the same or similar characteristics during their slow traffic service system design process;

finally, the complementary and systematic integration of slow traffic with service system design these two promising directions is of great significance for the further society development.

1.4 SERVICE DESIGN PROCESS & METHODS

In short, the service design develops as a process of 4D. Starting with the extensive exploration (Discover), summarize relevant clues, define related issues and approaches (Define), and then deepen the development of this design project (Develop), eventually in the presentation of the whole program (Deliver). The 4D design process need to be repeated and amended iteratively to ensure the accuracy of the design.

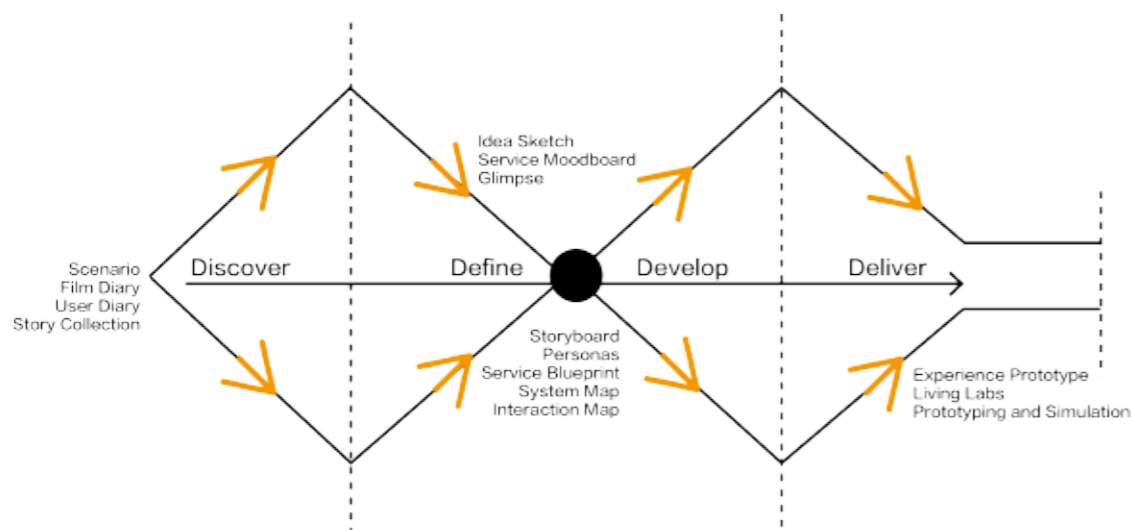
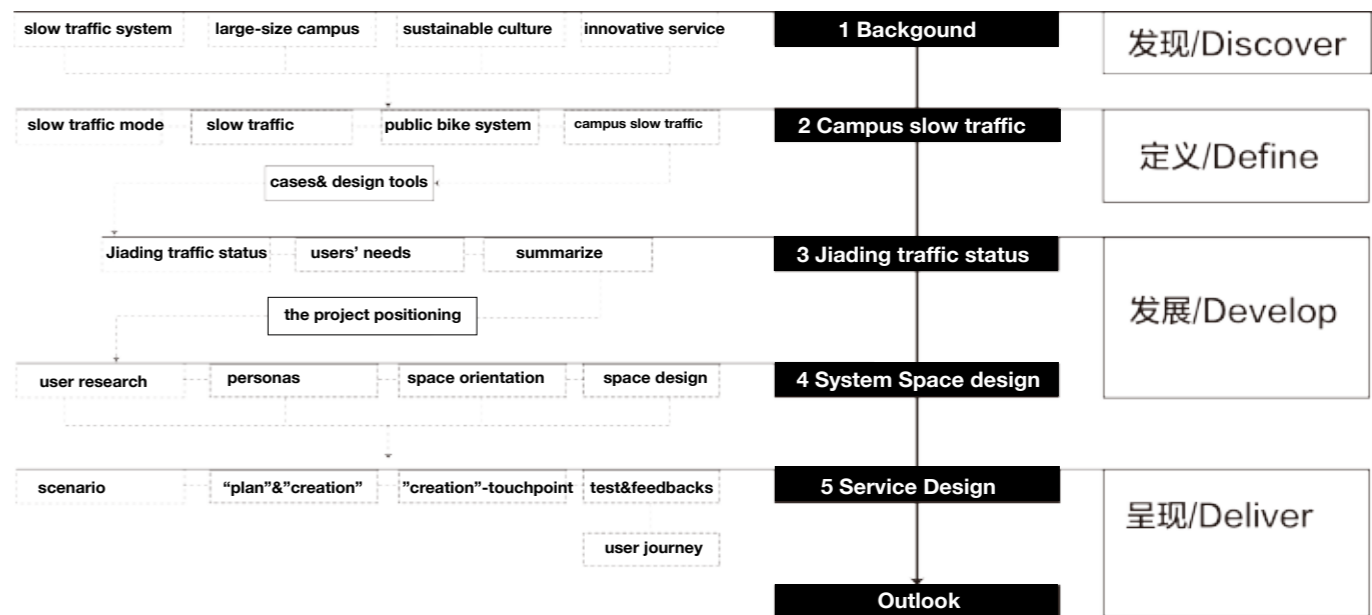


Figure 1.6 Design Methods for Developing Services

Research Framework



WHAT'S SLOW TRAFFIC

Slow Transportation is also called Non-motorized Transportation. In March 2011, related organization published <<Shanghai Transportation White Book>>, which proposed “Slow Mode Transportation” for the first time. In short, Slow Mode Transportation System includes 3 types of transportation: walk, bike and electric bus, mainly based on walk and bike. Under Slow Mode Transportation, speed of electric bus should **not exceed 15km/h, which are low speed, environmental friendly and noise free.**

Slow Traffic System has several characteristics: large coverage area, environmental friendly, easily influenced by fast mode transportation, good for short distance, fair experience.

2.1.1 MODELS OF SLOW TRAFFIC

Many cities and areas have set up Slow Mode Transportation System, choosing develop model based on their own situations:

- (1) **“Bike+ Walk” Model:** It has advantages in short distance (3-5 kilometers) and great flexibility. In addition, it increases interaction between people and society as well as communication among people.
- (2) **“Bike+ Electric bus+ Walk” Model:** This model is applicable in long distance (more than 6 kilometers), using public transportation as connection and “Bike” and “Walk” as main ways to travel.
- (3) The primary model discussed **in this article** is “Campus Slow Mode Transportation System”, which is **based on “Walk and Bike”, relying on campus cooperation&sharing platform, using public electric bus as supplement.**

2.2 Campus Slow Traffic System Components



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CAMPUS SLOW TRAFFIC

SERVICE SYSTEM

In this thesis, Campus Slow Transportation System has 4 subsystems: “Walk”, “Bike”, “Campus Online Cooperation Platform” and “Public Electric Bus”.

In <<Life Between Buildings>>, Jan Gehl proposed 3 types of travel mode: active travel, passive travel and synthetic travel. Active travel includes some leisure activities, such as taking a walk, visiting a garden and chatting outside, the routes of which are not regular; Passive travel includes some necessary activities, such as going to school, having a meal, routes of which are straight;

Synthetic travel mainly includes sports activities and team games, routes of which spread in the school. “University Student School Activity Survey Report” shows passive travel take up 55% of school daily activities, while active travel and synthetic travel take up 25% and 20%. In this thesis, all the 4 subsystems can satisfy the demand of these three types of travel mode, providing great environment and experience.

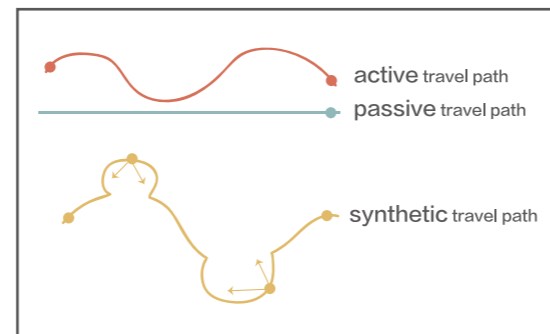
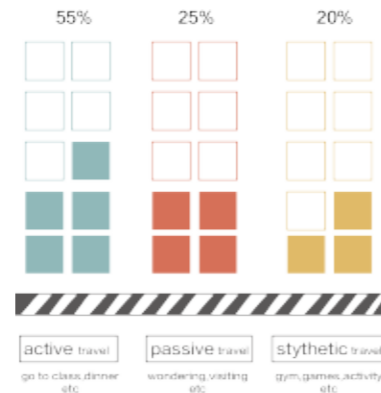


Figure 2.1 three types of travel mode

2.2.1 CAMPUS WALKING SYSTEM

Walking is the main method in Campus Transportation System. If we classify Campus Walk System in space, we can have 3 categories: Solid State, Liquid State and Gas State.

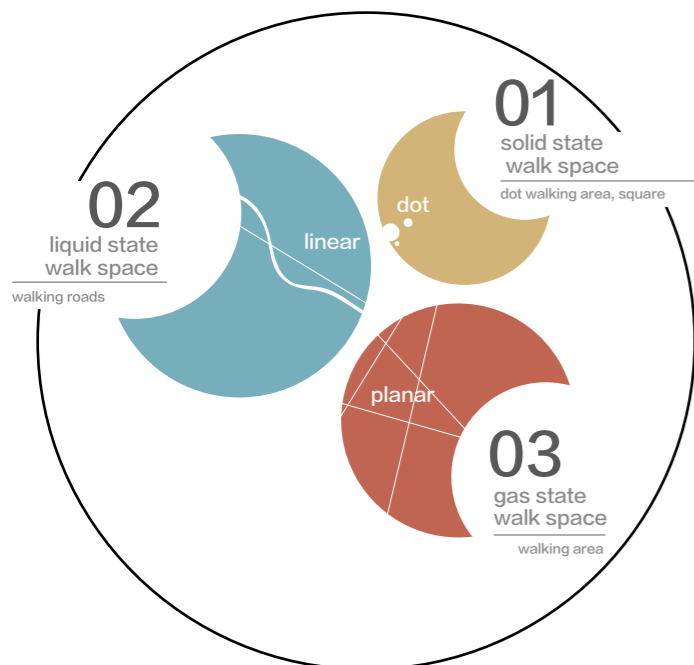


Figure 2.2 three kinds of campus walk systems

(1) Solid State Campus Walk System: it is also called Dot Walking Area, which refers to some dot walking area, such as sink square in school or rest area in front of architecture.

(2) Liquid State Campus Walk System: it is also called Line Type Walking Area, which refers to walking channel system in school.

(3) Gas State Campus Walk System: it is also called Facet Walking Area, which refers to a walking space consist of several walking channels. This walking area has a large space and can accommodate for large amount of people.

2.2.2 CAMPUS RIDING SYSTEM

Campus Public Bike System Classification

Currently, due to the differences of campus environment and student specialty, universities in China use various types of Campus Public Bike System.

(1) According to the ownership of bicycles, Campus Public Bike System can be classified into Campus Independent System and Subsystem of City Public Bike System.

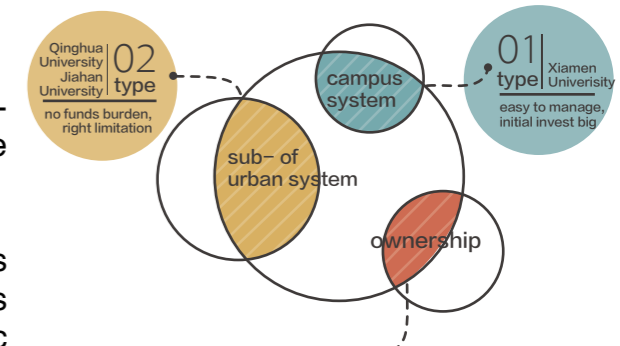
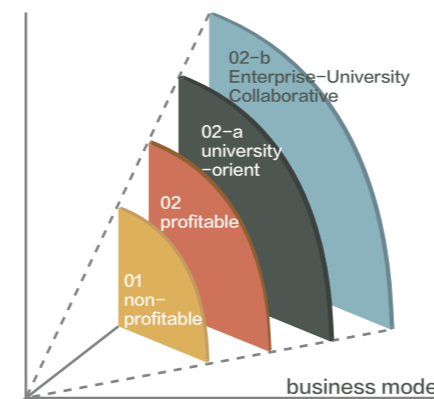
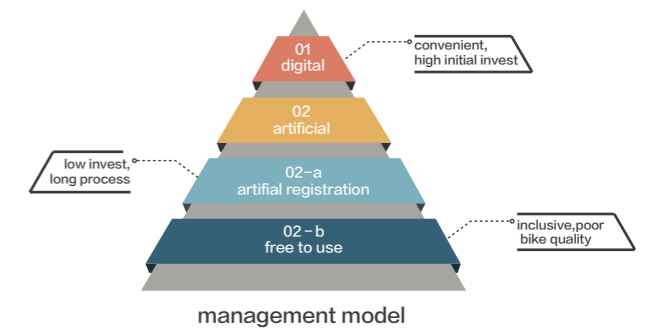


Figure 2.3 classification by ownership

(2) According to business model, Campus Public Bike System can be classified into profit system (University-oriented type and University-Enterprise Collaborative type) and non-profit system.

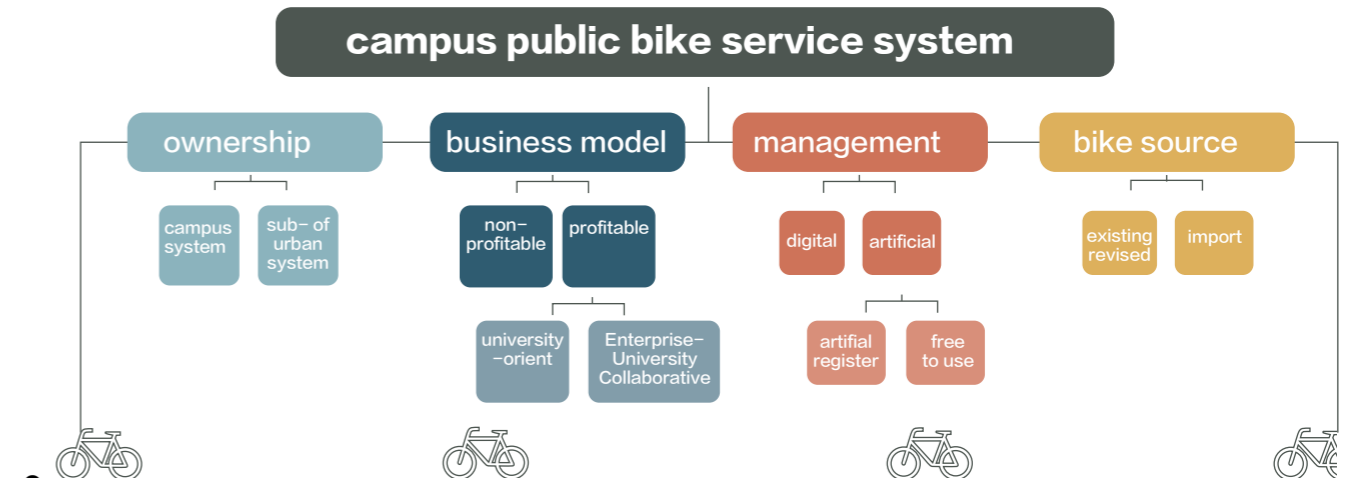


(3) According to management model, Campus Public Bike System can be classified into manual management and intelligent operation. In addition, manual management has two styles: manual register and random use.



(4) According to bike source: Campus Public Bike System can be classified into existing revise and import.

In general, Campus Public Bike System can be classified based on ownership, business model, management and product source, each of which has its own service condition and area of application.





2.2.3

CAMPUS

SHARING SYSTEM

In this thesis, online cooperation platform can be used to connect “Walk System”, “Bike System” and “Public Electric Bus System” together effectively. In the mean time, based on campus LBS, the platform will be an extension and long term implementation of Jiading Campus Slow Mode Transportation System.

2.2.4 CAMPUS BUS SUPPLEMENTARY SYSTEM

In the construction of Jiading Campus Slow Traffic Service System, riding service system and walk system are the two main travel modes in campus. The reasons are as follows: first, walk and bike are more suitable for campus travel which is mainly consist of short distance and high frequency travels; Second, construction of campus public transportation system meet the trend of campus culture, and bike will be a good example to show this trend; The core concept of Slow Traffic is to propose a healthy living style and transportation environment, while non-motorized vehicle can satisfy these requirements effectively. In addition, if people can conduct a deeper design in various factors of Slow Mode transportation, Slow Traffic will be more efficient and people will be proactive to choose it.

In the Slow Traffic System discussed in this thesis, Campus Public Electric Bus System is just a supplemental to the whole system, but not an important object.

2.3 Campus Slow Traffic Service Cases

(1) Tongji University Siping Road Campus Public Bike Service System

The bike service system of Tongji University Siping Road campus started from September 2014, operated by the non-profit bike association formed by students from Tongji University. Tongji provides some financial support while the security office provides supplies as well as management support. Bikes of the program came from unclaimed abandoned bikes. School posts a notice about unclaimed bikes, which have not been used for a long time, after a certain period, if nobody comes to claim these bikes, school representative will change those bikes to green public bike. Student and teachers from Tongji University can use these bikes for free with their school cards, but they need to return them on time.

According to a survey, public bikes bring lots of convenient to teacher and students, but they also have some issues: Since people need to manually record and check information, it takes a long time to rent a bike, which is not convenient; from the management level, due to gaps in the manual record policy, some bad phenomenon happen frequently, such as borrow bike using other’s name, late return and bike lost; Since the bikes used in the public bike system are abandon bikes, which are not in a good condition, so the biking experience is not good for most teachers and students; from customer level, this service is only open to students and teachers from Tongji University, so outside people can’t use bikes even they need them badly.

SERVICE CASE

同济大学四平路校区校园公益自行车服务体系 Tongji University Siping Campus Bike Sharing Service System

- Shanghai,China
- Starting from Sep.2014
- resource: field investigation



descriptions:

- recycling the unclaimed bicycles in campus into public ones after unified reforming
- students and staffs of Tongji could be free to use it during weekdays by campus card
- artificial registration, unlocked and bikes circulation in the three service points

STRENGTH

- reuse,recycle,reduce
- free to students and teachers, easy access
- without lock,convenient

WEAKNESS

- artificial registration takes long time
- the bike quality is not good
- often lost bikes

stakeholders:

- **public bicycle Institution**(Tongji students) in charge of the daily management
- **Tongji University** offers some financial support
- **Security Department** of Tongji offers management assist
- **Bike repairing stores** in campus have cooperation with the Institution

OPPORTUNITY

- smart devices to simplify the process
- improve the bike quality
- be open to visitors
- building bike date base

THREATEN

- cannot use at weekends
- using experience remains to be improved
- cannot ride the bike out of the campus

SERVICE CASE

洛桑理工学院校园Navia公共电车服务系统 Ecole Polytechnique of Lausanne Navia Electricity Service System

- Lausanne,Switzerland
- Starting from Nov.2011
- resource: internet literature



descriptions:

- Navia driveless electricity bus were conduct in the campus of EP Lausanne
- anybody could use campus card or credit card to take the bus
- the bus stops automatically at regular stops with 3D camera, GPRS and other smart equipment

STRENGTH

- electricity is clean energy
- open to all the people thus improving the usage
- automatical operation

WEAKNESS

- Initial investment is much
- only stop at regular stops,not swift
- identifying process with card is unconvenient

stakeholders:

- **Navia Institution**(college staffs) is responsible for the mangement and promotion
- **EP Lausanne** collaborates with Navia Compaby in business
- **Navia Company** is in charge of the bus updating and repairing

OPPORTUNITY

- simplifying operation with facial identifying
- long-term cooperation with design company to keep bus in update
- setting up bus data base

THREATEN

- not in line with healthy walking and riding spirit
- lack interaction between users
- not connected with urban bus system outside campus

(3) Ecole Polytechnique of Lausanne Navia Electricity Service System

Ecole Poly technique of Lausanne started Navia Electricity Service System in November 2011. Based on user distribution, this system set 8 Navia electric buses in some fixed locations. These buses can run at 20km/hour all by themselves, each of which, equipped with GPS, laser sensor and 3D camera for navigation and passenger identify system, can hold 8 passengers at most. Currently, the Navia system take some default locations for the bus to stop and passengers can choose where they want to get off and pay. Electric bus will run until the last passenger get off, then it will get back to the nearest bus stop.

CHAPTER SUMMARY

This chapter illustrates basic definition and characteristics of Slow Traffic and lists several main Models; then it introduces the four subsystems discussed in this article: Walk System, Bike System, Online Cooperation Platform and Public Electric Bus Service System. At last, it gives several typical examples about Campus Slow Traffic System.

After clearing the connection between slow traffic and service design, the author will do specific observation, surveys and analysis on the transportation space and current state of slow traffic in Jiading campus. In addition, the author will propose potential opportunities for future design.

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**SLOW TRAFFIC STATUS
IN JIADING CAMPUS**

3.1 ABOUT JIADING CAMPUS

Tongji University Jiading campus is located in Jiading district, Shanghai international automobile city. Tongji has West campus, Siping campus, Hubei campus, Hudong campus and Jiading Campus (covers an area of the biggest one, with a total area of 167 hectares; as shown below) altogether five campus. Jiading owns about 15000 students, built in September 2001 and with 60% green area.

Jiading campus is divided into **six major functional zones**: public service area, classroom buildings, dormitory area, experiment area, college area and development area.

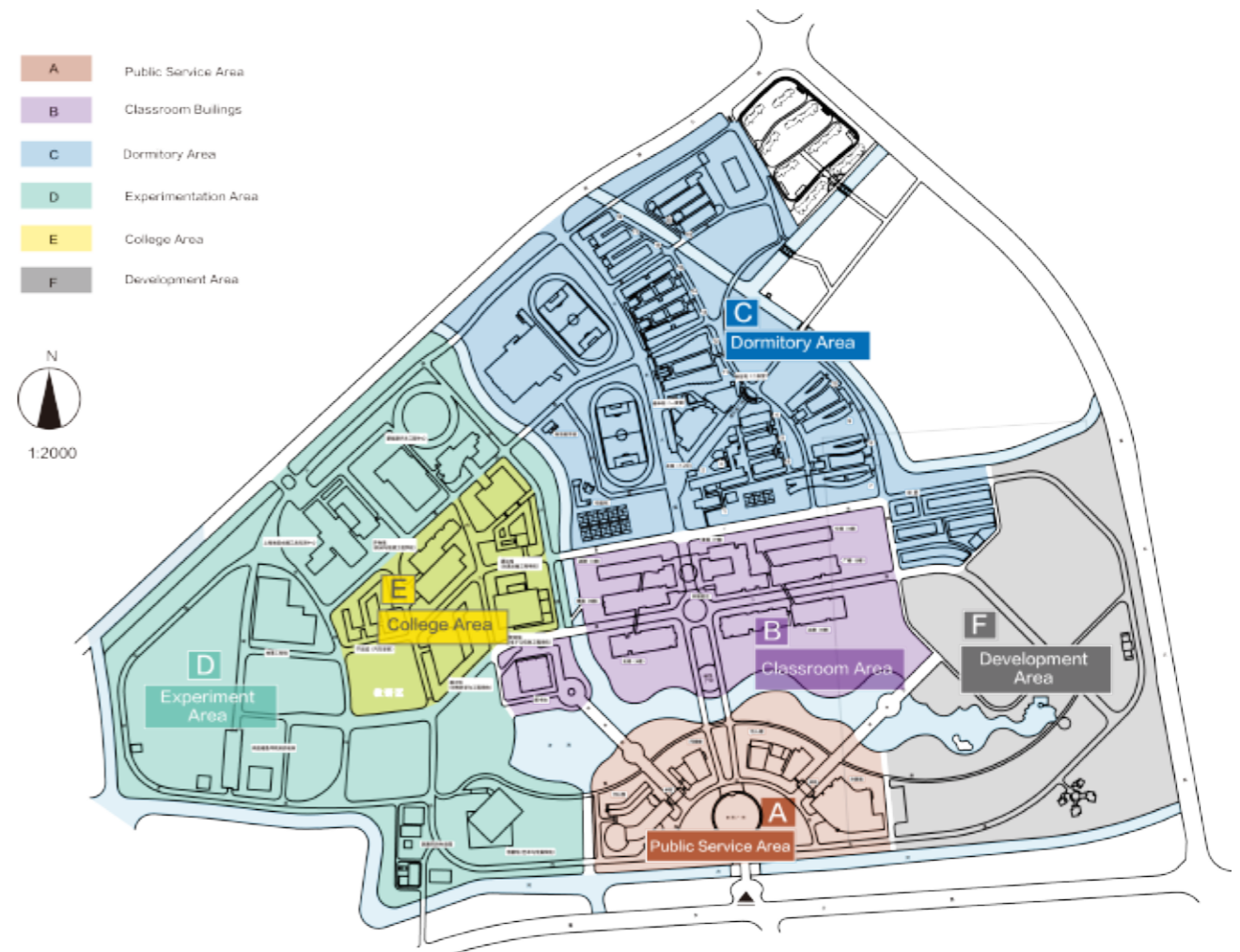


Figure 3.2 The changes of Jiading campus space form



3.2 Jiading Campus Traffic Space Form

American humanism urban planning theorist Kevin Lynch proposed in <The Image of The City> that a space should handle well the relationships among the five elements of road, edge, district, node and landmark, as well as inner relationship in itself. About Jiading campus space form and the influence on traffic, combining with the actual situation, the author will analyze from roads, edge and district these three elements:

3.2.1 CAMPUS SPACE FORM---ROAD

Road is the main body of the elements we perceive a certain space. The road network in Jiading campus displays as diverse-grid size and relatively clear, while on visual landscape both sides of the road lacks of changes, thus reduces the pedestrians' expectancy to the environment, difficult to produce deep passion to explore the campus.

According to using objective to classify, which can be roughly divided into vehicle mixed roads, crossed isolation roads and non-motorized roads (figure 3.3); Such as classification as to road section shape, they could be divided into one-mixed-panel, pedestrian panel and the three-area double panel these three types (figure 3.4); Good roads, forms and classification not only can bring convenience for commuting, but also improve travelling experience.



Figure 3.3 road classification by using objective



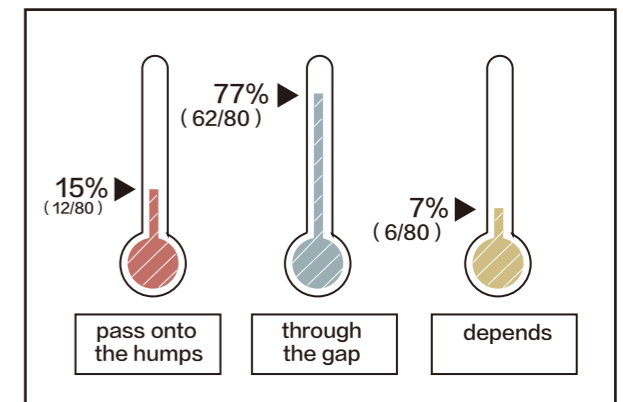
Figure 3.4 road classification by road section shape

As an important part of the road, the setting of speed bumps is also has some scientific basis.

According to observation, it could be found in Jiading campus speed bumps lies in every motorway. Many students prefer to choose to ride through gaps between the speed bumps not onto them. In order to solve the issue, the author made a questionnaire survey, the results following:

Passing way through Speed Hump Survey

subjects: 80 Jiading students
media: online+paper



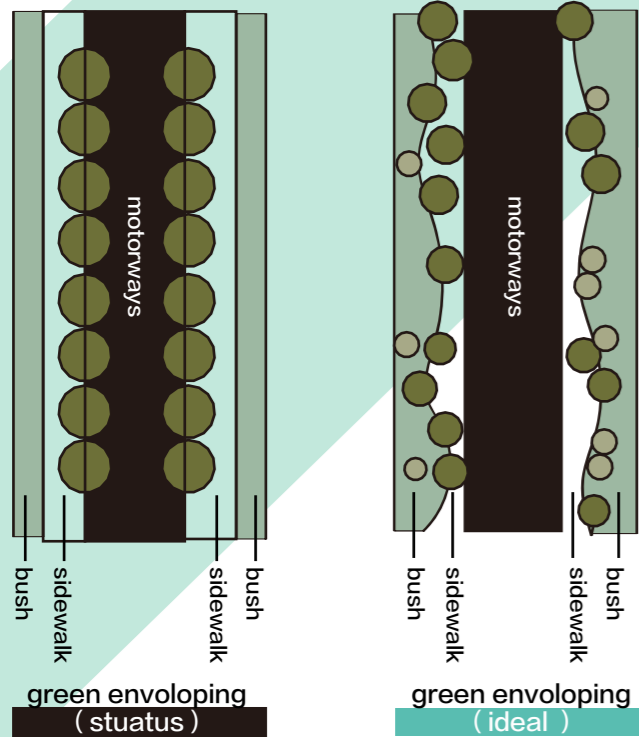
3.2.2 CAMPUS SPACE FORM---EDGE

Edge, as well as road, is also the important linear elements. Space need to be surrounded with edges, the enclosing form of Jiading campus could be divided into building enveloping and green enveloping, and the latter one is the key objective to be discussed here.



Jiading campus is mainly enveloped by soft limit with the green plants on both sides of the street; the plant s on both sides of the sidewalk in campus tends to be linear with ruled plant distribution, thus in lack of hierarchy between trees and shrubs, which goes against the crowd stop and rest for a long time on the sidewalk and interaction between people with the environment.

Figure 3.6 various road green enveloping create different experience



3.2.3 CAMPUS SPACE FORM ---DISTRICT

District could offer people a greater scope to experience the space then forming the sense of the space. Jiading building clusters are divided into several districts according to the different function, whether entering classroom building district, or dormitory area, due to the difference of function orientation, the respective occasion will release a functional magnetic field to convey person the space implication.

3.3

Slow Traffic Status in Jiading Campus

3.3.3 SLOW TRAFFIC STATUS SUMMARY

In all, there exists many problems in campus slow traffic present situation, and these problems will be analyzed and solved in the design part following. As the figure shows:

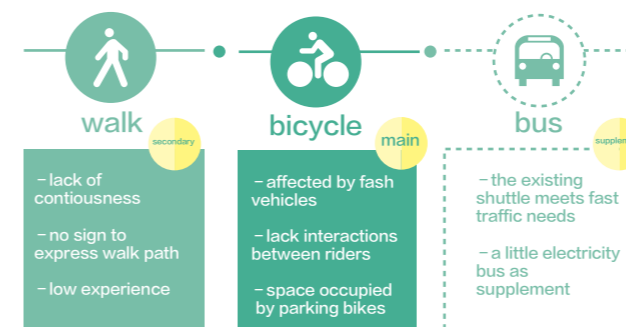
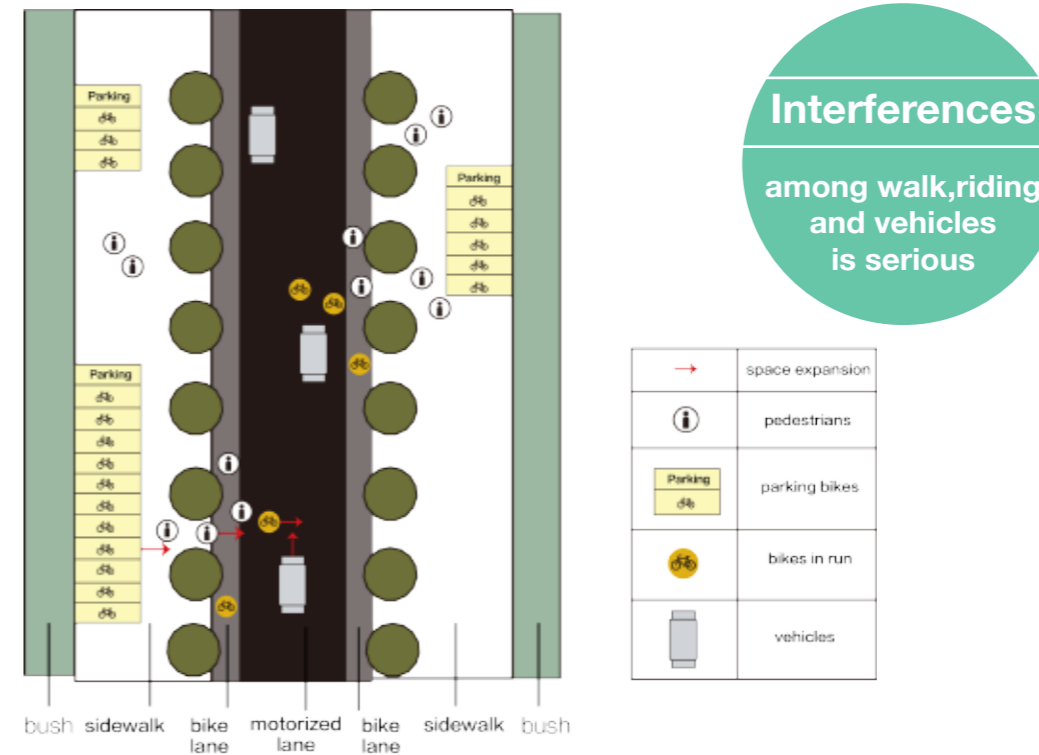
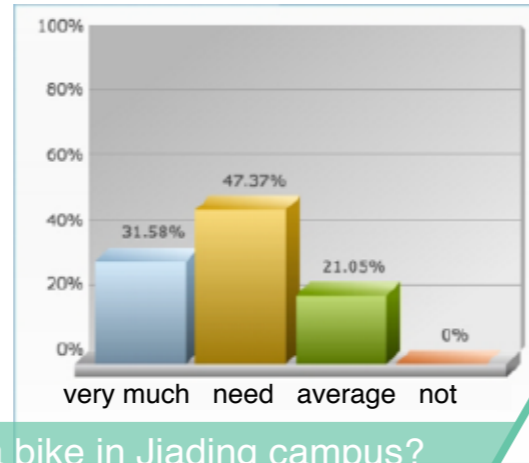


Figure 3.10 summary of traffic issues in Jiading campus

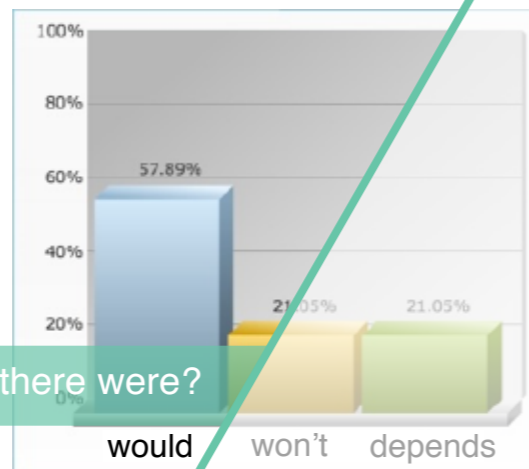
3.4 Demands for Slow Traffic System in Jiading

3.4.1 PRACTICAL DEMANDS FOR SLOW TRAFFIC SYSTEM

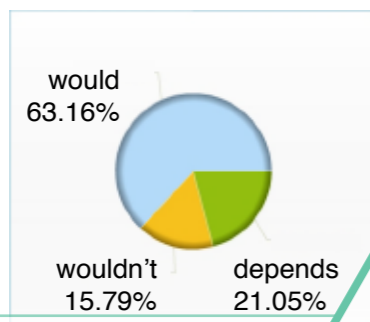
Through investigation and research, establishing the public bicycle service system is warmly supported by the masses in Jiading campus, which reflecting the real practical needs of teachers and students.



do you need a bike in Jiading campus?



would you use public bike if there were?



would you recommend visitors to use?

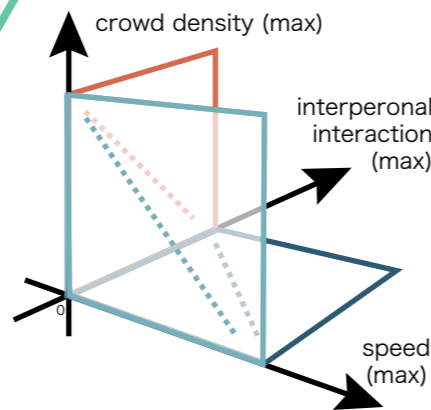


Figure 3.12 Jan Gale Model for interpersonal interaction

3.4.2 EMOTIONAL DEMANDS FOR SLOW TRAFFIC SYSTEM

By induction, the demands of campus life and activities are listed as security, intensity, interaction and communications.

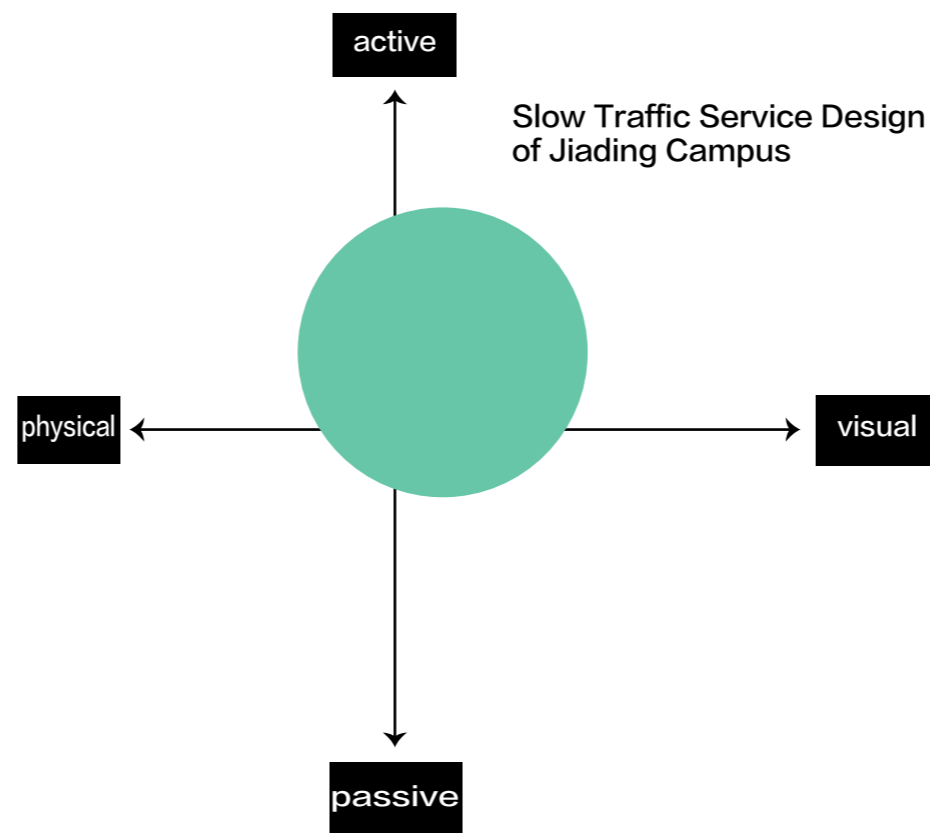
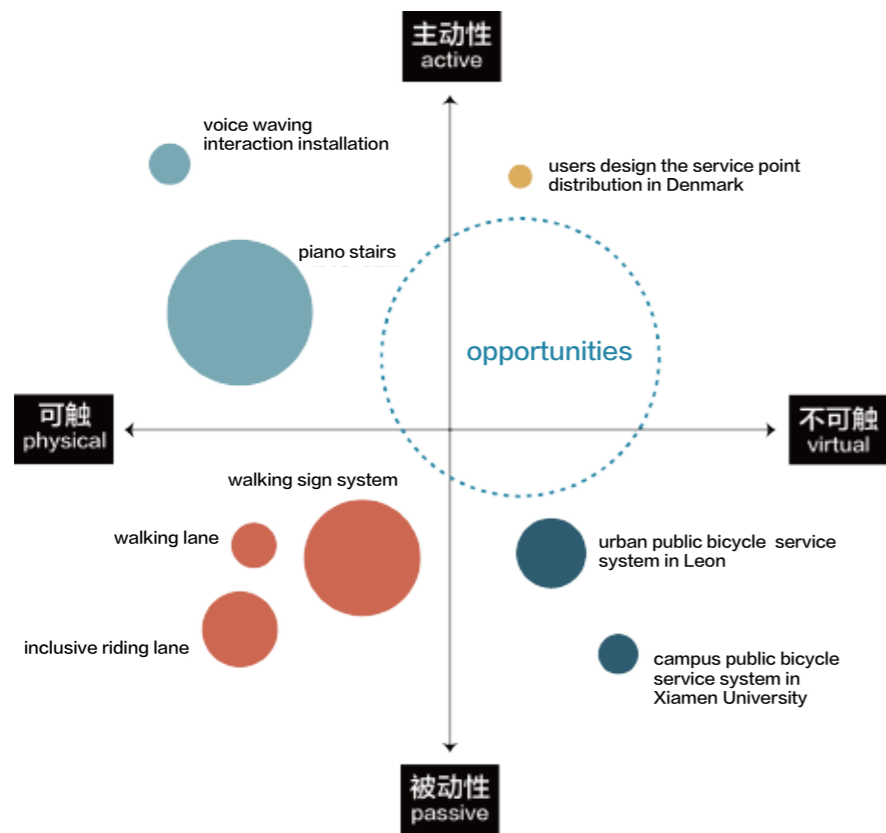


(1) **Jan Gale** has put forward "human mutual interaction produced in the interaction of density and speed" theory; he thought, in a given space, the greater the density is, the lower the speed of human activities, thus the higher the degree of interaction among people, the activities of people is the inverse association between speed and the degree of interaction. Therefore, the relationship between human activity speeds with interaction degree is inversely proportional; to further improve the degree of interaction among people in campus, we need to control the travelling speed in a reasonable range.

(2) American architect **Rutledge Albert J** proposed in his book <A Visual Approach to Park Design>, "in the most of idle time, all the people are in the non-purposive behavior of watching others and being watched by others, and the relative speed of the main body and the mobile space are the important factors to cause this kind of behavior." Walking and riding could provide proper movement speed for effective interaction between campus inhabitants. Therefore, the establishment of the slow traffic system is in line with the behavior characteristics of campus activities; meets the emotional needs of the campus inhabitants.

3.5 Positioning of This Service System

Through the analysis of slow traffic service system in most universities at home and abroad, it can be found that most universities were dedicated to improve user experience through the establishment of related walkways, bike paths, landscape facilities and so on; or some campus public bicycle service systems provide some bikes for student to use with registration, while during the whole service process, it lacks the user's active participation and interaction, so most of relevant campus services locate in physical-passive quarter and virtual-passive quarter. For this project for Jiading, 1st, 2nd and 4th quarter are all right choices in terms of positioning.

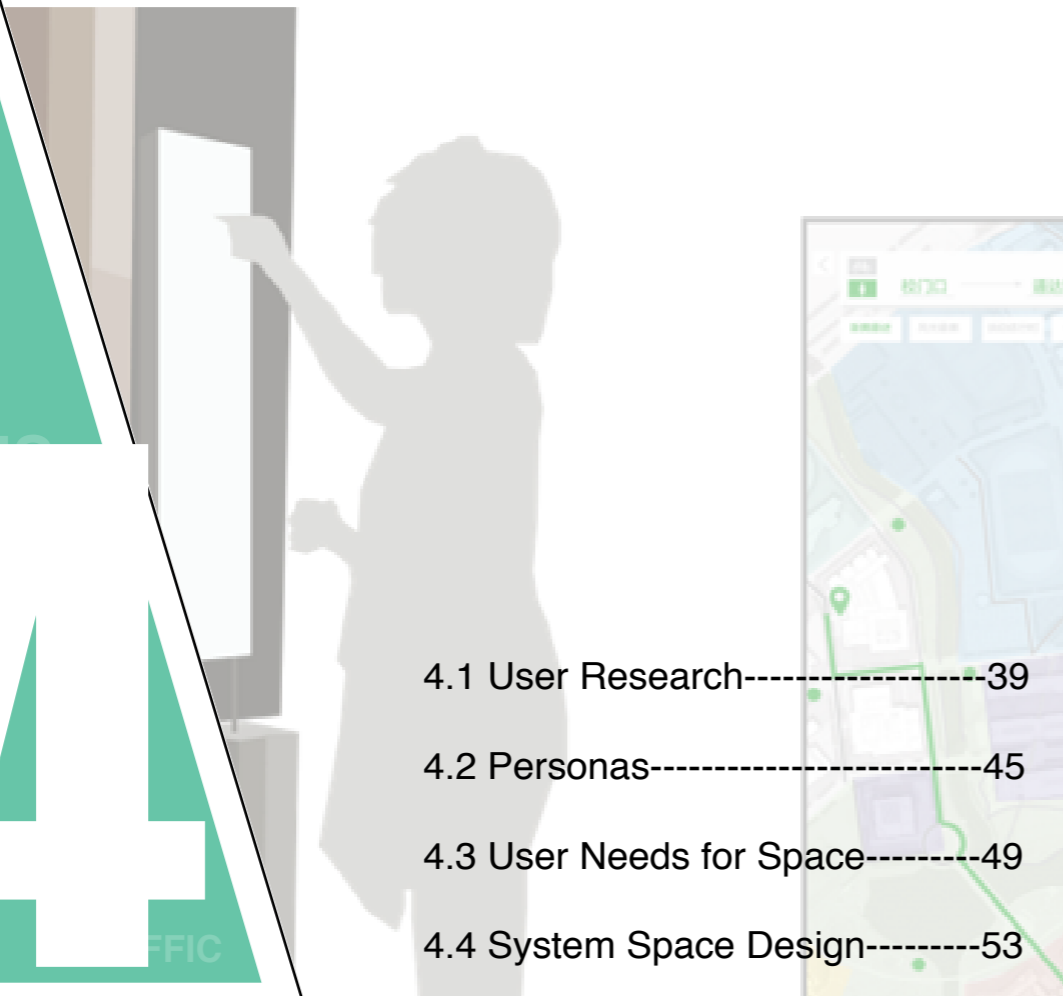


CHAPTER SUMMARY

In this chapter, the author firstly introduces the Jiading campus space and traffic basic situation, then according to the elements of road, edges, district in <The Image of The City>, analyzes Jiading campus space, and concluded the space characters, which have an impact on the traffic system; based on existing problems, research results and literature theory, it is concluded that the Jiading campus has strong practical and emotional needs for slow traffic system, thus this design project is reasonable.

In the third chapter, based on the summary to existing problems in campus traffic space and opportunities, this thesis provided entity design of campus slow traffic service system in the fourth with direction and guidance, and made clear the physical environment the service required.

In this chapter, the author mainly analyzes “users” and system “space”, by the means of final user groups research, to draw relevant needs of users; while establishing personas of each user group, the writer will draw relevant features of the service system; as to the "creation" level, a functional campus slow traffic services system requires a corresponding "materialized" means to assist, and this chapter is dedicated to analyzes the "space", namely the macro occurred environment provided for walking and public bicycle service, the route, the service network layout, etc; at the same time, we need to apply the relevant analysis results about "user" to the "space" design, reflecting the needs of users. The "activities" will be specifically expanded in the **fifth chapter**.



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4.4 System Space Design-----53

**SLOW TRAFFIC STATUS
 IN JIADING CAMPUS**

4.1 USER RESEARCH

4.1.1 DIRECT OBSERVATION

The results illustrate the features of slow traffic users in Jiading Campus:

Walking:

- (1) group of 2—3 people is general, and walkers ususally tends to walk on the bicycle path;
- (2) when walkers choosing their routes, the **reasonable walking space, walking safety and unblocked reality in route** are the three key factors. So they will prefer a reasonable-sized space specially for slow traffic .
- (3) the material in some region is wet and slippery for walking and riding in rainy days, so users are in great need of being **informed with the safety guidance** in all kinds of using contexts.

Riding:

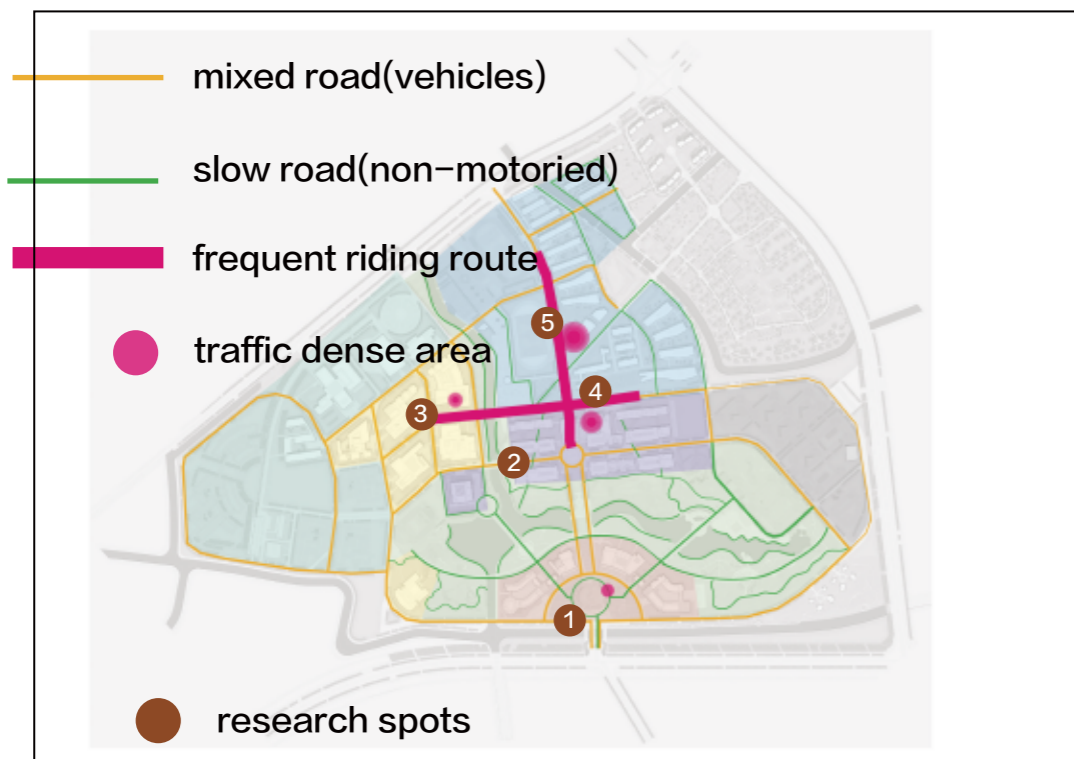
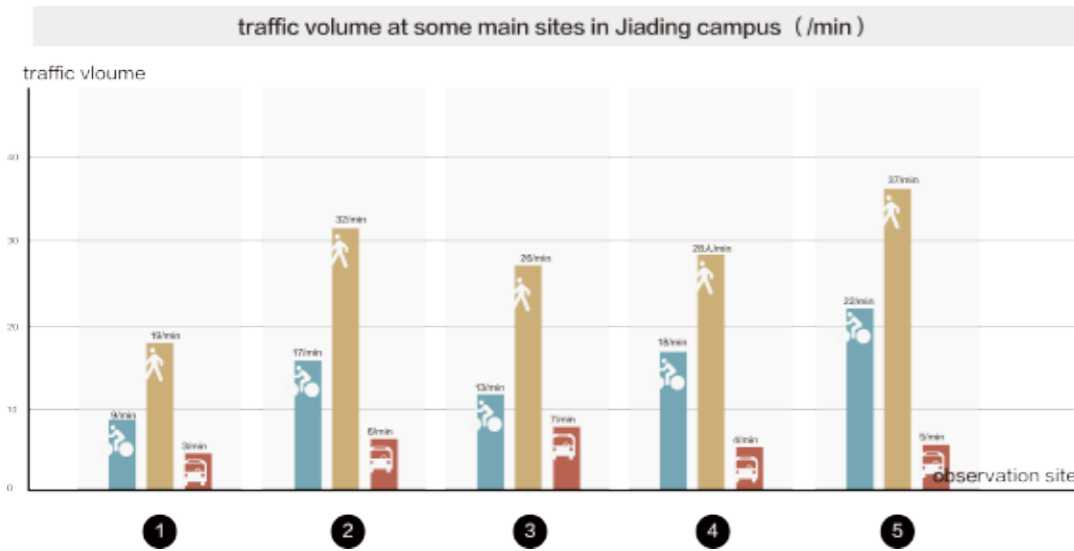
- (4) quite **inconvenient** to ride **without front-basket** in bicycle for storage
- (5) Each person takes about average 31 seconds to finish the whole **pre-riding** procedure “locat ing bicycle-taking out of the key- unlocking the lock”, which is **too long** for a flunet user experience.



4.1.2 SITE STATISTIC

The author determined five spots based on the most passage of people and traffic on site and set 15min as a unit. The five spots are as shown in the picture. There are four times statistic being conduct in each spot, eventually demonstrating that bike traffic volume per minute is over 18 and people is also 18 in some busy regions. **The results have important reference value and guidance to the distribution of service point and rationing.**

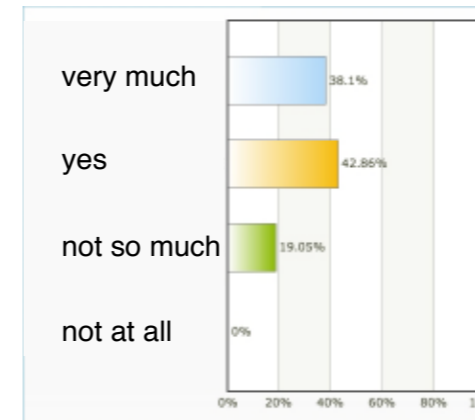
Meanwhile, the author conducted on-site interviews to some rides about the reason why choosing to ride as transport means, and about 43% of respondents said that due to the distant distance while 38% holded that bike is really convenient and flexible to use in short-distance campus traffic.



4.1.3 QUESTIONNAIRE

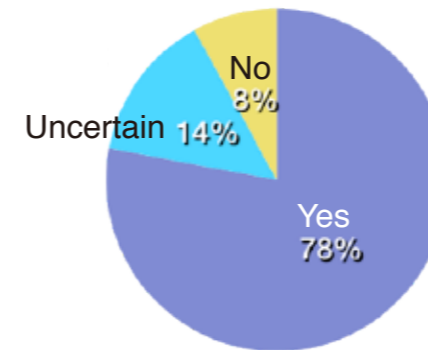
The survey finally received total 97(97/100)valid questionnaires; participate range covered students, staffs and visitors; the male to female ratio was 3: 1, which is accurate to reflect the ratio of male and female students of Jiading campus population, age distribution; the age range was between 18-56 years, in line with the approximate age distribution of teachers and students.

Whether a bike is necessary in campus?



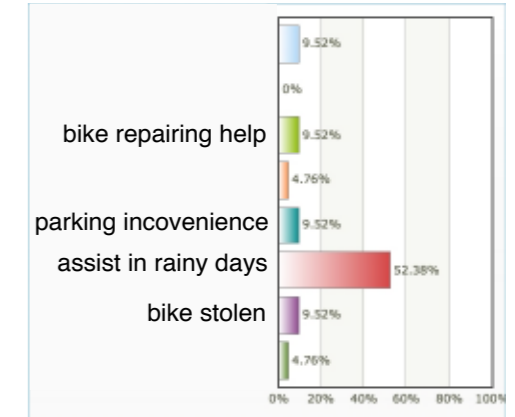
Results: bike traffic as an important tool in Tongji Jiading campus had a mass basement

would you like to participate sharing service?



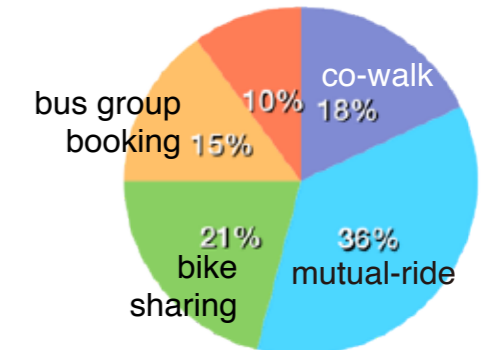
sharing service is welcomed

What's the most urgent to solve for riders?



Results: riders need feel convenient to to ride in various context, such as rainy or snowy days, and feel troublesome about bike repairing and maintenance.

what kind of sharing services?



prefer mutual ride and bike sharing

4.1.4 DEPTH INTERVIEW

(1) Interviewees

Students and staffs in Jiading are the main final users, but it also will include visitors within the scope of user groups in the next section, so that students, staffs and visitors are the main interviewees.

(2) Interview Framework

- Introducing project and describing the purpose of the interview (2 mins)
- Gathering basic information of respondents (1 min)
- Understanding the current traffic situation of respondents in campus trips (10-15 mins)
- Inspiring respondents to take an outlook to slow traffic service system (10-15 mins)
- Summary (5 mins)

(3) Results

Author took depth interviews with five respondents, covering students, teachers, staff and visitors. By the means of notes, audio, video and other means, to establish different personas.

访谈记录:

— 基本信息采集

— 受访者: 张同学, 同济大学材料学院大二在读学生, 20岁

— 采访时间: 2023年2月18日

— 采访地点: 同济大学材料学院办公室

— 采访内容:

— 您平时会选择哪些出行方式呢? what kind of transportation do you use in campus?

— 张同学: 我平时会选择步行, 骑自行车。

— 您觉得在校园里骑自行车有没有哪些安全隐患呢?

— 张同学: 其实安全隐患还是挺多的, 因为人车混行, 而且没有专门的自行车道。

— 您平时从宿舍到教学楼需要多长时间?

— 张同学: 步行大概需要10分钟, 骑自行车大概需要5分钟。

— 如果能在校园里设置公共自行车服务, 您觉得有哪些好处呢? (see)

— 张同学: 我觉得挺好的, 可以方便大家出行, 而且还可以锻炼身体。

— 您觉得在校园内设置公共自行车服务, 您觉得有哪些好处呢?

— 张同学: 我觉得挺好的, 可以方便大家出行, 而且还可以锻炼身体。

— 您觉得在校园内设置公共自行车服务, 您觉得有哪些好处呢?

— 张同学: 我觉得挺好的, 可以方便大家出行, 而且还可以锻炼身体。

4.2 PERSONAS

Persona Category

Final users of the service system can be divided into three categories: **Tongji Jiading students, staffs and visitors.**

用户角色	<p>张同学/乐天生活派</p>	
空间路线特征	<p>波浪线型的集成性出行 (主动性出行与被动性出行结合)</p>	
空间需求情感板	<p>亲密 互动 积极 便捷</p>	
空间行为特征	<p>出行频率较高</p> <p>出行目的地分布夹带随机性</p> <p>与周边环境交互度较高</p>	
需求导图	<p>精力充沛 善于营销 独特的触点设计 精准手机平台深化体验</p> <p>喜欢新鲜 热衷社交 与人互动 深入别处的步行路线</p> <p>与环境互动 视觉交互系数大的空间</p>	
空间需求痛点雷达图与空间特点总结	<p>交互系数较高 出行安全度 高互动性 便捷性 寻路方向性 空间信赖感</p>	<p>需求空间特点总结</p> <ul style="list-style-type: none"> 一个体验特别的步行路线 吸引人参与的互动触点设计 定期举行活动的开放空间 一个可以广泛参与的互动平台

Perspma profiles

(1) (Jiading Optimist) -- Zhang

Zhang is a junior student of Tongji, basically every day he goes from domitory to cafeteria, library and department buildings, he has a bicycle and uses it averagely 2-3 times a day, each ride all keeps within 10 minutes. Zhang is keen to participate in various campus activities, hoping to make acquaintance with more students and expand his social circle. He is a typical Campus "positive factor"



ZHANG/ OPTIMIST

(2) (Jiading Commuters) -- Ding

Ding is a teacher in Tongji, and every day she is driving her car from home in Jinchang Road to Jiading. At every workday noon, she would take 27-minute round-way walk to campus canteen,. She loves her job and in a rapport with students. In spare time Ding learns Japanese herself; every weekend she also goes to take training classes to learn adobe design software.



DING/ COMMUTER

(3) (Jiading Visitors) -- Feng

Feng is a student of East China University of Political Science, and he loves photography and usually walks carrying a camera in every corner of the city to capture the beautiful moments. His friends Dandan studying at Tongji University. At weekend Feng often comes to Jiading to visit Dandan, walking together on campus and taking pictures.




Feng is also a travel enthusiasts, and he attaches great importance to the unique experiences and feelings brought by every space.



FENG/ VISITOR

4.3 USER NEED FOR SPACE

For Zhang(Jiading Optimistic) , he is more eager to have an **interactive and interesting** campus slow traffic space; Ding(Jiading Commuter) holds more expectations about **high-efficiency** of the service; Feng(Jiading Visitor) in a new environment early, hopes that the new environment could provide direct guidance and implications to him to help him generate a sense of familiarity to the new space, and could also **easily find ways** based on the relevant prompts.

用户角色			
	ZHANG/ OPTIMIST	DING/ COMMUTER	FENG/ VISITOR
Info	boy/21/student	woman/31/staff	man/24/photographer
personality	open-minded, passionate about sports	has a strong persistence	cares about living quality
needs	SOCIAL,EXPERIENCE	FAST COMMUTE	WAY-FINDING,SCENE

Slow Traffic Space Design ABOUT MAN-JIADING SYSTEM

4.4.1 MAN-JIADING SLOW TRAFFIC SERVICE SYSTEM

This project is designed for the Tongji students and teachers who are passionate for life, social and seek for high-efficiency ,as well as feasible to visitors to Jiading. The services aims at providing better walking and riding experience, helping users to know more about Jiading and enhancing the closeness among users to weave a strong campus social tie.

Therefore, the system was named “Man-Jiading” - Tongji Jiading campus slow traffic service system, **the pronunciation of “slow” and “leisure” in Chinese both read “man”**, so “Man-Jiading” is not representative of the speed of the "slow", which also represents **a leisurely and sustainable lifestyle** containing walking, riding and sharing.

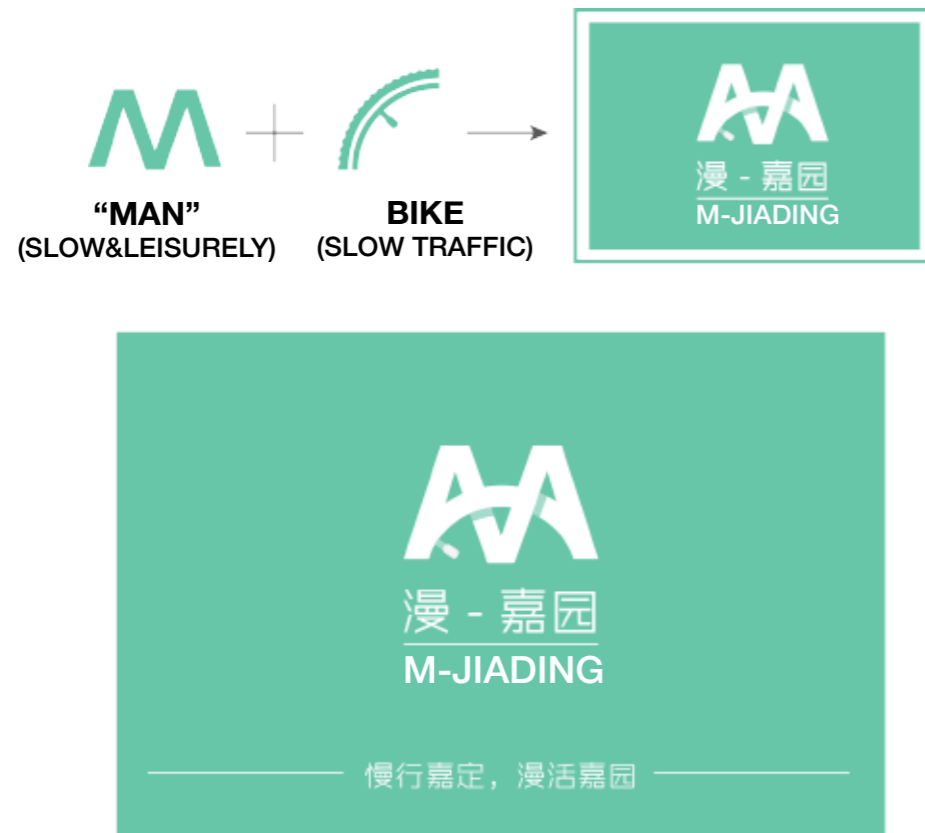
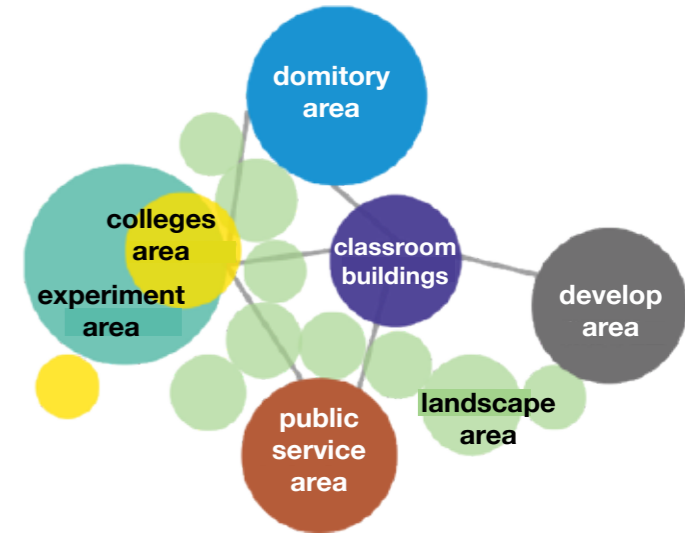


Figure 4.1 The logo of Man-JIADING system

4.4.2 SPACE DESIGN

— — **Respect current campus space**, and maximize the unique experience conveyed by various functional areas

The current space form, function zoning and road network planning in Jiading are very reasonable, I decided to add some touchpoints into campus traffic network, encouraging user to interact with touchpoints and thus revitalize the slow traffic routes throughout campus, presenting different traffic travel experience.



4.4.3 SLOW TRAFFIC ROUTE DESIGN

— — Through the touchpoints revitalizing the campus slow traffic flow lines

According to the the analysis in second chapter, the walking line system in accordance with different spatial forms could be divided into solid, liquid and gaseous walking lines; three different walking lines need to be guided by corresponding functional device. Solid walking line are mostly dot in size, which requires guiding, diversing and draining; liquid type are more streamlined, so it needs ensure coherence and smoothness of routes; gaseous walking system are mostly some open spaces, in need of the user viewing guide. Combining the feature analysis of three walking lines, the distribution of the device— —“Man Box” covering the three walking lines has been settled down, as shown.

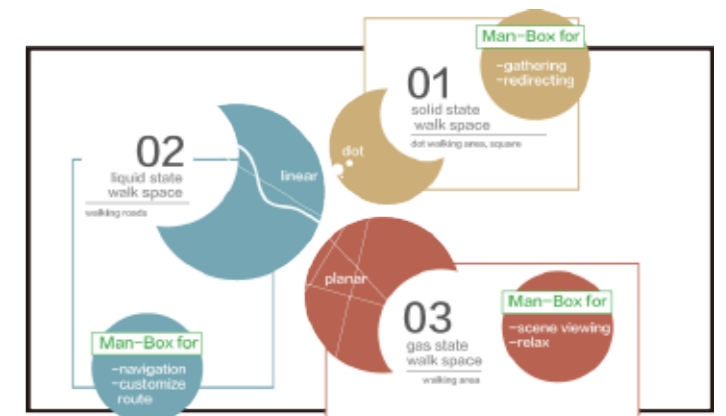


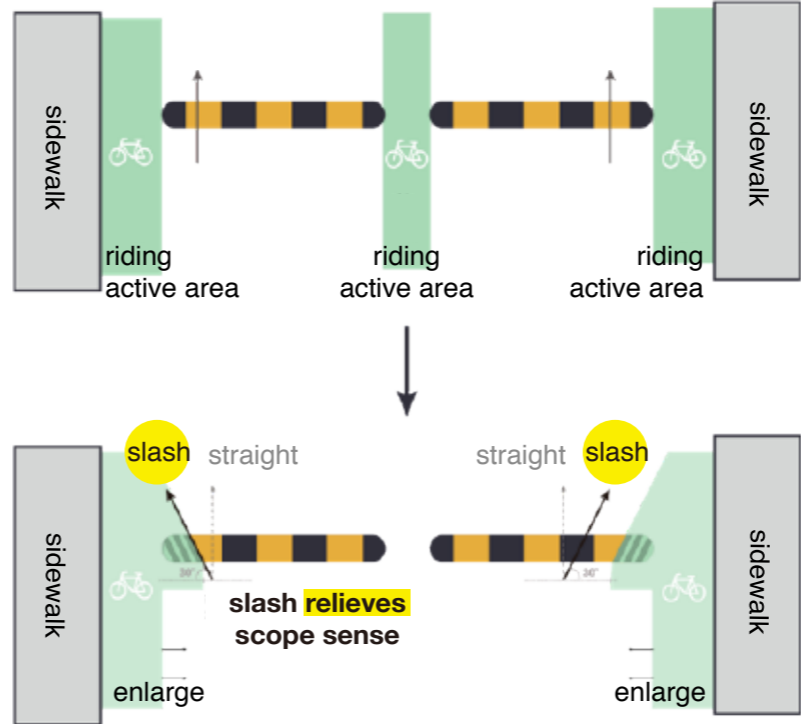
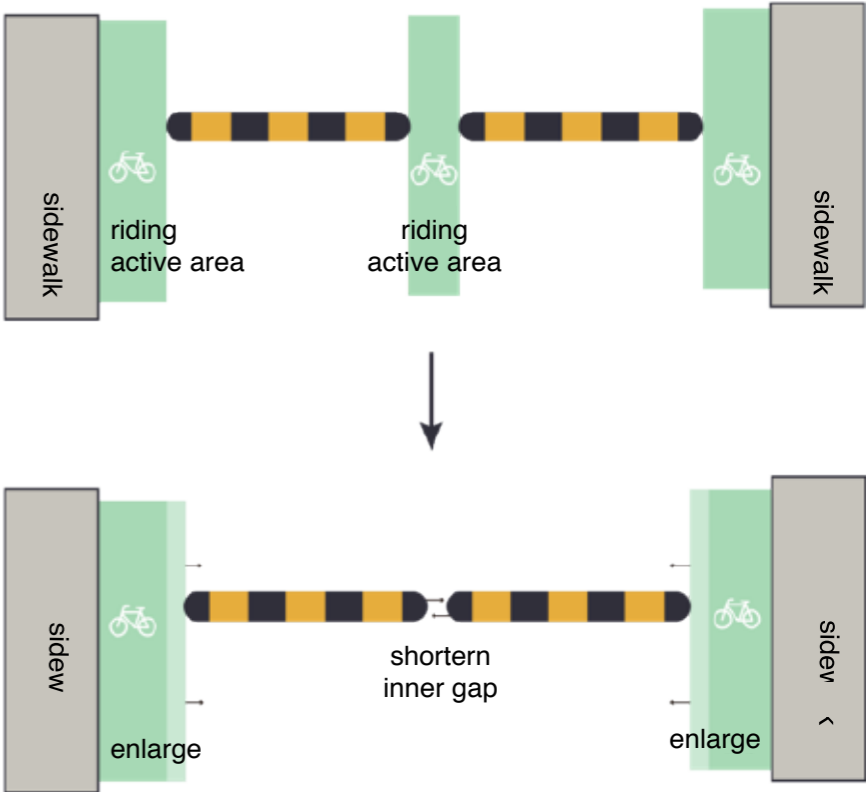
Figure 4.3 the differnet needs of the three walking lines to Man-Box

4.4.4 RIDING ROUTE OPTIMIZATION

— Limiting space to expand, slashes guiding
 The traffic situation of vehicles Mixed caused some security risks. Therefore, it has no need to change the existing road network but based on it optimize slow traffic space.

(1) Define visually bike lanes on existing roads, such as **uniforming the bicycle region** clearly with logo colour, reminding drivers to control the vehicle speed and path in vision. We can also paint "Man-Ji-ading" logo on the bike trail, a 100m as an interval, to guarantee the relative independence of slow traffic space.

(2) Adjusting the speed humps.
 If the Speed humps could be readjusted: the length of humps could be shortened; about the survey in the third chapter, it is found that more than 75% of the riders choose the gap passing by speed humps, therefore, **the gap between the two bands** appropriately could be **shortened** to provide more space for the two-side gap near sidewalks.



If Speed humps could not be adjusted: **slash in logo colour** can be painted on both sides of Speed humps near sidewalks to guide towards the two direction, thus to make cycle routes between speed humps was **30-degree angle**. According to traffic physical principles, a bike ride along diagonal could **reduced the scope**, thereby weakening the sense when bicycle moving to bumps and achieving a smooth transition.

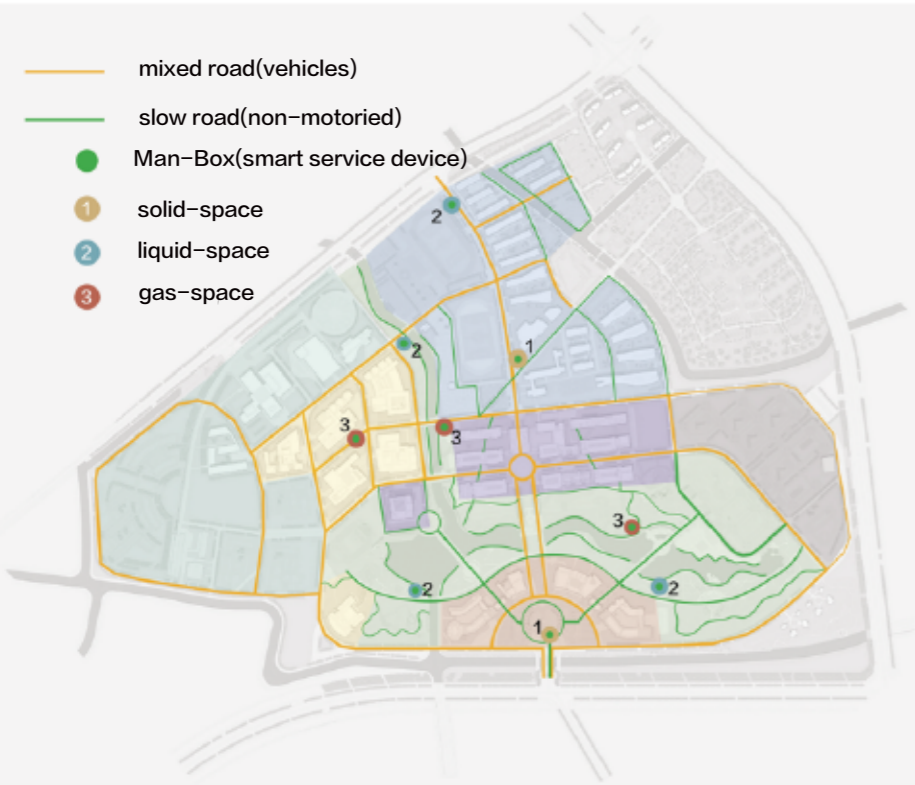
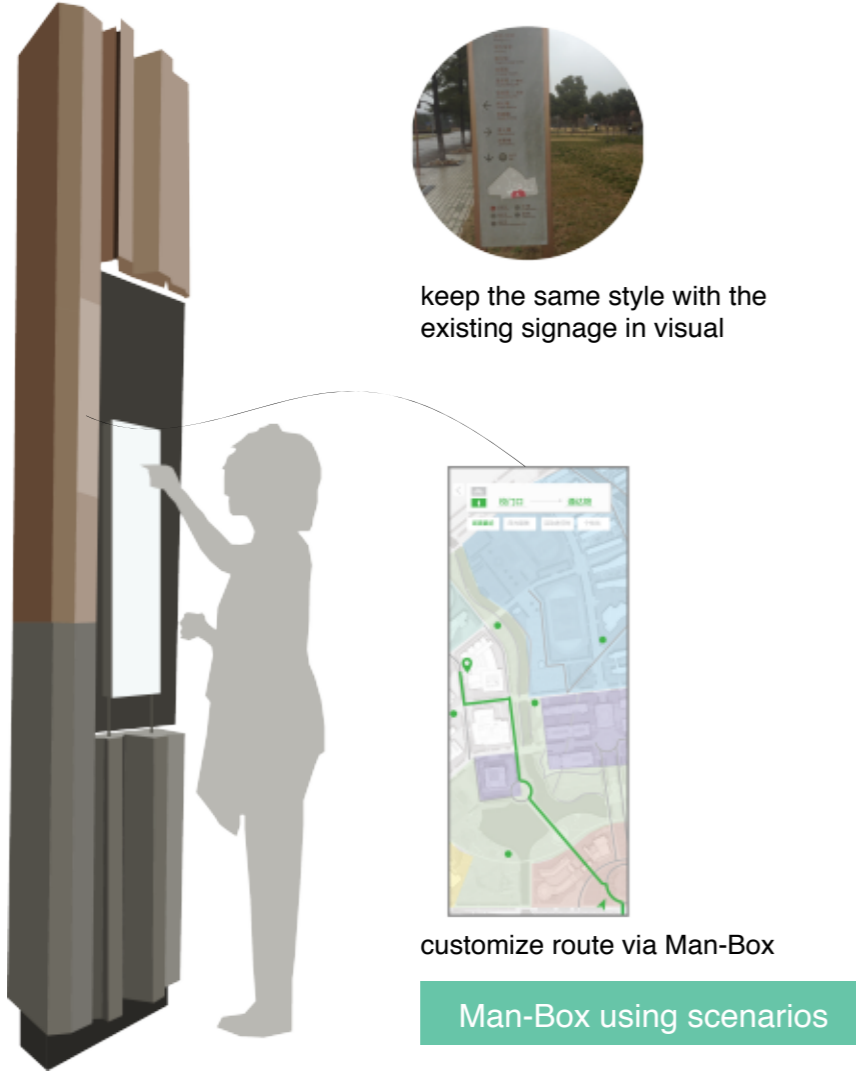


Figure.4.4 the distribution of "Man Box"

4.4.5 THE SERVICE POINT DISTRIBUTION

(1) Reserving Gray space in the periphery of the building for Communication

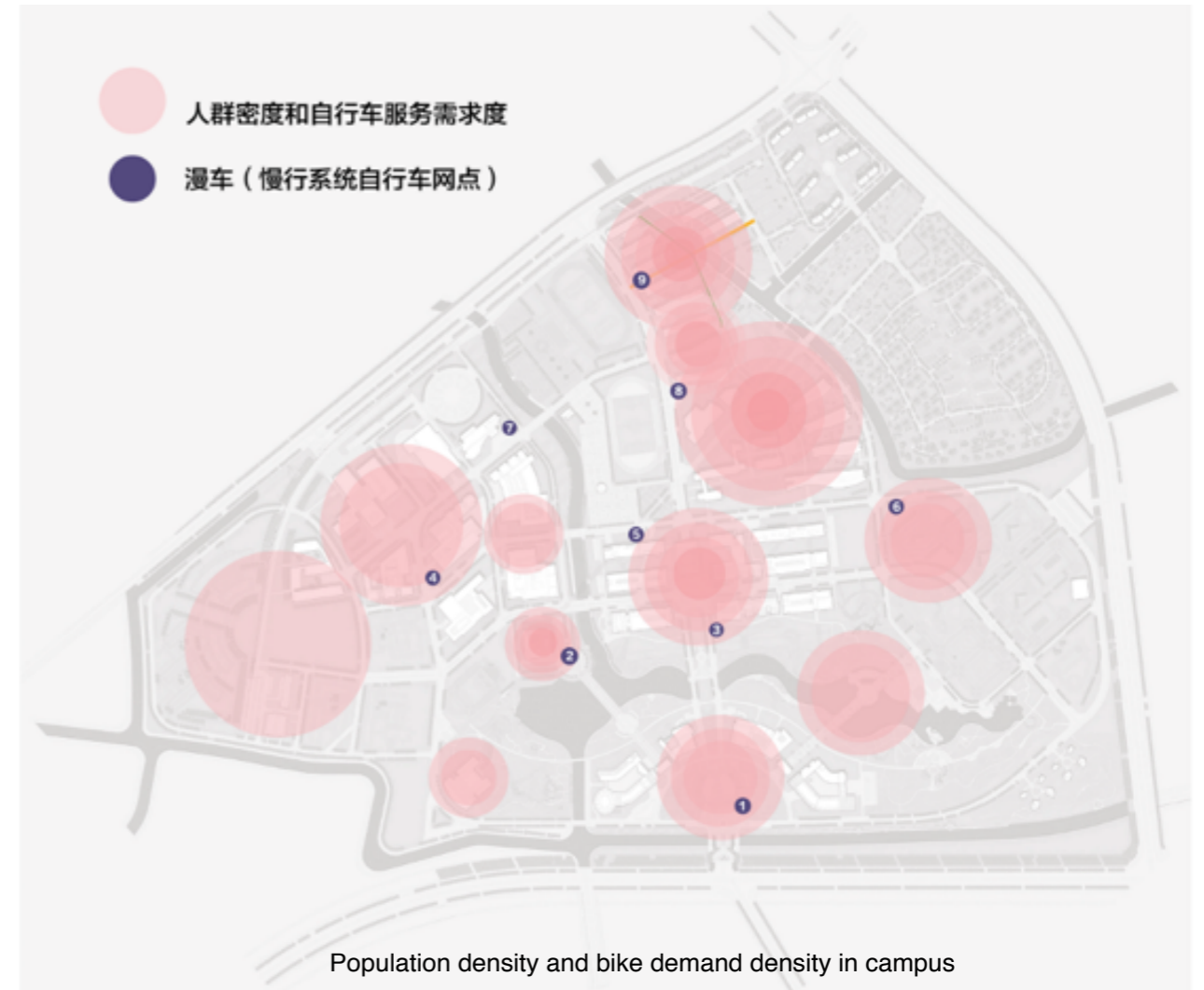
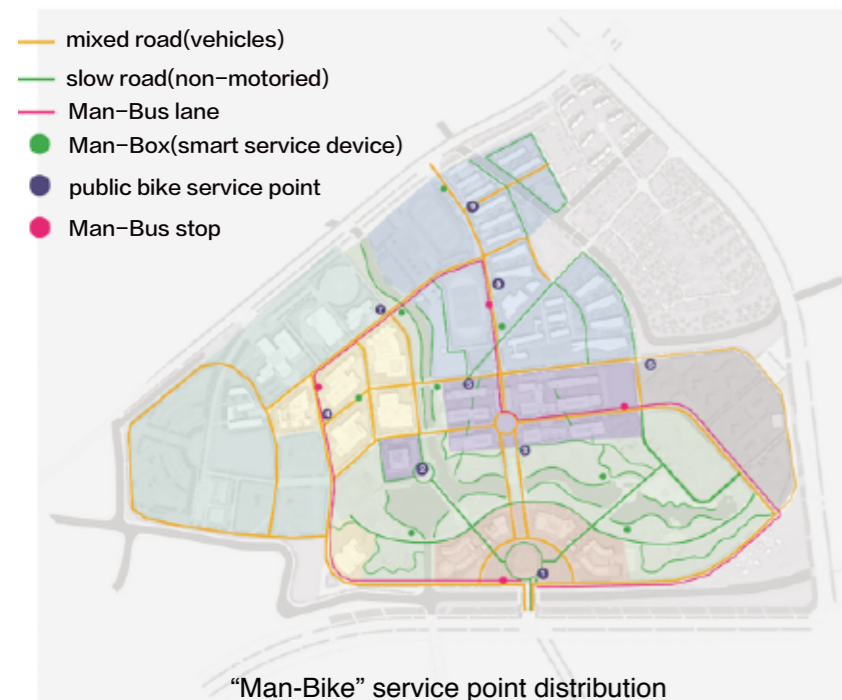
Most bicycle service points will be arranged around the building. According to Jan Gehl in *Life between Buildings*, the extension gray space between dormitory, public school buildings with canteen have lots of high population exchanges and in a high interaction degree. Therefore, when arranging service point near buildings, they should be arranged in the periphery of the building gray space as much as possible to leave enough space for interpersonal activities.

(2) Combining special terrain conditions to set service point

Through much research and surveys to Jiading traffic, it could be found that in North Plaza in front of the library, there lies in a huge wind formed by building terrain elevation. Library underground parking area is vast and in a low usage, and the line flow to the external is fluent, therefore, the library service point should be placed in the underground garage, with identity guiding people to the ground.

(3) Service points distribution

According to the survey, it could be found that the average trip number in Jiading campus was 33750 times / day. If following the calculation standard of 150 travels needing one bicycle, Jiading campus needs a total of 225 public bicycles; combining campus travel situation and density flow area, the point size should be increased in the dormitory area, public school buildings area, library area and pedestrian area, as following the network distribution program: **a total of nine campus public bicycle service points, four large points and five small ones**; each large service point is arranged 40 bicycles, installed 50 parking piles (to prepare for deployment peak usage from other bicycle points); each small point is arranged 13 bicycles, set up 20 parking piles. When confronted with the usage peak, each service point can be deployed or supplied each other.

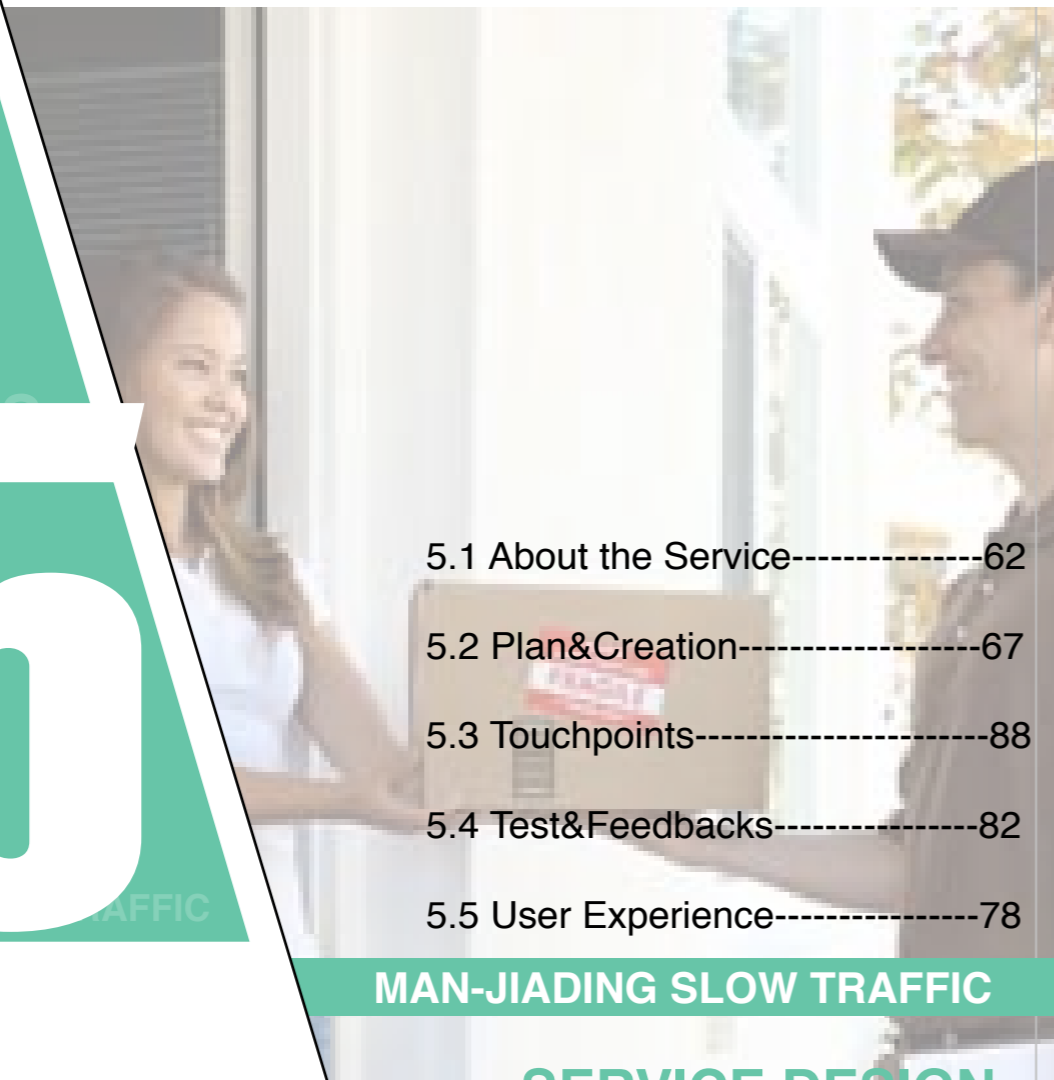


CHAPTER SUMMARY

The fourth chapter discusses that in the slow traffic service system, if we want to ensure services could run well, what "space hardware" need to construct, combining large number of user research, questionnaire survey, field observation, in-depth interviews and others to establish personas thus extracting different users demands for slow transport service; in the fifth chapter, the focus will be attached on the "virtualization software" like service planning, designing, process and principles in the entire system.

“Planning” About the Service

In this chapter, we will keep on designing the service on the basis of the previous chapters, and discuss in detailed the service design part of “Man-Jiading” system.



- 5.1 About the Service-----62
- 5.2 Plan&Creation-----67
- 5.3 Touchpoints-----88
- 5.4 Test&Feedbacks-----82
- 5.5 User Experience-----78

MAN-JIADING SLOW TRAFFIC

SERVICE DESIGN

5.1.1 SERVICE VISION

Vision 1 — —Convenient Campus Traffic

Vision 2—A More Closed Campus Social Tie

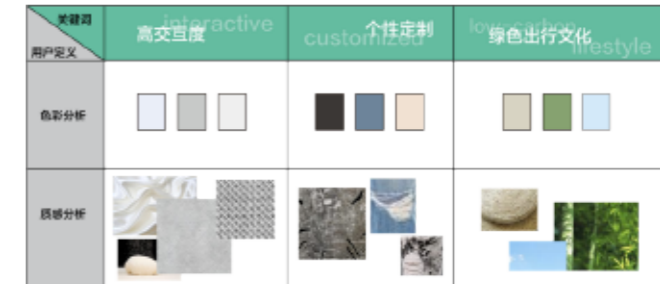
Vision 3—Customized Commute Experience

Vision 4—Sustainable Campus Culture

5.1.2 SERVICE MOOD BOARD

In the research phase, the author prepared many pictures for participants' choosing, drew the corresponding derivative keyword, then from the visual, mood, materialized three areas determined the visual image for user-defined keywords; eventually I conduct the color matching and material for the final derivative Keywords to express visually services mood of Man-Jiayuan system.

The derivative keyword of "Man-Jiading" service system are - High degree of interaction, Customized and Sustainable commute culture.

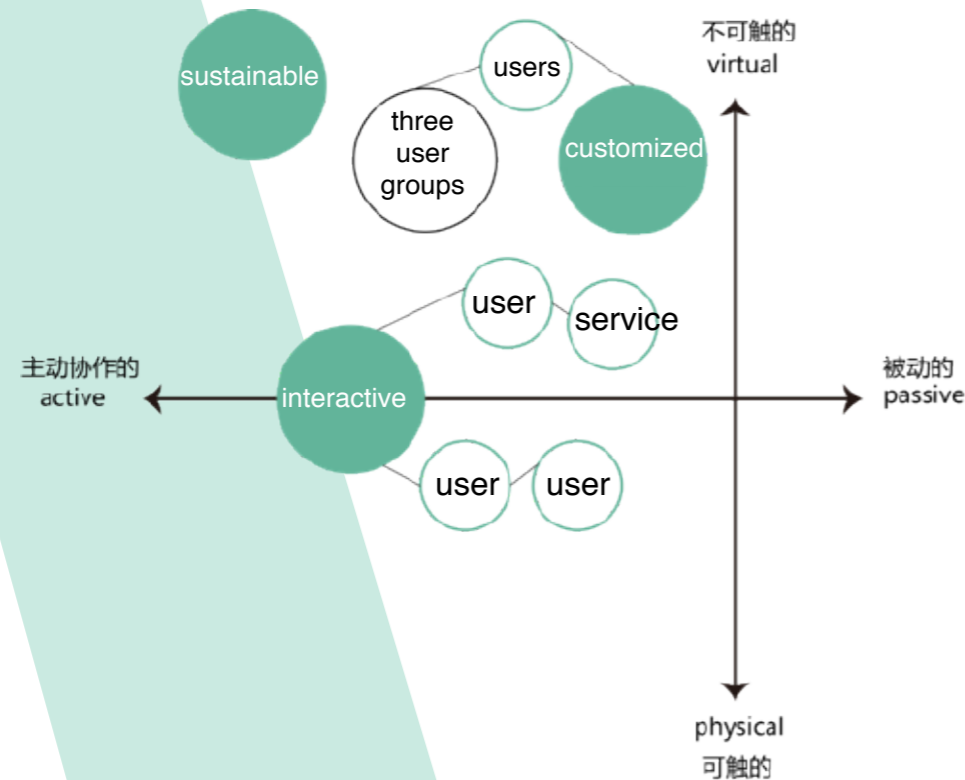


5.1.3

SERVICE

SCENARIO

Therefore, according to the positioning of this system in Chapter 3, that is to establish an interactive and active campus slow traffic service system with less limitation of physical conditions, combining convenience, interaction and custom service characteristics, the scenario of Man-Jiading system are listed as: in this system, each user could custom his or her own service according to demands, which makes every participant get **unique experience**; the whole Man-Jiading platform is an open and interactive **O2O system**(online to offline), improving the interaction between users and between users with **services to form a closed campus social tie**; the pre-, in- and post- phrase of services interconnect to establish a fluent closed service loop for slow traffic and campus activities.



5.2 “Creation” and “Planning”

5.2.1 OFFERING MAP

Man-Jiading slow traffic service system consists of Walking system, Riding system, Sharing system and Electricity Bus supplementary system altogether four subsystems; Riding system and Sharing system act as the key ones in the whole, complementing and enriching each other.

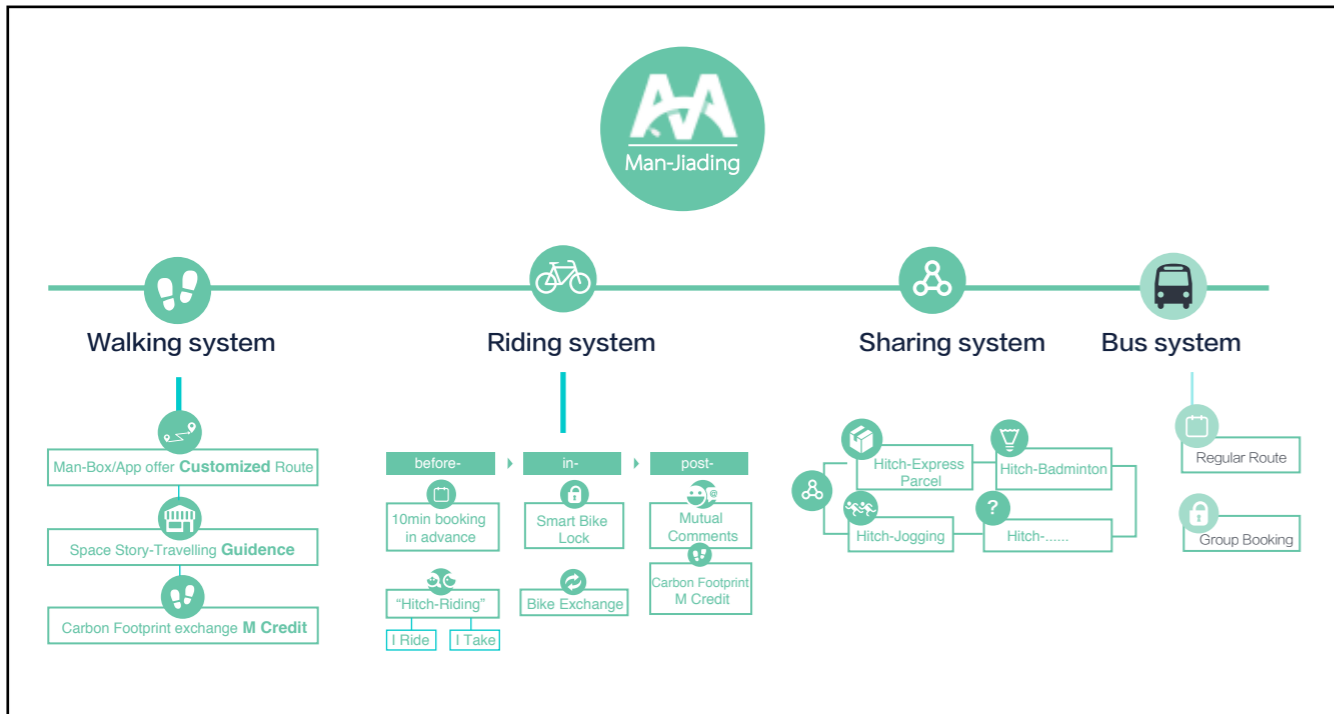
1. Walking Service System

Walking system offers users services through two important physical touch-points---“Man-Box” walking service smart device and Man-Jiading public wechat account.

(1) navigation and customized route service

It could be found in Chapter 4, “Man-Box” as the smart devices are plan to be distributed in campus. When choosing proper route, users could use Man-Box nearby to log onto Man-Jiading platform, and four kinds of routes they will get: the shortest route, the route with landscape scene, the route passing by campus activities now and customized route. Users could choose what they want or set their own customized routes.

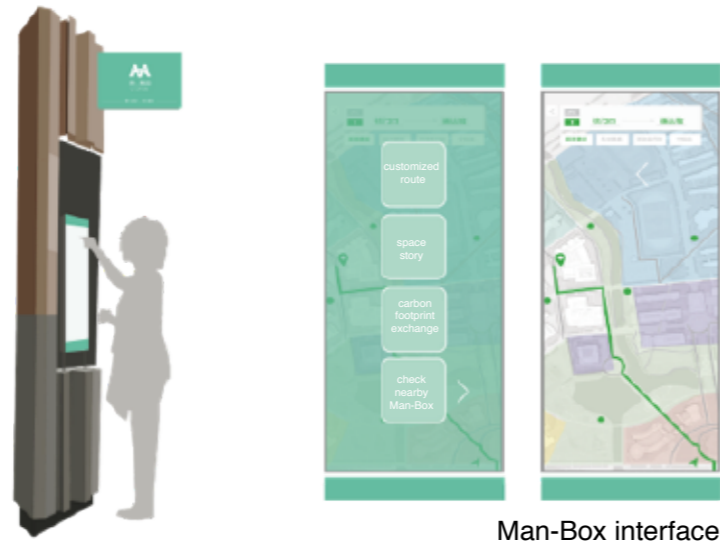
Proper services would be recommended to users considering the current time or context, for example, in rainy or snowy days, Man-Box would mark out the **route** and paths easy to cause traffic **accidents** to inform users of avoiding choosing them.



the offering map for the whole system

(2) "Space Story" walking service

In walking system, the service of Space Story provide users with the history, design principle and other relevant interesting informations of main buildings, landscape, garden, path, bridge and so on in campus, which is convenient to follow via Man-Box or Wechat account.



Man-Box interface

3) Carbon Footprint Exchange walking service

The public Wechat account of App of Man-Jiading system could calculate the walking miles of the user and divert to M-credits for enjoying other services in this system; once the personal account of a user was established in Man-Jiading platform, it begins to the accumulation of low-carbon walking miles, diverting to the M-credits to exchange other services or gifts.



APP of Man-Jiading System

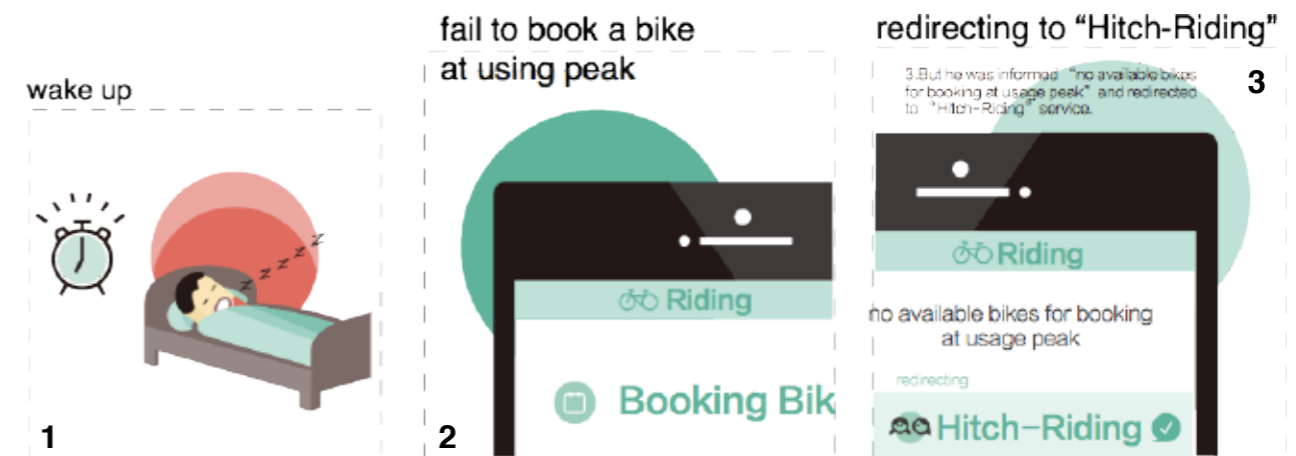
2.Ridng Service System

Riding system acts as a very important role of subsystem in the whole. There are from No.1—No.9 altogether nine service points for the public bicycle service in campus, with two using modes of card sensing and password operation: staffs and students in Tongji could enjoy the service by their Tongji Cards, and it would be free if returning the bike within 30min, increcementing 0.2 yuan every 10 minute, and the user would be charged when locking to return via his Tongji Card; while visitors could also enjoy the service by sending his Alipay or credit card number to Man-Jiading system to establish personal accout via cellphone SMS or APP, and system would reply a using password to unlock bike at parking pile, eventually locking the bike at any vacant parking pile with the same password to return, thus system will charge according to using time.

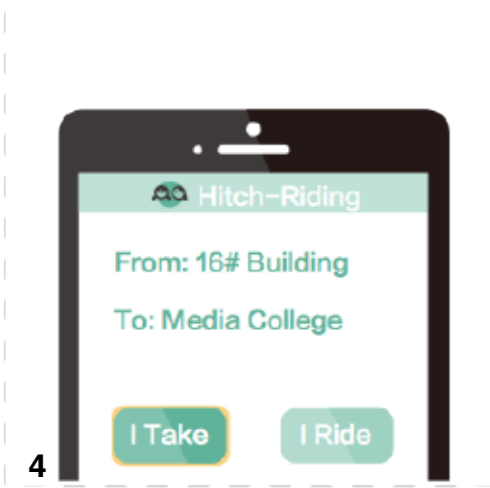
(1) Pre-Riding---Free Booking and "Hitch-Riding" Service

Riding system provides users the free [redacted] to avoid bikes shortage at using peak. Just logging onto Man-Jiading platform, choose "Bike Booking" in Riding system, type Tongji personal code , Alipay number or credit card number, then receive the Booking Number from system if booking successfully ,and the recepiant could take the bike corresponding to the nubmer; within 10 minutes, the parking pile of booked bike shines a red light to show its "booked status" exclusive to the subscriber but the status would be back to "public available" beyond the time range with the booking automatically canceled, which charge the subscriber 2yuan or 5 credits reduction.

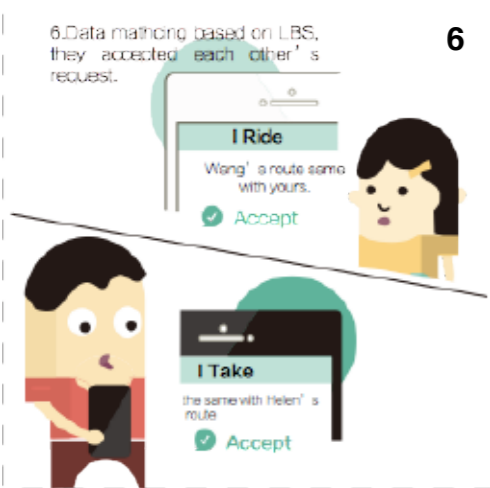
Meanwhile, students and staffs could choose "Hitch-Riding" service in Riding System, consisting of "I Take" and "I Ride" two options: logging onto Hitch-Ring service, type destination, choose "Take" or "Ride", wait for sytem mathing location-based, then another user with the same or nearby destination in the vicinity will recommended to the subscriber; they could chat online for details then meet to share the hoch-riding service. Hitch-Riding service not only improve interaction among participants, but also contributes to the use of public bike resources to the most extent.As the storyboard:



choose "I Take" and destination

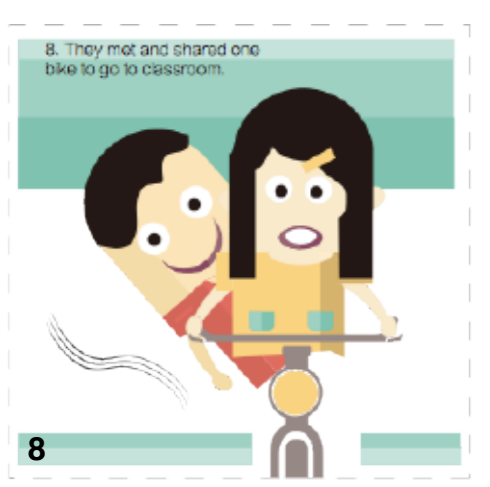


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6

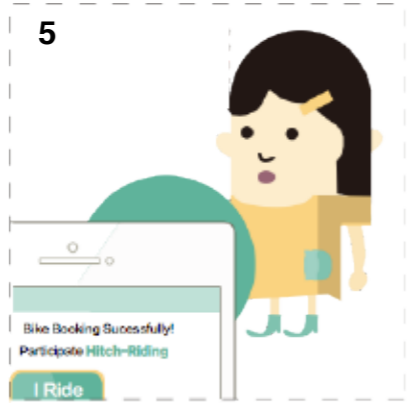
based on the same route, the system matched them



8

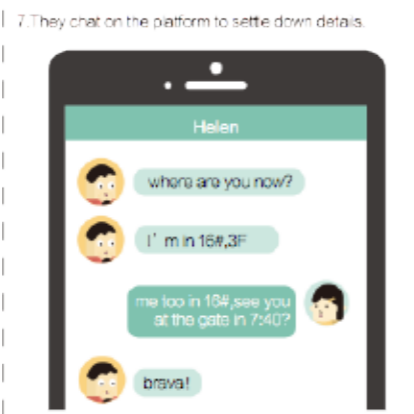
meet and share a hitch-riding

Hitch-Riding Storyboard



5

Emy just booked a bike and received Hitch-Riding suggestion



7 online chat for details

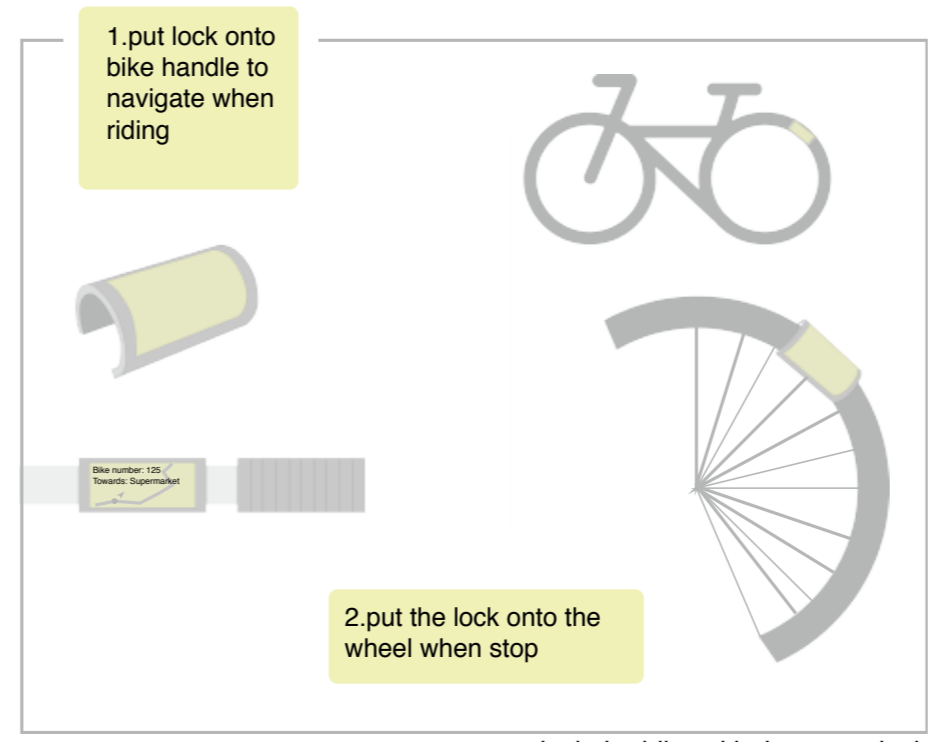
Emy got M-credits as reward



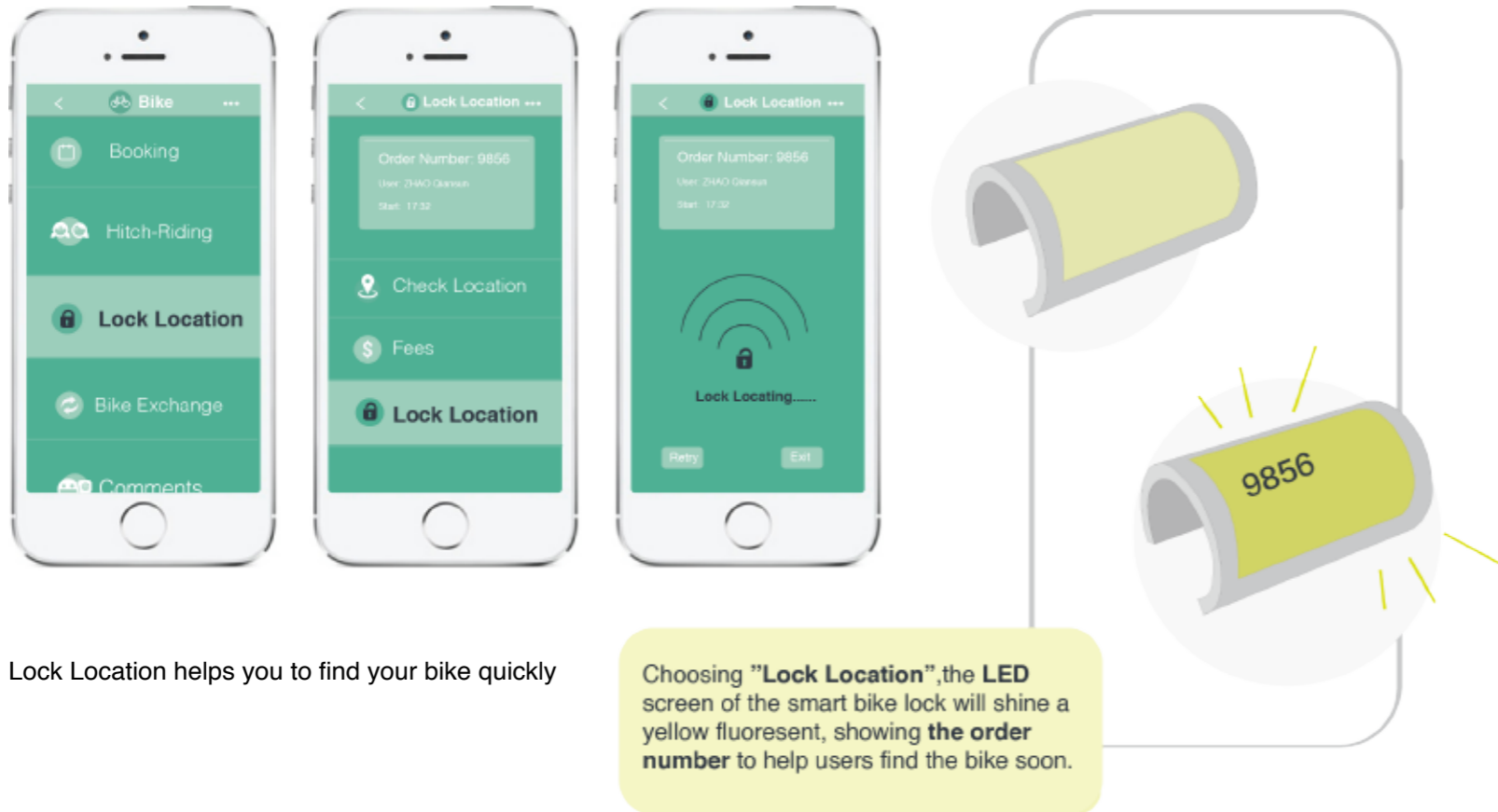
9

(2) In-Riding--- Smart Lock and Front-Basket

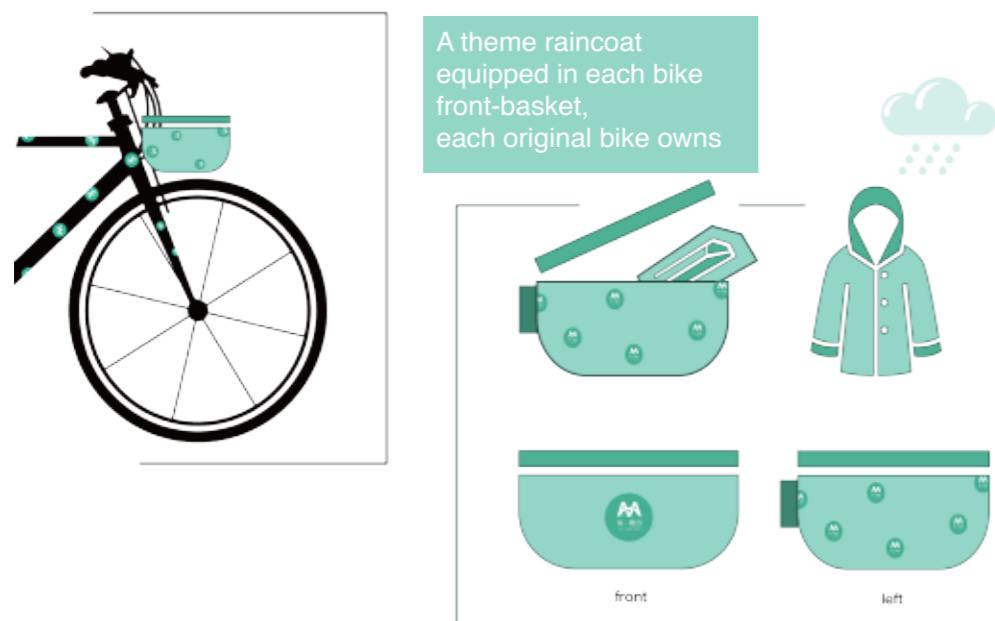
The smart lock and corresponding parking pile are in the charge of the same system. When users activate the pile via Tongji Card or password, the corresponding smart lock also begins to save the user information, during temporary parking users could lock the bike through Tongji Card and password. Smart lock owns GPRS to navigate, bike location and keep the system center in update of the location of each bike, which is convenient to management.



bike location-showing the bike location map when forgetting where the bike stops



As to the inconvenience of riding in rainy days or with some carrying belongings in the field research in chapter 3, the author set a front-basket holding a Man-Jiading theme raincoat in it for each bike.



(3) Post-Riding---Service Comments

After returning the bike, users could log onto Riding system to make comments for the service and the bike quality; system center would update the health data for each bike to fix or maintain according to comments and regular check. Meanwhile, every subscriber would get some M-credits as reward to exchange other services or presents if he made service comments constantly.

3.Sharing Service System

As the important component of the whole system, Sharing system is not only the seamless supplement of slow traffic service, but also the function expansion of slow traffic about campus activities. Sharing system is designed specially for the most important user groups---Tongji students, establishing a more closed and formalized among students campus slow traffic system and O2O social community.

(1) Co-activity Service

After registration personal account with Tongji code, students have their own accounts in Man-Jiading system. The system gathers and saves the updating personal information for each subscriber, such as dormitory address, major, course schedule by linking to college teaching dean and so on. Sharing system is based on LBS(Location-Based-Service) to match co-partners for some campus activities for users. For example, system would recommend Lee who goes to jog every weekend with another student having the same activity habits.

Sharing system encourages users to update and detail personal information, such as regular commute time, canteen preference, working-out schedule and places, etc. The more detailed the personal data is, the more Co-Activities services the system can recommend and match to help users enjoy. Sharing System tends to be interactive to make each participant find co-partners of his campus activities.

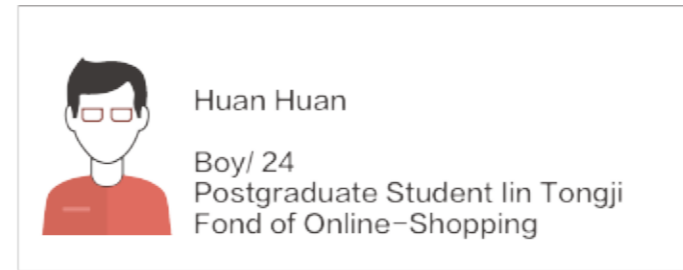
(2) Mutual Task Service

Students could publish some tasks easy to carry out on the Sharing system, then other participants capable to realize could accept the task online, and after the task done, they are ought to comment and give marks to each other about the result quality, service attitude, task difficulty and so on; the task publisher have two kinds of reward methods---the same task return within a certain time to the recipient or some M-Credits. M-Credits could be used for enjoying services in Man-Jiading or exchange some presents.

For example, Lele has courses this morning while receiving the SMS from Express Firm to go to playground to take his parcel before 11:00, then he published the Mutual Task of "helping him take parcel" on Sharing system and set "the same task in one month" as the reward. Liu just viewed and accepted this task, they settled down the details online then met at appointment place, after receiving the parcel from Liu, Lele gave him a good comment and 5-star marks, eventually Liu got the "reward" of the same task from Lele in one month.

Mutual Task Service could improve largely the mutual interaction among students to strengthen campus social tie, which also calls on students to **help each other and donate our abilities or resources into meaningful campus public services.**

Here comes a storyboard of **Hitch-Express Parcel service**



storyboard of **Hitch-Express Parcel service**

1. Huan received SMS from express firm to get his parcel before 11:00 a.m.

2. But he had class this morning thus could not to take the parcel

	Mon	Tue
9:00 - 11:00		Software Programming

3. He linked to "Sharing System" with selecting "Hitch-Parcel"

4. Publishing a task on "Hitch-Parcel" to help him to get the parcel

5. Lily just intended to go to F Building to take her parcel when viewing Huan's task online, then accepted it.

6. They chat on the platform and settled down the details

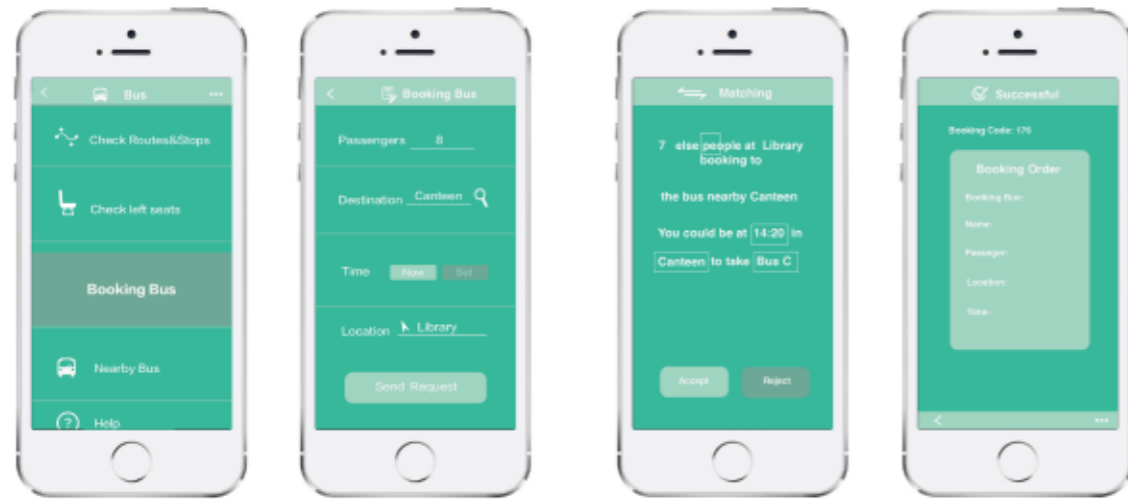
7. Lily took her express-parcel and also accepted Huan's parcel at the same place.

8. They met at the appointment location, and Lily took Huan's parcel to him.

9. Task done and mutual comments, Lily chose the same task to Huan in return in one month as reward.

4. Bus Service System(supplementary)

Electricity Bus has 4 stops in campus, lying in campus main entrance, college building cluster, the 1st Canteen and Peng Garden dormitory area. Interconnecting with public bike service points, the buses give supplement to the whole. Users could come to nearby stop to take by checking the available seats and bus updating location via App; meanwhile users could also booking for customized route, that is sending destination and passenger numbers to the system center, with center's locating the sender, a bus would be booked successfully reaching 15 passengers.



bus booking interface

5.2.2 STAKEHOLDERS

In the system, there are Users, Tongji University, Man-Jiading Institution, Design Team and Collaborative Companies altogether 5 stakeholders.

1. Users

The users in the system could also be divided into **core users, final users and potential users**, and The closeness and loyalty to the service from the three kinds of users are descending successively; users could participate into the service through experiencing the service, feedback comments, co-design, applying for the institution member and so on.

2. Tongji University

As the **main financial supporter** of this system, Tongji University is in charge of the initial construction as well as holds the business operating rights. It would earn money in the later phrase by sponsor fees from company partners, service income, Man-Jiading theme products selling and so on. Tongji University also owns the **supreme decision right** to the whole Man-Jiading system.

3. Man-Jiading Institution

The Institution is responsible for the **daily operation of the whold system**. Students in Tongji could apply for the **volunteer** to help institution do the devices maintenance. The experience of volunteer is admitted by the Practical Innovation Credits which is a compulsory course to all the Tongji students. and develop services according to the feedbacks from users. The team builds up a long-term tracking regulation to the service system.

4. Design Team

The Design Team consisting of IT designers, Interaction designers and engineers take the responsibilities of the developing the maintenance of the system. They negotiate with the Institution and update the latest technology, and develop services according to the feedbacks from users. The team builds up a long-term tracking regulation to the service system.

5. Collaborative Companies

Tongji University could set up business collaborative relationship with those companies whose main final users are university students. Those companies purchase the advertisement on public bike body, lock, service point or other sponsor media, even the long-term Naming Right of this service. They could also purchase the design or issuing right of the theme products.



5.2.3 SYSTEM MAP

1. Business Model and Funds Source

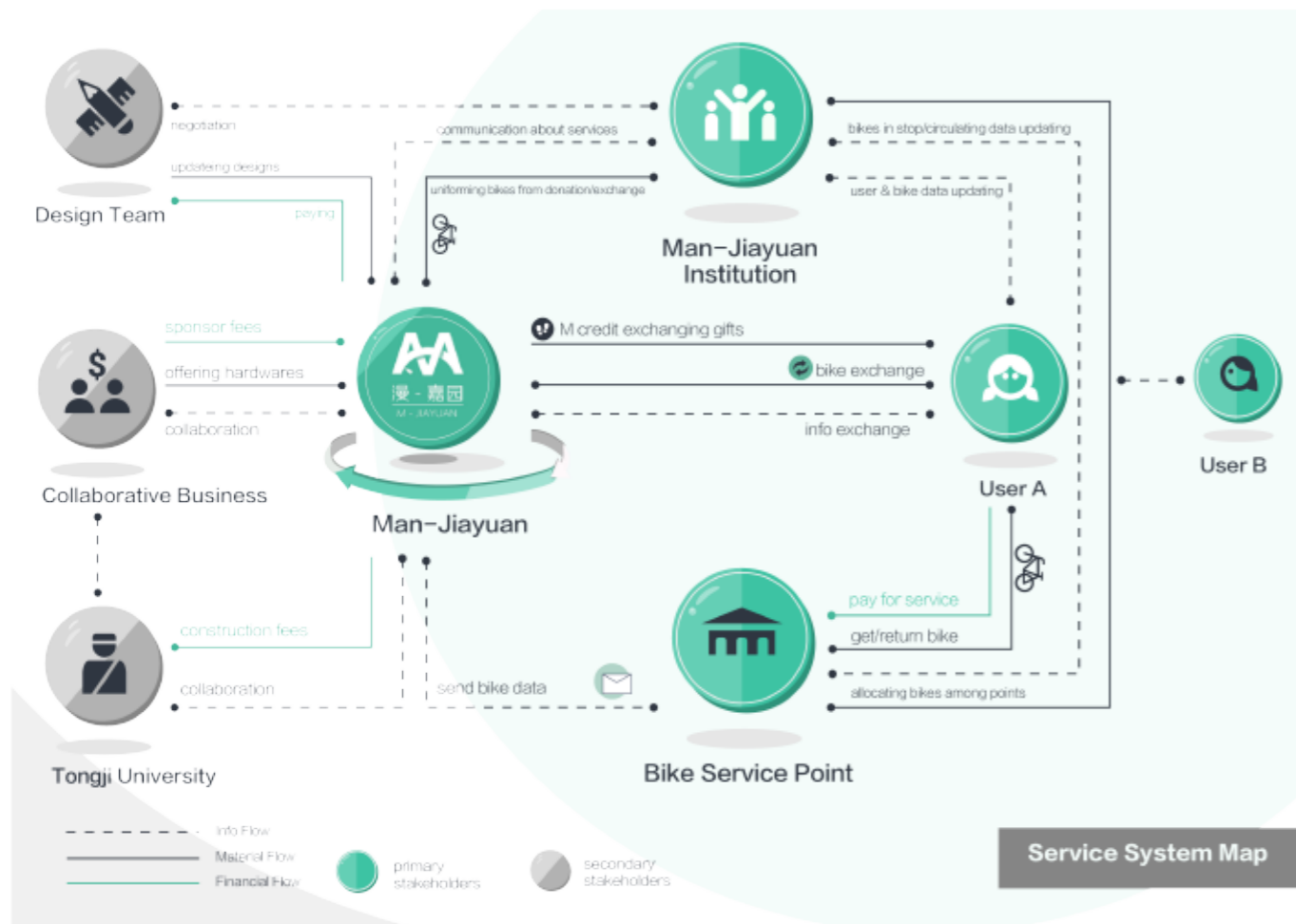
The second chapter makes a simple comparison about various business models of the existing campus public bike services: the **University-oriente** type could guarantee the absolute developing decision right to the system, while burdening University with financial sources; the **Enterprise-University Collaborative type** offers strong financial support to guarantee the service quality, while University has to transfer some decision rights to the enterprise.



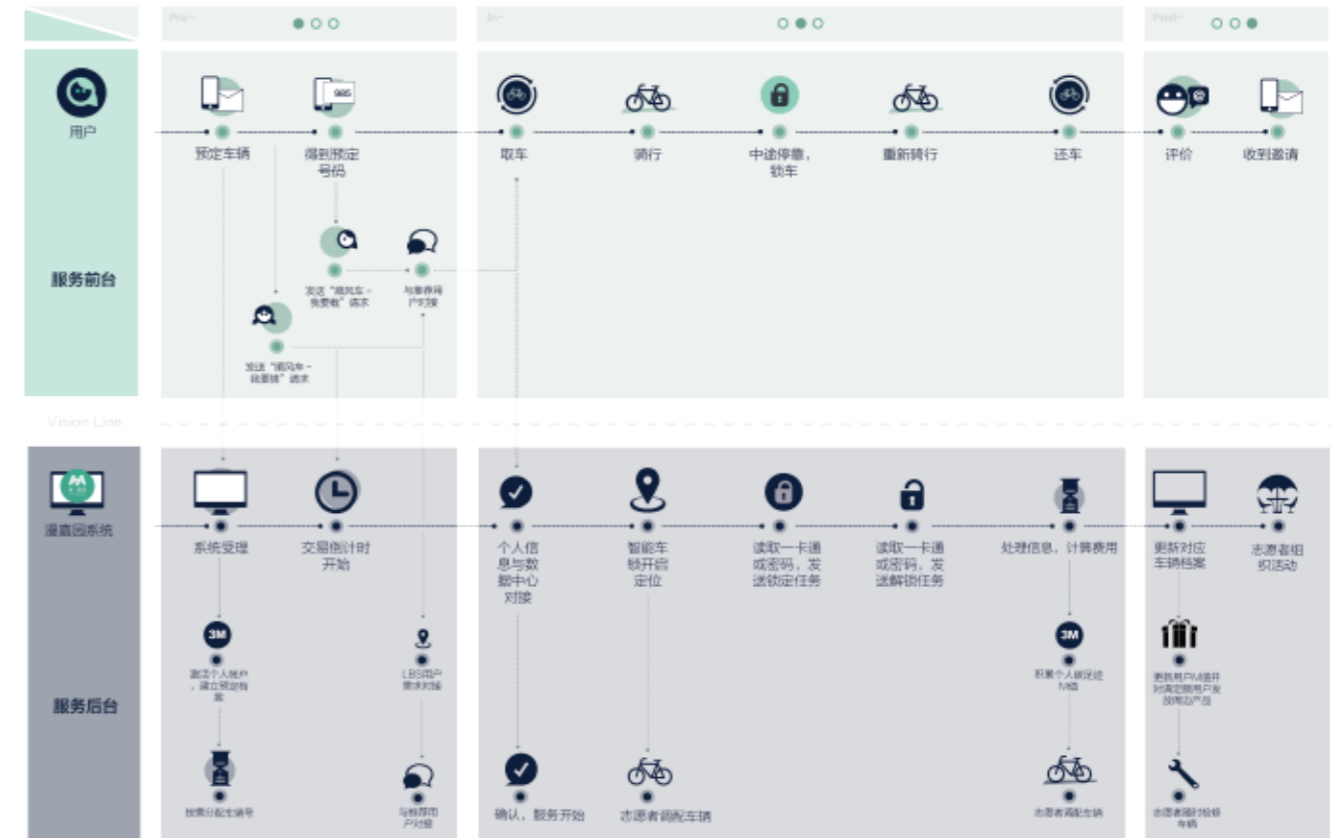
According to the service mode of Man-Jiading, the core competence lies in extend the value line of slow traffic service: the pre-stage and post-service stage are both extended to set up a closed experience loop; therefore, the **completeness and comprehensiveness of the services** act as the key competences of Man-Jiading system; **Enterprise-University Collaborative type** could be better to improve **service diversity**, as well as offer sufficient funds for the further development, so that it is the proper business model Man-Jiading System should adopt.

The operating funds for Man-Jiading is classified into initial funds and late funds; initial funds consists of investment from University, sponsor fees for the advertisements; late funds comes from the Naming rights fees of a certain subsystem, relevant theme product design rights, retail revenue of some products, income of bike service and so on.

2. System Map



Service Blueprint/服务系统蓝图



The main stakeholders are users and the system institution, they collaborate to improve the service by material, financial and info flows mutually; university and collaborative enterprise as secondary stakeholders do not appear in service front-stage, while providing much material, financial support with info flows at back-stage to optimize the services for users.

5.2.4 SERVICE BLUEPRINT

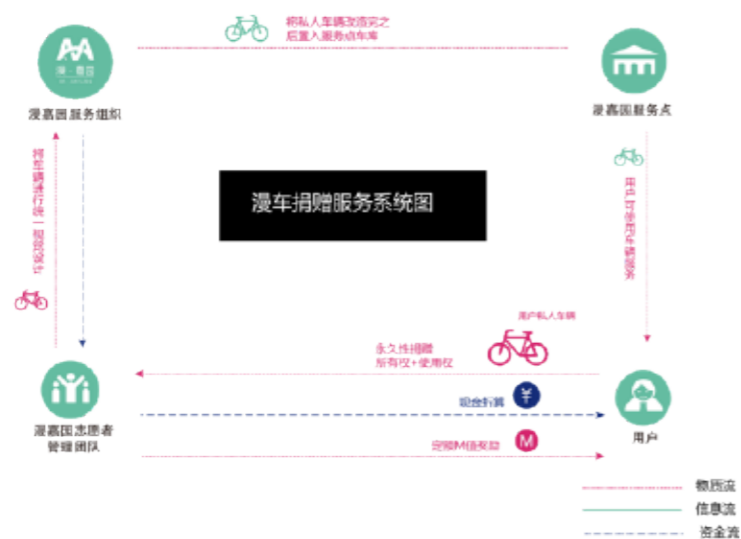
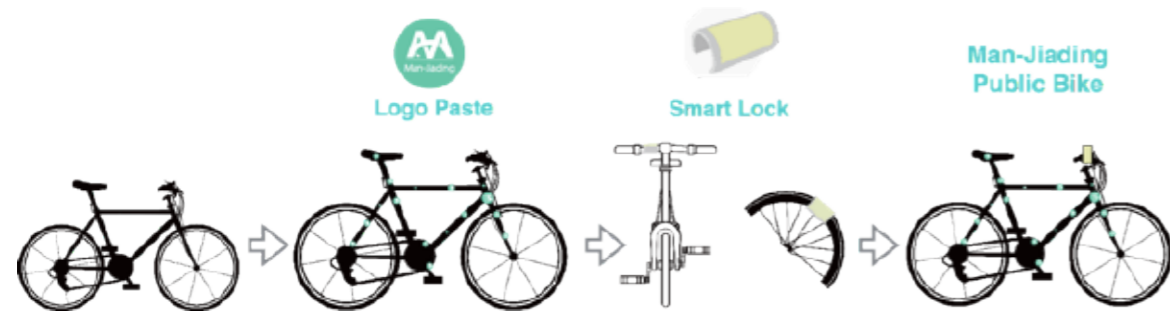
Among the four subsystems, Riding system and Sharing system are the core ones. Then as the blueprint of Riding system as an example following: with the service process divided into pre-, in- and post- altogether 3 phrases, users could choose booking in 10min advance in pre-phrase or Hitch-Riding service, then system will match for the user based on location and demands, with pushing the message to the user; in the service process and post- phrase, volunteers of Man-Jiaying system will allocate and deploy bikes for each service points according to the using condition.

5.3 Creation—— Touchpoint Design

5.3.1 BIKE DONATION SERVICE

According to the surveys, there are many idle bikes in Jiading Campus. Some of the idling were parked dut to the owner abscent in school for some time, some were abandoned after the owner graduating.

To participate Bike Donation service, users could donate their private bikes to Man-Jiading system: the donator need to submit online donation application and the system institution would check and measure the bike in three days, if the measurement is good, the bike will come to Riding system bike garage; later, volunteers would redesign the bike equping smart lock. Front-basket with raincoat and logo paste to uniform into public bike; eventually the donator woud get some M-Credits as reward, for exchanging all kinds of services and presents in Man-Jiading System.



5.4 Test and Feedbacks

5.4.1 TESTING PREPARATION

The author selects two virtual service touchpoints discussed in depth in the below---Hitch-Riding service and Bike Donation Service as tested objectives. The author also chooses a typical user in the three kinds of personas in chapter 4 to be the testing participant. As following:

1. Zhang, the 3rd year student in Media College in Tongji University, lives in 16# dormitory in Jiading Campus, with daily transportaion ways of bicycle in campus.
2. Hu, postgraduate student in Material College Tongji University, he has no his own bike in campus but cares much about Jiading campus slow traffic service system.
3. Lee, the Staff of China Mobile, his daughter is the freshman of Vechile College Tongji University; his daughter goes home in Pudong Distric every 2 weeks and he comes to visit daughter each month. Everytime he comes to Jiading, he usually gets off at the university main gate and walk to his daughter's dormitory for more than 20 minutes.



The author prepared some moodboard pictures and storyboard vedios to paste on the room wall, creating a similar using context and experiencing mood with the system for the testing subjects; describes the system map of Man-Jiading service to make them have a overall comprehensive understanding to the system; then through picture display, oral presentation, key words and storyboard vedio, the author elaborates some services, to make it more clear to the testing subjects that what are the detailed APP interface, and using procedure, to capture their own feelings and attitudes; also with the journey map and storyboard instructions, the author invites them to cosplay in using context, to make testing subjects get informed well the details vividly and to experience on a real user's shoes.

5.4.2 TESTING FEEDBACKS

The testing subjects all talk about the “Wow Moment” (Wow Moment, new word emerging on Internet Interaction User Research Field, referring to the moment gives users the most amazing surprise in one product or service.) and some potential points to be improved from their own perspectives.

1. “Wow Moment”

(1) The Hitch-Riding service is really interesting to generate a unique campus culture ;sharing the same bike is a sort of media, to condense students and formalize a high-quality campus social network.

(2) Hitch-Riding is based on LBS(Location-Based-Servic) to recommend partner to users with the same or similar route; sometimes the same route is helpful for users to find or generate the same activities cluster or communities, building up a long-term interrelationship.

(3) Bike Donation could effectively redistribute and optimize the existing bike resources, which has an innovation in service mode.

2. Points to be Improved

(1) Zhang mentioned that, sometimes, some students have an underuse of their own bikes just in a range of time, such as summer/winter holidays or go to another city for intern, while after this range of time, perhaps they are back to in a great need of bikes. Bike Donation is the transfer the bike’s ownership to the public system, if the donation regulation could be edited to phased temporary donation for a certain time, the donator still holds the bike ownership and just donate his bike for sharing the use right for some time, and when the donator needs his bike, he could get back his bike from the system freely.

(2) Lack of consistent continuousness between Hitch-Riding service with the later social services.

(3) Some other sharing&mutual services like “Hitch-Riding” could be added more.

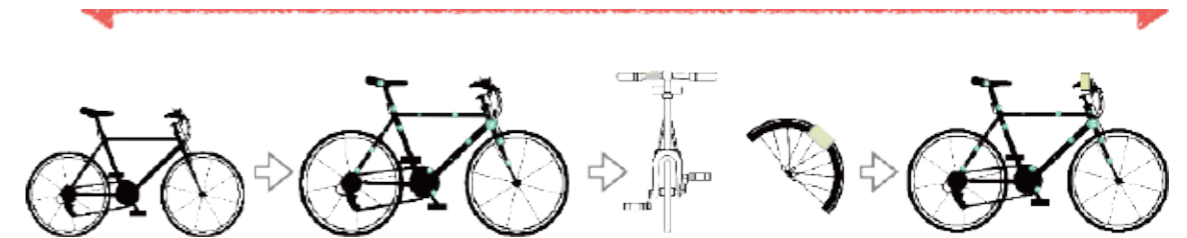


5.4.3 IMPROVEMENTS

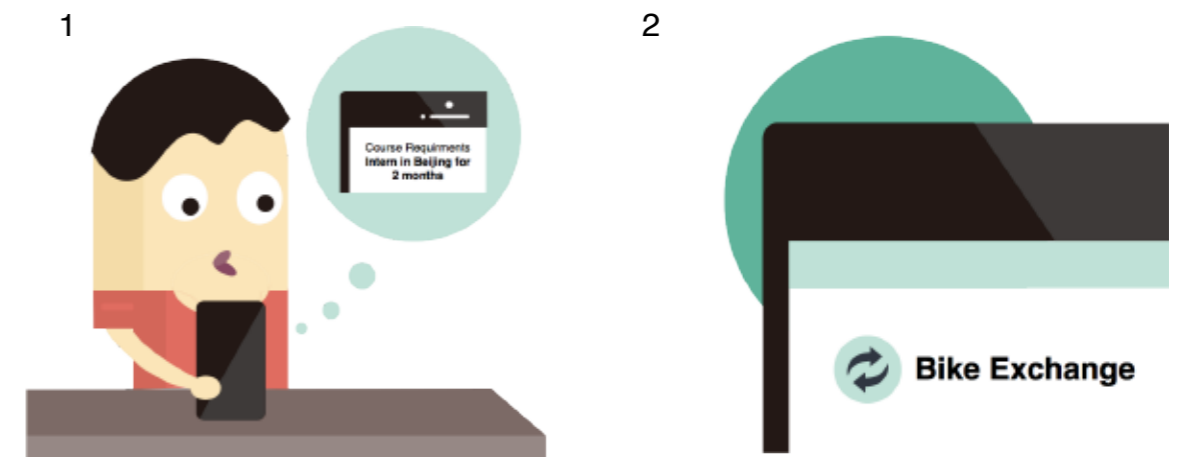
Optimizing Bike Donation to Bike Exchange

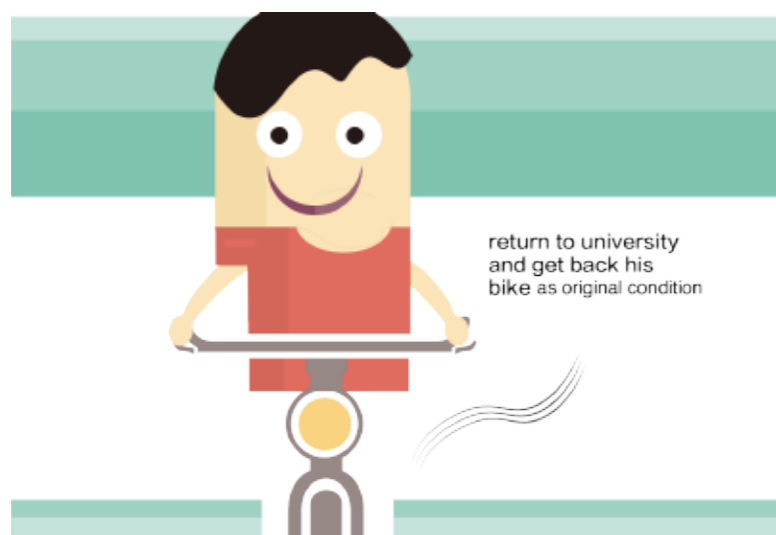
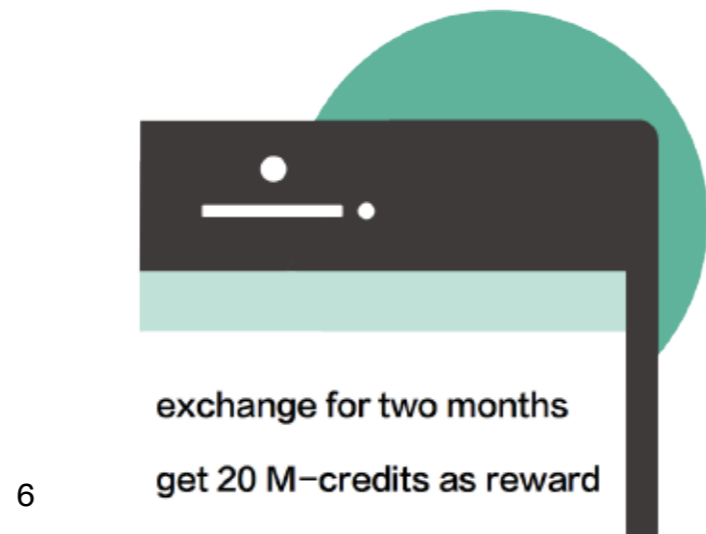
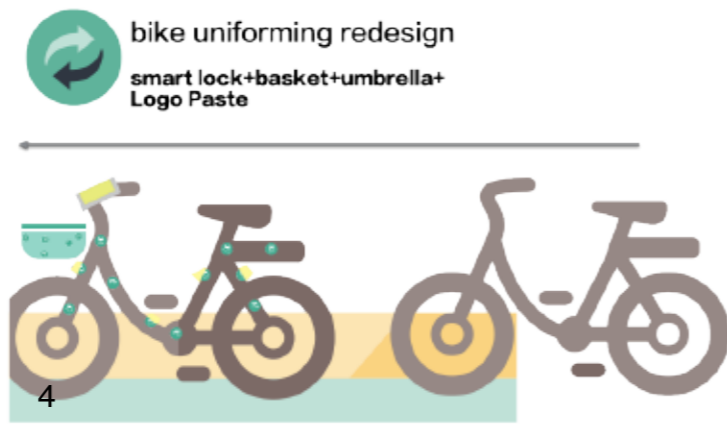
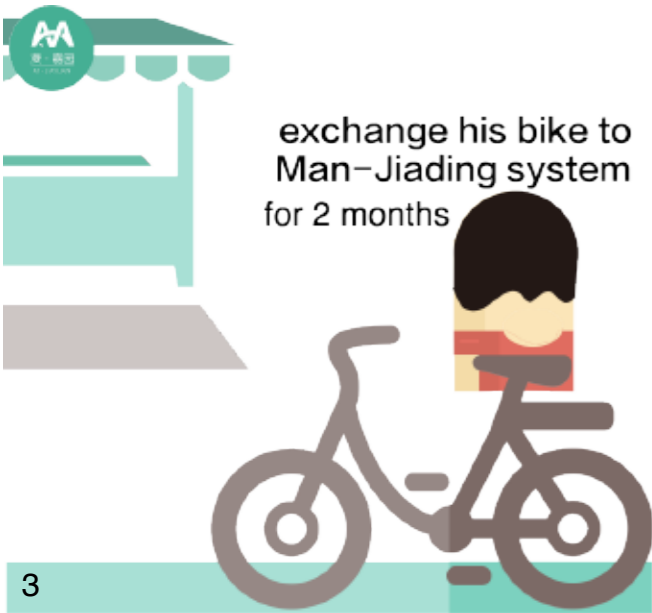
In previous donation service, the ownership of bike is transferred to public system permanently; while in the revised exchanging service, users could choose “exchange bike” or “donate bike” according to their own practical conditions. The bike owner could choose “Exchange” his bike temporarily for sharing the using right with others, and is free to get back his bike after the exchange time range; and donator could also donate his bike to transfer the ownership to system permanently. Both of the two kinds of participation could give some M-Credit of corresponding degree as reward, which can be used for the services in the system.

The bikes coming from donation or exchange need to redesign conformed by the institution volunteers to become public. The volunteers equip the bike with logo paste(special material easy to clean by oil), smart lock and front-basket with raincoat. When returning to the bike of “Exchange” service, the devices of redesign would be unloaded to restore back to the original bike condition.



bike exchange service storyboard

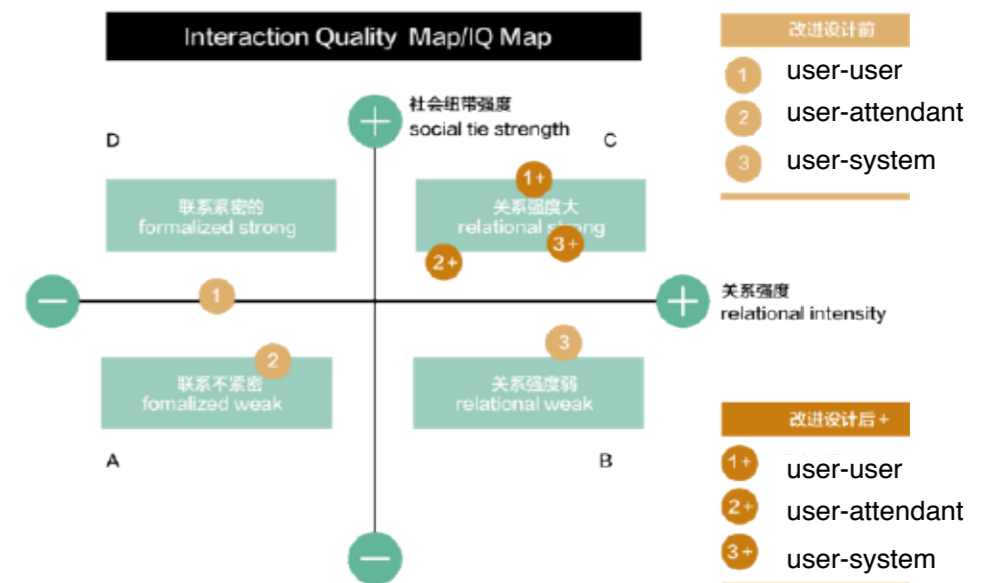
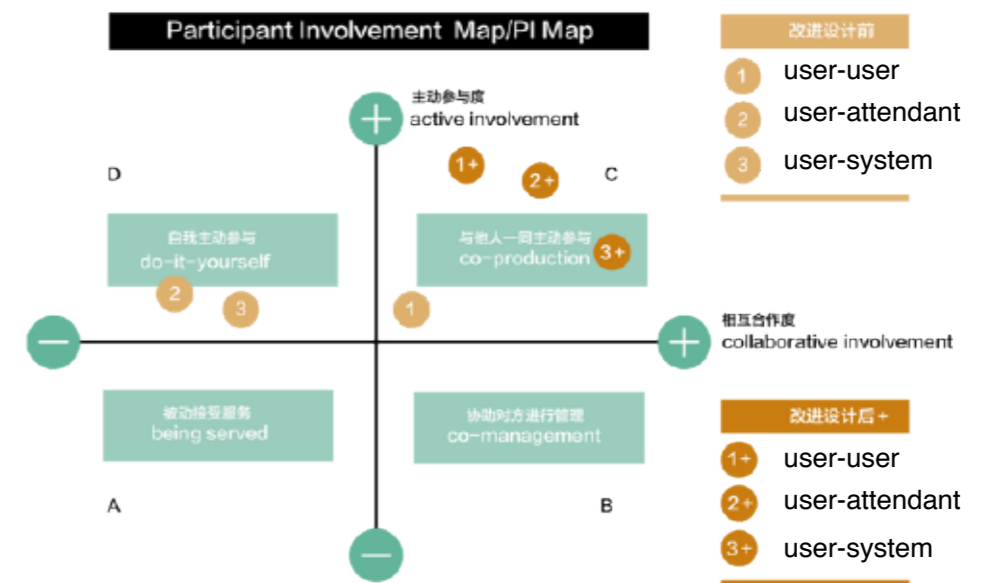




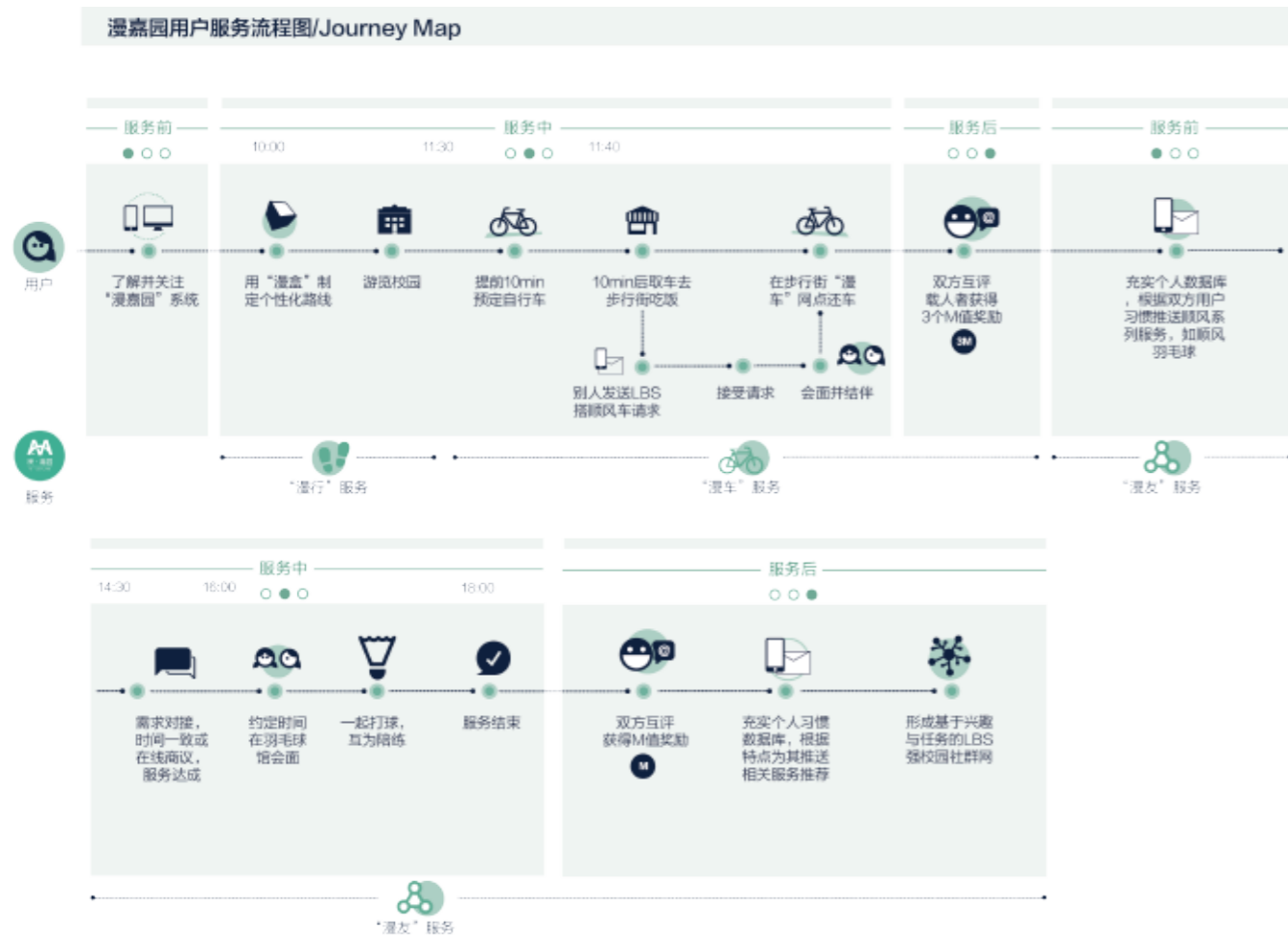
5.4.4 INTERACTION DEGREE MEASUREMENT

PI Map (Participant Involvement Map) and IQ Map (Interaction Quality Map) are the general measurement tools for the interaction degree among stakeholders after design. These two maps both regard the relationship between two stakeholders in the service as an objective, to see whether the interpersonal relationship and closeness has been strengthened or not more clearly after using the service.

In Man-Jiading Campus Slow Traffic Service System, the author divides the measurement objectives into user-user, user-attendant and user-system these three relationship.



5.4.5 JOURNEY MAP



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