

A Practice on Wayfinding System Design with Service Design Thinking

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Abstract. Environment around people has become more complex than ever before due to the development of society and economy. It is easy to feel lost when exposed to wide-open and unfamiliar environments. Thus, wayfinding system design becomes increasingly important. Various factors affect people's wayfinding experience. Factors such as color, symbol or material of wayfinding facilities have been discussed a lot while the importance of systematic planning of wayfinding system has been ignored. This study combined service design thinking with wayfinding system design. Different service design methods had been applied to the different stages of wayfinding system design process in order to help designers make a more comprehensive design strategy. The wayfinding system design of Tea Experience Museum had been taken as a practice to show how service design thinking was used in wayfinding system design process.

Keywords: Wayfinding system · Service system · Design · Experience

1 Introduction

Wayfinding system originated from signage, which may be just a mark on the stone. As the era developing, the boundary of this design field expanded to signage system and finally, wayfinding can into being. The terminology "Way-finding" was firstly defined by Kevin Lynch (1960) as a consistent use and organization of definite sensory cues from the external environment [1]. The basic aim of wayfinding system design is to answer the following questions: 1. Where am I? 2. Where to go? 3. How can I get there?

The current wayfinding system in general often has the following problems¹:

1. Unreasonable information density. Too long distance between each clue may make people upset while too short distance between each clue may interrupt their experience.
2. Inconsistent information. Sometimes signage with conflicting information can be seen in the street due to inadequate on-site testing.

¹ Similar statements can be seen in various literatures.

3. Inanimate Form. The clues are usually showed in single form such signboard. Different forms of clues and more interactions should be involved.
4. Facilities out of order. Without systematic planning, new information carriers are added freely. A lot of different signage standing in chaos will make people confused.
5. No consideration of environment. Sometimes the style of wayfinding facilities is clashing with the scenery. Sometimes the design of wayfinding facility does not usable in the environment such as glass badge is difficult to read under sunshine and facilities hidden by trees are useless.
6. Neglecting the people with disability. For example, most of the wayfinding clues require visual ability, excluding the people with visual impairment.

Today in China the study of wayfinding system design is hot but still laggard. Most of the existing study remains on color, symbol or material of wayfinding facilities. Of cause these are all significant factors in wayfinding design, but another important factor that creates wayfinding problems has been ignored, which is the lack of systematic planning. Wayfinding system design is more than the separately design of wayfinding facilities.

Wayfinding system in the form of information carriers, its ultimate goal is to meet people's wayfinding needs and solve wayfinding problems. This requires us to be user-centered and plan systematically rather than focusing on each wayfinding facility separately.

Shostack put the terms "service" and "design" together in 1984 [2]. And service design launched as a design discipline for the first time in 1991 by Michael Erlhoff, a design Professor of Köln international school [3].

Service design is a user-centered system design. It serves the whole process, aiming to provide users with a complete, high-quality experience. Today, service design thinking is often use in product design as product service system design (PSSD), shifting the business focus from selling physical products alone to selling a system combining product in order to meet the specific client (both business and final user) demands [4].

For example, Diddi & Gori company provide a PSS called Digodream, from which people cannot only get the product (flooring) but an entire service, from supply and installation, to the removal. This perfectly meets the final goal of people who buys flooring: having textile flooring installed, at the same time the company also benefit from the recycling of the textile materials [5].

In this paper, wayfinding system design of Tea Experience Museum is used as a practice to show how service design thinking can be used in wayfinding system design process.

2 Background and Purpose

Tea Experience Museum is located in Huzhou, Zhejiang Province. It's base on the content of "The Classic of Tea" written LuYu, the famous tea sage in China. The museum consists of one main pavilion, a restaurant, a tea bar, a garden and a kids' park.

It not only shows the knowledge of tea but also provides visitors diverse tea experience by connecting different spaces. It was asking for a comprehensive wayfinding system, which can connect the existing resources as a whole system and meet the needs of different people, using a combination of tangible and intangible service.

Therefore, service design thinking was applied to the design process.

The aim of this study was to provide a new theoretical approach for wayfinding system design and to provide a more effective, comprehensive and interesting wayfinding experience for the visitors.

3 Theory and Methods

3.1 Wayfinding System Design

The main process of wayfinding system design can be divided into three stages: Planning, Design and Implementation [6]. Planning stage consists of research and analysis, strategy and programming. In this stage, we set a clear design goals, establishing design strategy through not only the field research on the environment and traffic conditions, but also the analysis of user’s needs. Preliminary plan the location and content of wayfinding facilities.

Service design methods will be used mainly in the Planning stage.

3.2 Service Design

Service design process starts from exploration to creation then reflection and finally implementation. However, it is not a linear but iterative process, each stage might be necessary to turn back to the former stages [7]. See Fig. 1.

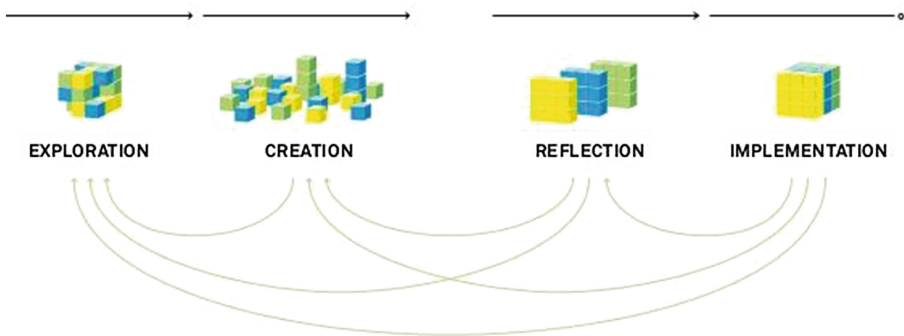


Fig. 1. Service design process [7]

There are four main factors in service design:

- (1) People: Human service system is the most important part. Service design starts from people and end with people. In the service system, “people” include service

end-users, service providers, partners and business users. They play different roles in the system.

- (2) Environment: Environment is the service location, which includes the natural environment, social environment and cultural environment.
- (3) Process: Service design process is carried out on how the service is implemented. Anything that occurred during service can be designed. Some of the processes here are material and some are immaterial.
- (4) Tools: Tools are the carriers in services implementation, and they are also the potential interaction objects and service participants. Usually refers to the products, platforms and facilities provided by the service providers to end-user.

There are five principle of service design: User-centered, Co-creative, Sequencing, Evidencing and Holistic.²

All these factors and principles should be taken into consideration in wayfinding design process.

3.3 Apply Service Design Thinking into Wayfinding System Design

From service perspective wayfinding system can be interpreted as a service system, helping people access to the information of destination, plan their journeys with information, successfully arrived from one destination to another. Therefore, service design methods and principles can be applied into wayfinding system design process. It will help designers think and design the wayfinding system in a more user-centric and systematic way.

Firstly, literature study on both service design and wayfinding system design was done in order to form a model of wayfinding system design with service design methods (See Fig. 2). It shows which methods from service design can be used in wayfinding system design process and how they are used in each stage of the design process.

Secondly, the model of wayfinding system design with service design methods was applied into practice, taking the wayfinding system design project of Tea Experience Museum as the object:

In Research & Analysis stage of wayfinding system design process, Questionnaire, In-depth Interviews and On-site Analysis were used in order to understand the users' need and get information of the target environment and its surroundings.

In Strategy stage of wayfinding system design process, Stakeholder Map, Offering Map from service design were applied in order to define and visualize the goal of this project. Service blueprint and System Map were brought in to understand the circulation path of the users.

In Programming stage of wayfinding system design process, Persona and Storyboard were used to take different user groups into consideration and decide the location and forms of wayfinding service touch points. Prototype was used to test the whole wayfinding system.

² This is service design thinking.

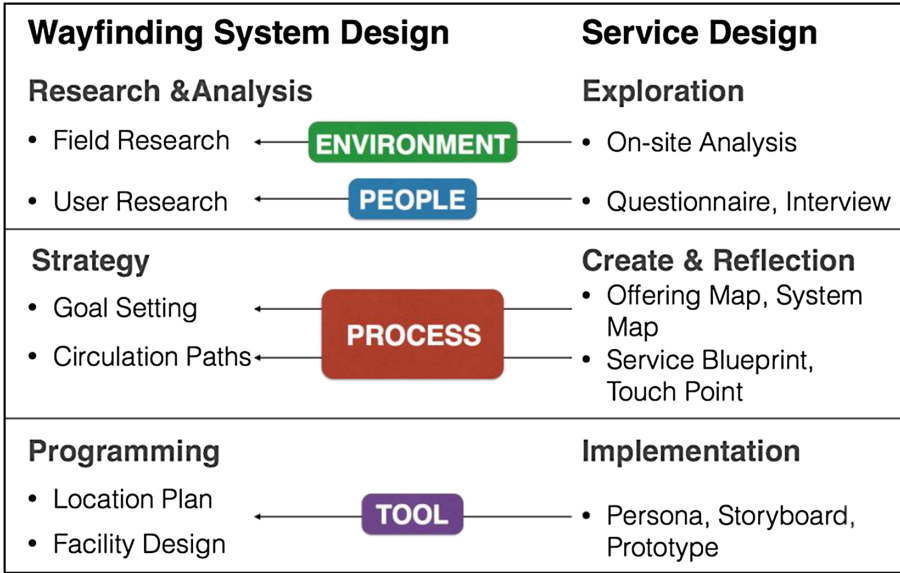


Fig. 2. Model of Wayfinding system design with service design methods

During the whole process, service design principles should be taken into consideration:

1. User-centered: During the wayfinding system design process of Tea Experience Museum, the physical needs and psychological needs of the user were the most important things need to be considered. The final goal of the wayfinding system is to serve the wayfinding needs of visitors.
2. Co-creative: Invite different user groups or even stakeholders to take part in the design process.
3. Sequencing: Services is a continuous process, so is wayfinding system. This requires directed attention be paid to user experience, avoiding problems such as unreasonable information density, inconsistent information.
4. Evidencing: Service is intangible, only through tangible goods can people “see” it. The wayfinding service was visualized by special facilities, making people aware of the existence of the service.
5. Holistic: Wayfinding service begins at the moment when visitors decide their destination. Therefore, the experience of visitors checking route information at home, determining the direction of the road, visiting the museum and going to the associated sites should be taken into account, instead of just focus on the wayfinding experience inside the museum only.

4 Research on Tea Experience Museum

4.1 Field Research

Tea Experience Museum is located in Huzhou, the birthplace of Chinese tea culture. It is a topic museum based on “Experience of tea” and aimed at spreading the knowledge of tea. As a modern museum, it is no more a process of one-way teaching but a process of two-way experiment during which audience are encouraged to touch, operate, and taste. Tea Experience Museum is an important resource of tourism in Huzhou. It surpasses other resources because it could display more content of regional culture.

Tea Experience Museum is in south of the harbor, north of the administrative center, marina to the east, Zhongxing Bridge to the west. Near it, there are major cultural facilities like Huzhou Museum, Library, Science Museum, Technology Expo Centre, Grand Theatre and Music Hall. All the spaces together constitute a magnificent, fully functional cultural landscape.

Nowadays, due to development of transportation and civilization of tourism, main future visitors of Tea Experience Museum are not only local people, but also travelers from nearby cities. Huzhou has a good geographic condition, 80 km away from Hangzhou, 140 km from Shanghai, 220 km from Nanjing.

Tea Experience museum is a museum park consists of five tea theme spaces: main pavilion, tea garden, tea restaurant, tea bar and children’s playground. There are also car parking lot, bike rental spot and tour bus stop in the museum park.

The building area of the main pavilion is about 3800 m², divided into two floors. The first floor consists of Reception, Exhibition Area, Multimedia Room, Museum Shop and Tea Room. The second floor is all Exhibition Area.

Huzhou attaches great importance to the development of tourism, with a lot of tourism resources, attracting tourists from all over the visitors. In addition to tea culture, Huzhou has a wealth of tourist attractions such as Tiefu temple, Flying tower, Long Island Park, etc.

Visitors can reach Tea Experience Museum by car or by public transportation, Since the museum haven’t been open to the public yet, the author herself pretend to be a visitor, using empathy to explore the whole wayfinding process to Tea Experience Museum.

The process of people finding their way to Tea Experience Museum can be generalized in the Fig. 3. From home to Huzhou, arriving at Museum Park, entering the pavilion, going out of pavilion, visiting other scenic spots or returning home. If Tea Experience Museum is just one of many destinations in a visitor’s trip plan and not the first destination, the process can go the opposite way, from other scenic spots in Huzhou to the museum and finally return home.

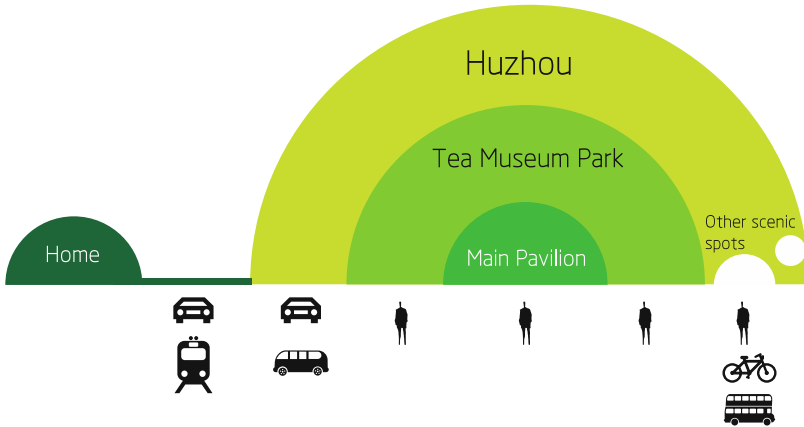


Fig. 3. The Wayfinding Process to Tea Experience Museum

4.2 User Research

Questionnaires and Interviews were used in the user research.

150 questionnaires had been distributed and 138 had been used for analysis. The questionnaire consists of four parts: basic information, understanding of tea culture, trip mode and wayfinding habits.

Five persons were selected to be interviewed in-depth based on the conclusion from questionnaire. The interview time was 1 h per person and was recorded in the form audio. The basic information of the interviewees was shown in Table 1.

Table 1. The basic information of interviewees

Name	Age	Gender	Job	Location	Other Information
TLL	24	female	student	Suzhou	
ZY	28	female	student	Shanghai	
ZHM	32	female	teacher	Shanghai	has a 5 year old son
PN	50	male	civil servant	Nanjing	has a daughter study abroad
GX	74	male	retired	Huzhou	

Insights from the user research were:

Continuous information and having wayfinding facility in the right place is the most basic needs of visitors, and they also desire for an interesting learning and interactive experience. More information about eating and accommodation is in great

demand and it's better to connect other scenic spots with the museum. Different age group requires different wayfinding service. Different wayfinding stage needs different wayfinding solution

4.3 Conclusion (Opportunity)

The main stakeholders involved in the whole wayfinding process are visitors, Tea Experience Museum and government department of Huzhou. The design opportunity is in the overlapped area of the needs of these three stakeholders (See Fig. 4).

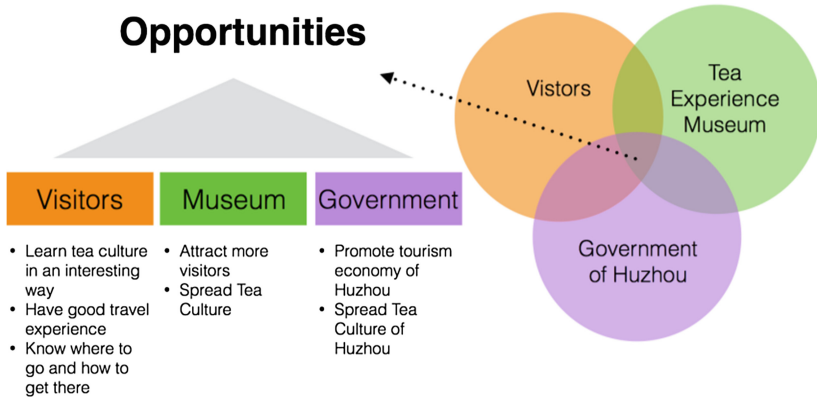


Fig. 4. Stakeholder map of tea experience museum

5 Outcomes

The visitors' main need is to learn tea culture in an interesting way and have good travel experience, to know where to go and how to get there. The main need from the museum is to attract more visitors and spread tea culture. The main need of Huzhou government department is to spread Tea Culture of Huzhou and promote tourism economy.

Therefore the design of wayfinding system should of five functions shown in the offering map (See Fig. 5).

1. Function of guidance: Information should appear in time to guide people's way.
2. Function of education: Visitors can expand their horizon of knowledge during tourist in museum.
3. Function of Advertising: Advertising board in the city could lead the way for visitors. Interesting, lovely and vivid advertisement could transfer concept of regional culture.
4. Function of Interaction: Visitors can explore by themselves via wayfinding system and gain joy of achievement.

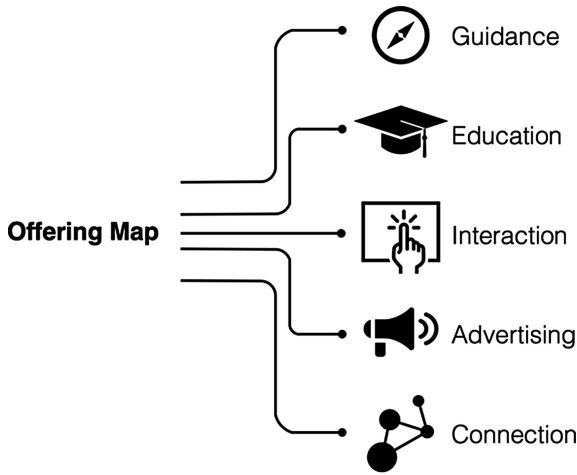


Fig. 5. Offering map of tea experience museum Wayfinding system

5. Function of Connection: The connection to other travel attracts could satisfy the demand of visitors and promotes the development of culture and economy in Huzhou.

To realize the functions mentioned above, different stakeholders had been involved in the service. The system map below (Fig. 6) shows how the stakeholders were related to each other.

Three personas were generated based on the user research (See Fig. 7). The special needs of different kinds of people revealed by drawing storyboard of different personas.

Service blueprint (Table 2) of the wayfinding system had been made to help designer understand the wayfinding process in detail and define the touch points (Fig. 8).

6 Prototype and Feedback

Some paper prototypes of the physical wayfinding facilities, such as badges and boards, had been made to test the touch points, avoiding inconsistent information. The audio guide and digital guide were explained without prototype. Two of the interviewees, ZHM and GX (see Chapter 4.2), had been invited to test the prototypes. From their feedbacks, the wayfinding information appeared in time and the diversity of wayfinding solution is welcomed. Some small adjustment about size and height of the facilities had been made to make the wayfinding experience smoother.

7 Conclusion

As a result of the rising quality of life, the wayfinding system should not only effective, but also efficient and provide smooth wayfinding experience to the users. It should meet the needs of people both physically and mentally.

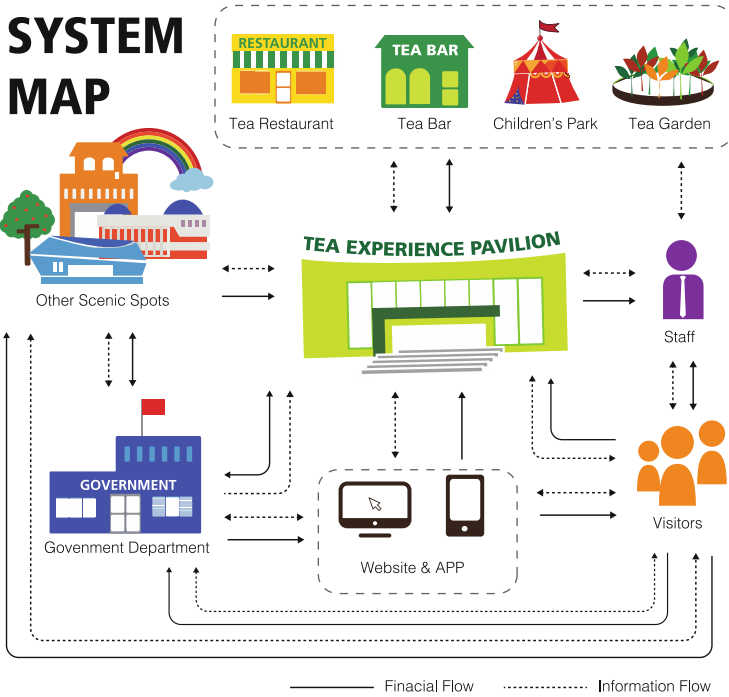


Fig. 6. System map of tea experience museum Wayfinding service




 <p>Miss. Lin 24 year-old Student</p> <p>Basic Description:</p> <ul style="list-style-type: none"> Interested in tea culture but doesn't know much. Likes to travel alone. 	 <p>Mrs. Zhang 35 year-old Bank Staff</p> <p>Basic Description:</p> <ul style="list-style-type: none"> Has a 7 year-old son The whole family often go out at weekends, taking the children to park or museum 	 <p>Mr. Li 70 year-old Retired</p> <p>Basic Description:</p> <ul style="list-style-type: none"> Loves tea and knows a lot about Tea Culture Likes reading newspaper and chatting with tea friends
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Fig. 7. Three Personas Used in Wayfinding system design process

Stakeholder	Pre-Service		During Service		After Service
	Plan	Departure	Arrival	Stay	Leave
Visitors	<ul style="list-style-type: none"> Collecting information Book tickets Guide and activity reservation Download App Record route 	<ul style="list-style-type: none"> Departure for destination Reference to recorded route Use digital map or APP Reference to wayfinding Facilities 	<ul style="list-style-type: none"> Enter museum park Park cars, find main pavilion entrance Understand the environment Deposit coat and luggage Get guide book/audio guide 	<ul style="list-style-type: none"> Visit main pavilion Take part in activities Visit other places in museum park 	<ul style="list-style-type: none"> Return Visit other scenery spot Give feedback
Tea Experience Museum	<ul style="list-style-type: none"> Design web and APP to provide information 	<ul style="list-style-type: none"> Design and set the physical wayfinding system of the museum Contact Huzhou government (departments of tourism and transportation) 	<ul style="list-style-type: none"> Provide relevant service (education, entertainment, catering...) 	<ul style="list-style-type: none"> Prepare for exhibitions and provide products Organize activities 	<ul style="list-style-type: none"> Provide Feedback platform on web or APP
Huzhou government (departments of tourism and transportation)	<ul style="list-style-type: none"> Add link of museum on its official website Update city map, adding information of the museum 	<ul style="list-style-type: none"> Add information of the museum In tourism brochure Put brochure and advertise in railway station Add information of the museum to signage board in bus station Set new bike renting point and tour bus point Provide public wayfinding system 			<ul style="list-style-type: none"> Provide information of other scenic spots
Related scenic spots	<ul style="list-style-type: none"> Cooperate with the museum 				<ul style="list-style-type: none"> Wayfinding system of other scenic spots

Table 2. Service blueprint of tea experience museum Wayfinding system

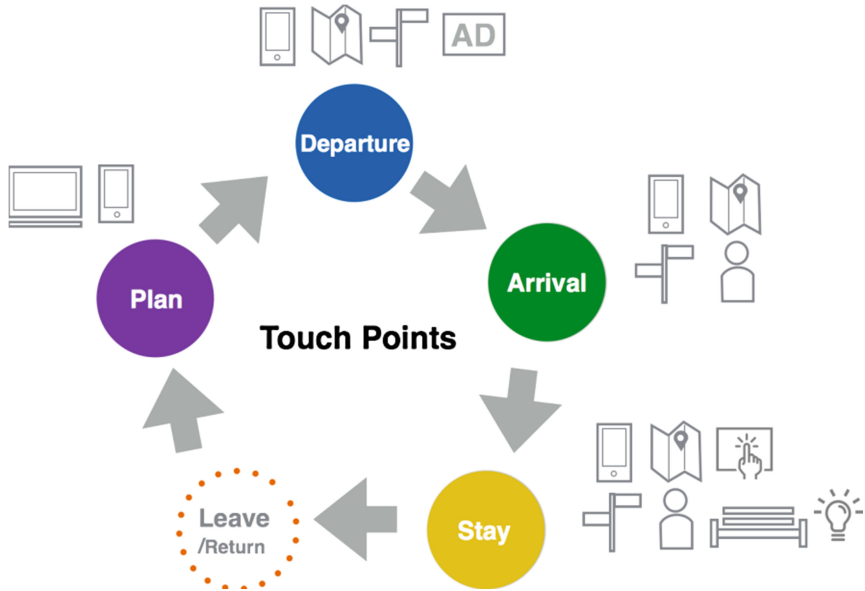


Fig. 8. Touch points in Wayfinding Process

Service design methods can be used in the planning stage of wayfinding system design process to help designers make a more comprehensive design strategy, thus design a more efficient and desirable wayfinding system to improve the visiting experience. By using service design thinking, different stakeholders are involved. This will benefit the end user (visitors), the client (museum) and also the tourism of the city.

References

1. Lynch, K.C.: *The Image of the City*. The M.I.T Press, Cambridge (1960)
2. Shostack, L.G.: *Design Services that Deliver*. *Harvard Bus. Rev.* **62**, 133–139 (1984)
3. Moritz, S.: *Service Design: Practical Access to an Evolving Field*, Lulu. com (2005)
4. Manzini, E., Vezzoli, C.: *Product-Service Systems and Sustainability: Opportunities for Sustainable Solutions*, pp. 4–5. UNEP, Paris (2002)
5. Manzini, E., Vezzoli, C.: *A strategic design approach to develop sustainable product service systems: examples taken from the ‘environmentally friendly innovation’ Italian prize*. *J. Clean. Prod.* **11**(8), 851–857 (2003)
6. David Gibdon, C.: *The Wayfinding Handbook: Information Design for Public Places*. Princeton Architecture Press, New York (2009)
7. Stickdom, M., Schneider, J.: *This is Service Design Thinking: Basics, Tools, Cases*. BIS Publishers, Amsterdam (2010)