2017 3rd International Conference on Management Science and Innovative Education (MSIE 2017)
ISBN: 978-1-60595-488-2

Application of Service Design Tools in Product Development Process

LIN ZHU

ABSTRACT

The basic concept of service design tools, principles and system composition elements thereof are introduced in order to explore the application value of service design tools in the product development process. The application of service design tools in product development courses is deeply analyzed through the case of postcard service design in the course, thereby promoting the communication between users and working staff, and providing users with satisfactory services. Service design tool is a systematic innovation approach, which is beneficial for outputting a set of practical and feasible comprehensive service strategies efficiently and accurately during product development by students, improving product development model, optimizing service efficiency, and improving user satisfaction.

KEYWORDS

Service design tools, product development, system innovation.

CONCEPT OF SERVICE DESIGN TOOLS

The so-called service design tool does not refer to a service design special tool. Most service design tools are obtained from product design, computer science, user research and other fields from the point of view of existing tool library. The development process of service design tools is sorted from four sources, namely sociology, business, design, technology, etc. The service design tools have trans-disciplinary characteristics in gene, they are gradually integrated in the development process, and unique characteristics are formed.

CLASSIFICATION OF SERVICE DESIGN TOOLS

The author divides tools into three following categories according to service design flow:

(1) Discover tools: the tool is acted on investigated user for obtaining their views and demand for services, including behind-the-scene operation, constructive interaction, the persona and character profile which is commonly used in physical design and other tools. The tool does not have distinct service design characteristics, and most parts are common in all design fields.

(2) Define & Develop tool: the tool is acted on internal members of the team. The team members can use these tools to communicate and exchange during internal discussion, design plan issuance, etc. in design processes. The service design tools mainly include the follows: affinity diagram, group sketching, journey map, LEGO

Lin Zhu, zhulindesign@126.com, Huaihai Institute of Technology, Lianyungang 222002, China.

serious play, rough prototyping, experience prototyping, service prototyping, etc. Such tools are beneficial for designers to express themselves and communicate effectively among teams.

(3) Deliver tool: it is the tool used by the service design team to demonstrate the design plan and convey design concept to the entrusting party at the subsequent period of design. The tool is acted on the entrusting party (client) and aims at making clients comprehend service system actor, touch point and offering clearly and vividly, thereby recognizing the service plan or participating in modification and perfection. The service design tools include the follows: offering map, service blueprint, service image, etc. It corresponds to the features of service design output results. Tools for conveying service design results also should have the statement of emphasizing the integrity of service system. They focus on expression of service scenario and other corresponding features.

Design case-service design based on the traditional postcard

The author participated in the service design course offered by professor Wang Guosheng of Fine Arts Academy of Tsinghua University as a student in December 2015. The course lasts for four weeks. Participants include nearly 30 postgraduate and doctoral students from Tsinghua University majoring in industrial design, visual communication, interaction design, etc. The course is based on a series of service design tools as a clue. Students are divided into several groups. Participants of all groups can complete respective service design plans since investigation within 4 weeks.

The author leads the design team. Design activities start with demand exploration in the first week. The team members control the investigation scope within the team due to time limitation of one week, and the team members think collectively inside the team. The author uses affinity diagram (also called relationship diagram, Figure 1) as a collective thinking tool: team members use post-it notes in different colors to record respective discovered problems, demands and possible solutions. The stickers are pasted on the whiteboard. Then, all team members explain the content on the notes one by one for reasonable discussion, judgment and further innovation. The affinity diagram is also called relationship diagram, since the diagrams can be rearranged and classified according to contents on the note and mutual relationship by the users finally. In the case, all notes are distinguished and pasted finally according to type, role and other categories of postcards. The team members can quickly organize existing information and determine the subsequent design direction through the step. Since the post-it notes can be pasted repeatedly, the bondage of means for designers is canceled. The flexible and targeted features have targeted team communication mode, which is beneficial for members to concentrate thinking and stimulate inspiration.

Figure 1. Teaching-based service design tool: affinity diagram.

The affinity diagram is generally used in the early stage of the project to organize many complex information. It has the following advantages of scattering centered on point problem and focusing on classification and summary. However, it has a prominent defect in service design project. Namely, a series of process problems changing with time cannot be handled. When the team starts to deeply design the service details, the author tries to combine the affinity diagram with another service design tools-journey map (Figure 2) in order to make up for the defect. The journey map is based on the user behavior as a clue. Problems, demands and experience in the behavior process are organized according to time sequence. It can be regarded as a path to guide the team thinking. The problems in each step of user behavior process can be deeply thought in turn, the collective thinking radiating with point as the center is changed into the linear thinking process with time as an axis. The completed journey map is sorted into an electronic version. Then, the tool changes the role. The tool assisting team knowledge sharing is changed into a tool promoting other related parties to comprehend the design process.

The second week of design course is regarded as the plan conception stage. The author and the team use collective sketching tools. Service system plan construction

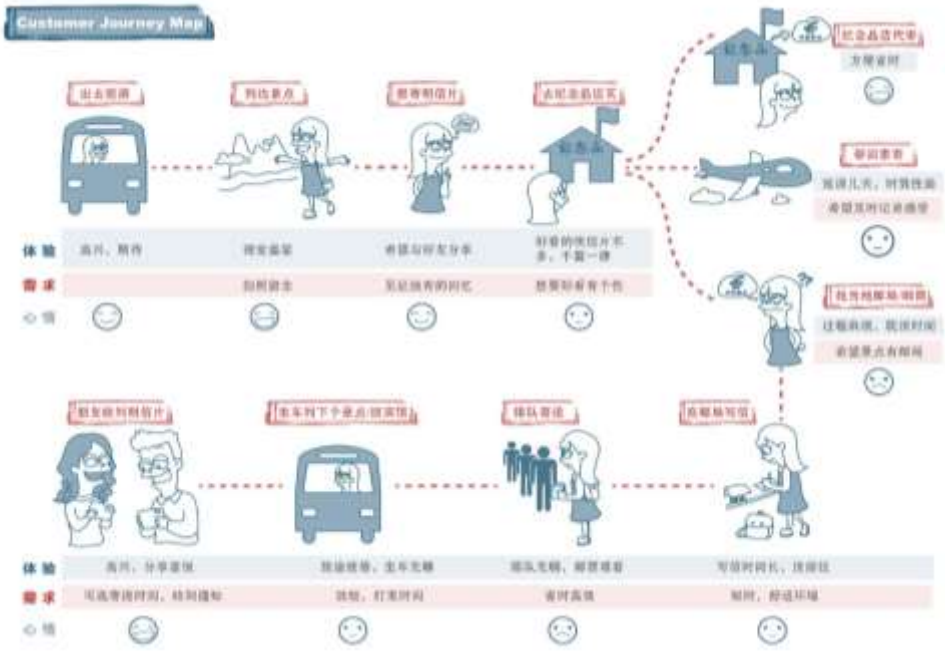

Figure 2. Teaching-based service design tool: journey map.

is impersonal, common and rational with clear principles of evaluation in the process of service design. The evaluation process is simultaneous with creation process. Omissions of one person are prevented through collective wisdom of many people to guarantee the feasibility and the rationality of the service plan, thereby realizing optimized combination of resource combination. When the team is composed of five to eight people, it is an ideal state of using collective sketches. The narrator uses quick sketches to express and record own ideas during oral description of creation. Other members in the team also can express own suggestions through modifying or remarking on the sketch. It is above-mentioned

that the service design team is always composed of trans-disciplinary members, the trans-disciplinary team exchange is particularly difficulty due to difference in knowledge background, language expression ability, etc. as well as professional bias, discrimination and other problems. However, almost every person has the experience of expressing with stick figure under the condition that it cannot be expressed with language. Meanwhile, collective sketch is different from the rendering commonly used in the design major which pursues expression and art skills, and the collective sketch attaches great importance to communication and participation rather than representation techniques, therefore it is suitable for trans-disciplinary knowledge sharing within the team.

All teams begin to prepare material output in the third week of the course. The output objects for service design generally include principals, service practitioners and end users. In the face of different objects, output tools with various functions and various forms can be used. In the case, the team which the author leads use four output tools of style sheets, story boards, system diagrams and service design blueprints.

Style sheet (Figure 3) is like the commonly used mood board in the product design. Namely, many images and texts are combined in a montage mode for expressing the desired design effect of the designer. In product design, the content of the mood board includes the image of the target user, product color, material, surface treatment effect, use environment, etc. The mood board cannot use direct visual elements ‘description’ service due to limit of service invisibility. Service feeling to users or the experience of user during use of the service is expressed through abstract and perceptual images.

As shown in Figure 3, our group selects dormitory room of international youth hostel, American fast food and self-service of Ikea restaurant and other images to convey the style of service system constructed by our group: convenience, low price, guarantee of good quality, satisfaction of the most basic demands of users,

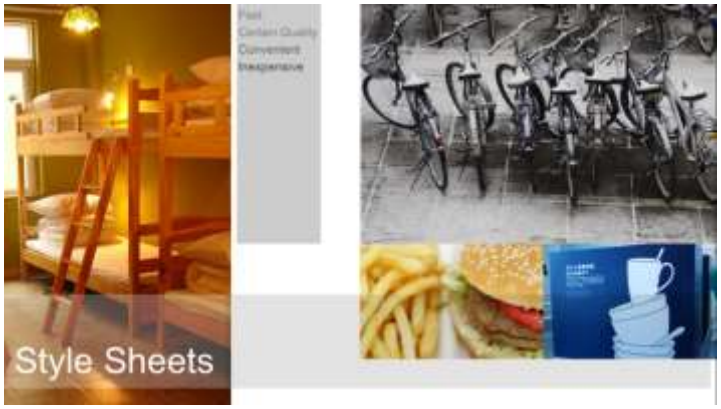

Figure 3. Teaching-based service design tool: Style Sheets.

and the cost is lowered through self-help services. One appropriate and vivid mood board not only can convey the design intention to people outside the team, but also can be used as the design principle for reference in the team. The design direction can be modified. In the case, the team members argue the charging standards of services and whether additional services are provided, etc., the design intention can be discussed again aiming at the use style sheets, thereby ensuring consistent design style.

The output tool with more detailed content than the style sheet is story board (Figure 4). Its definition and origin show that the story board has the original intention of design guidance and plan inspection. It is an objective prototype tool used in the early stage. In the foreign cases studied by the author, the feature of the story board can be well reserved. The story board is always combined with storytelling for testing the details of the service system, thereby discovering omissions. However, the most commonly used method refers that the story board is regarded to convey design plan at the later stage of design in China. It is carefully drawn, and the service details are fully expressed.

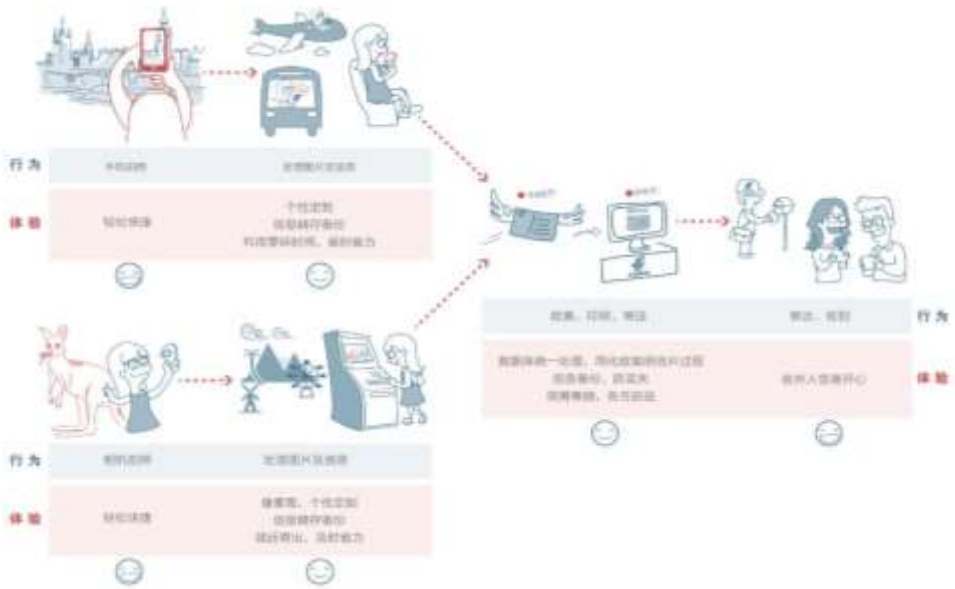

Figure 4. Teaching-based service design tool: Story Board.

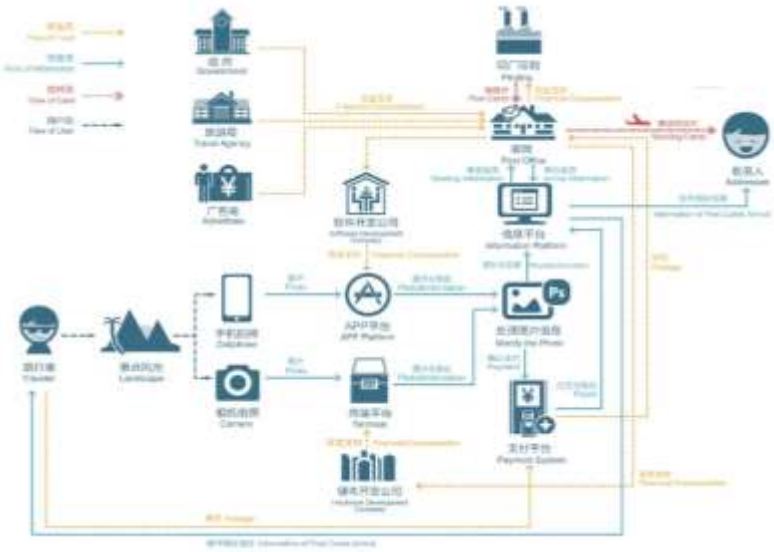

Figure 5. Teaching-based service design tool: System map.

The author doesn't think that the use mode of story board is wrong in China. On the contrary, it is just ‘localized’ expression. The design tool is changed in order to

adapt to different environments and users. Compared with performance of service design plan on the stage, we prefer to draw virtual characters; they can express own thoughts and needs instead of us. This is spontaneous and positive change of design tool to adapt to different culture backgrounds. The example shows that Chinese designers' preference on design tool and the localization trend of design tool in China.

The system map and the service blueprint are output in the fourth week of the course. The first two communication tools prefer visual presentation. The design is meaningful and emotional with a wide range of applicable objects. By contrast, the following two communication tools are organized, more clear, rational and systematic. It is generally used at the final stage of design conveying. Its objects are interest related parties without design background.

System map (figure 5) has the following meaning on designers: design plans, capital flow, logistics, personnel and other factors can be fully considered. They are not within the scope that should be considered by the designer. However, they are objects that should be designed in the service design. Therefore, the trans-disciplinary team is the necessary condition for service design. Experts in all fields and designers should discuss the design of the system in all aspects in front of the system map together.

Service blueprint (figure 6) is the last tool in the case. As the name implies, the service blueprint is the plan and blueprint for guiding service implementation. It is the last step for the designer delivering the plan before the system is put into operation. If the service is regarded as a performance, the service blueprint is the script. There are three horizontal lines from top to bottom:

The first line is called line of interaction. User behavior is above the line of interaction, namely audience watching the performance. The behavior of the front desk personnel is below the line of interaction. They contact users directly and visibly. Players on the stage are front desk personnel.

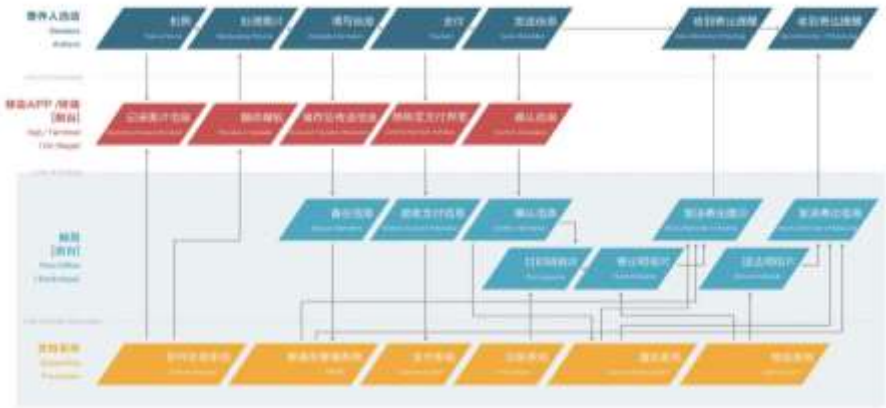

Figure 6. Teaching-based service design tool: Blueprint.

The second line is called line of visibility. The system is divided into two parts with the line as the boundary. The front desk personnel visible for users are above the line, and background personnel incapable of direct contact with the user are

below the line of visibility, and they provide background guarantee for smooth performance.

The third line is called line of internal interaction. The support system is below the line, such as outsourcing logistics company, databases, telecommunications operators, etc. They have organization internal and user unknown contact with the background working personnel on the line, thereby providing basic support for normal operation of the service system.

Designers can adjust the blueprint according to their own needs with the use and development of tools. For example, user experience is regarded as a new column item, or physical evidence for each step is added for product designer as reference design opportunities. Since the service blueprint has a distinctive feature of service design, and it can be easily mastered due to relatively fixed format, it has become the most representative tool of service design. It is the best starting point for the initial learner to observe the excellence of service design. The service blueprint is growing. The author believes that it is a correct trend. Tools should not be limited to the fixed procedure, it should better improve the design efficiency and improve the design quality.

SUMMARY

The promotion of service design tool is a shortcut to promote contact service design in domestic design field. The author clearly realizes that new design tool brings fresh vitality to the design process through the application practice. It tries to apply several service design tools in the design practice cases, the problems after tool migration are summarized. Their thoughts and demands on service design tools are heard through discussion with participants. It is discovered that the service design tools have excellent application prospect in the product development process in the future.

REFERENCES

1. Wang Guosheng. Service design: Design in new knowledge economy era. Design Management, 2011, 04:83.
2. Stefan Moritz. Service Design: practical access to an evolving field. KISD, 2005: 25.
3. Gianluca Brugnoli. Connecting the dots of user experience: the design of interactive systems [EB/DK]. Frogdesign, (2009-02) [2011-09-23].
4. http://lovelearn.wordpress.com/
5. Huang Lili. Chinese interpersonal harmony and conflict: localization theory and research. Chongqing University Press, 2007.
6. Jia Yuxin. Cross-cultural communication. Shanghai: Shanghai Foreign Language Education Press, 1997.
7. Marc Stickdorn, Jakob Schneider. This is service design thinking. BIS Publisher, 2010.
8. Wendy Termillo. Storyboarding: design of lens script. Wang Xuan, Zhao Yanyi. Beijing: China Youth Press, 2006.
9. Jiang Xiaojuan Pei Changhong. China service industry development report: ideas, goals, policies and system policy security of China service industry development during the ‘11th five-year plan’. Beijing: Social Sciences Academic Press, 2004.