

Research on Information Architecture Design of Online Creative Space

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Abstract. The paper introduces the concept and feature set of online creative space and illustrates the development process of online creative space using three cases to seek design and building strategies for online creative community, with a view to facilitating the progress of urban information and intelligence, inspiring public perception, interaction and evolution on creative ideas and their diverse value, promoting productization and commercialization of creative design schemes and thus guiding future-oriented design innovation, technological innovation, cultural innovation and business innovation.

Keywords: Online creative space · Building strategies · Public collaborative innovation

1 Introduction

The evolution and innovation of information interaction have mirrored the flourishing of human advanced civilization in the context of information technology. The arrival of the Internet era has reshaped people's daily lives and behaviors. The user-centered innovation environment shows growing complexity when the separation between online communication and offline reality becomes increasingly prominent. In this context, the creative community becomes a bridge between social civilization, user needs and creative design, as well as a microcosm and symbol of an open innovation-oriented society. What role are the public playing today? As the coinage "prosumer" indicates, they become both producers and consumers. The building of the creative community is expected to break the boundaries between professions, disciplines, and display the charm of the knowledge-based economy with cross-boundary collaboration. In view of the wide scope of creative community, the paper will focus on online creative community, studying its concept and feature set, illustrating its development with three cases as set forth in Sects. 4, 5 and 6, and giving strategies for building online creative space in Sect. 7.

2 Concept of Online Creative Space

From the perspective of information science, the concept of online creative space should be traced to "information space", which means the place where information exists or occurs, or the set of information about a field. Compared with physical creative space,

online creative space can be wide or narrow in scope and the key lies in rational design of the organization and structure of information so that users can better understand and use information.

With the advance of science and technology, the traditional process of cultural creation has been overturned by the creative modes of innovation for online information space based on cloud computing, ubiquitous technology and Internet of Things. At the same time, online creative space has gradually become a substantial complement to physical creative space, making the “makerspace” a new creative collaboration and display space that synthesizes the online and the offline, the virtual and the real.

Initially, American magazine *Make* defined “makerspace” as “a real physical place, an open lab, workspace or machine room with workshop and studio functions”.

As the new industrial and technological revolution develops, makerspace has extended in meaning as a new open platform. The concept “mass innovation space” comes into being. It’s a neologism with Chinese characteristics created by the Chinese Ministry of Science and Technology after surveying makerspaces and incubators in Beijing, Shenzhen, etc. and summarizing extensive experience in entrepreneurial support services. After a shift from “garage space” to “mass innovation space”, maker movement and maker culture begin to thrive when “mass innovation space” plays a role in pushing for change in social production and lifestyle.

From a macro point of view, “mass innovation space” seems too narrow to cover all the forms of using platforms to share resources and provide innovation and entrepreneurial support services in today’s society. The paper therefore uses “creative space” to grasp the concept in its broader sense, with its focus on online creative space, where creative thinking, creative interaction, creative practice and other links of creative ecology converge to achieve new social value and commercial value. As the number of users grows by leaps and bounds, many online creative spaces have fostered cross-zone, cross-regional and cross-media creative community ecosystems which have also brought considerable social and commercial value. The value and derivatives of creativity become easier to be exchanged and thus form a strong impetus to the process of social innovation.

3 Feature Set of Online Creative Space

The feature set of online creative space is divided into three parts, respectively education, interaction and management concerning innovation and entrepreneurship, as follows:

- Creative and innovative online education platform: Colleges and universities have accumulated methods, experience and modes in programs like “challenging courses”, “open innovation”, “maker marathon” and “entrepreneurial practice”. All these educational resources can be systematically and intellectually integrated into one knowledge system. And when this system enters a more extensive online creative space for public education, it will influence more creative groups in the community and form a sustainable, iterative curriculum content production system.
- Creative interaction and exchange platform: Creative thinking and exchanges can be carried out on social hotspots, technological developments and interesting topics on

the scope of all the communities. Online interaction and discussion for hot topics may extend to offline lectures and workshops, thereby achieving better social innovation value.

- Creative project progress management platform: In the design and development process of a creative project, the creative team needs to have an information platform for efficient and convenient management of project progress from intellectual property protection research, to project development contract and agreement planning, and to market-oriented information media promotion.

Creative interaction and exchange platform and creative project progress management platform are the focus of the study of online creative space. In Sect. 4, development stages of online creative space will be presented through three cases and then strategies for building online creative space will be proposed. The analysis of the feature set of online creative space can hence contribute to a better understanding of the connotations and development stages of online creative space.

4 Online Creative Platform Based on the Exchange of Ideas

The idea exchange-based online creative platform is the initial stage of online creative space and the necessary supplement to physical creative platform. The users of this platform can express their opinions and exchange creative ideas on interesting topics and social events. Of such platforms Zhihu, Douban and Weibo are the popular ones in China.

Zhihu is known as an online Q & A platform. Its slogan “Share with the world your knowledge, experience and insights” shows that this platform will help users find answers and share knowledge. Click on one of the topics and the user can view all the answers to the question and write their own answer. The user can also give their comment to one of the answers. In this way, there will be more and more active users and topic hits. Zhihu is a typical representative of online creative platforms based on the exchange of ideas.

The exchange content of the platform is confined to the level of idea and the promotion is also limited to the level of discussion. In light of its limitations, this platform is only the initial stage of online creative space, but it acts as a bridge between the environment and the masses to a certain extent. From the standpoint of top-level design, the idea exchange-based online creative platform can help the public carry out more frequent information exchanges, so it can be regarded as an important research and practice carrier that centers on the public wisdom and turns it into a force that drives the city forward.

5 Extension of Online Creative Space

5.1 Ecosystem Model of Creative Communities

With an online creative community as a center, a creative space as a platform, creative associations as a talent pool, and creative practices as a value orientation, the ecosystem model of online creative communities (As show in Fig. 1) enables design of the smart creative products whose attributes can be iterated. The extension of an online creative

community refers to combining creative association with creative practice organically. Since it is mainly made up of the creative class and emerging makers concerned, creative association is a “human-related” factor in an online creative community. Creative space, which consists of an offline physical space and network-based online space, is an environment and carrier of research on how to establish creative exchanges and collaborations. It is an “environment-based” factor in a creative community. Creative practice studies how to look for and incubate the huge value of creativity to social and urban development by means of information exchange, activity design, orientation interaction, collaboration and co-creation among creative groups.

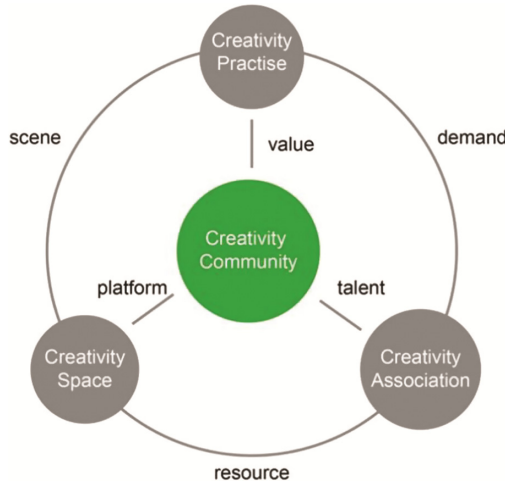


Fig. 1. Ecosystem of cc model

The design and construction of an online creative community will be specifically analyzed and discussed by Living Lab with the online creative community as a concrete carrier in the subsequent sections of this paper, to explore an effective method and path for online creative community construction.

5.2 The Concept of Living Lab

Living Lab is a new individual, enterprise and government-oriented ecosystem that facilitates social innovations through the collaboration and interaction between community, activity and cooperative work space, and a new R&D environment committed to training user-centered and future-oriented technological innovative patterns and innovation systems. In a manner of speaking, Living Lab is the most typical representative of mass collaborative innovation patterns. The value principles of Living Lab are as follows: user-centric, service-oriented, supportive of participation by diversified parties, continuous iteration, and real environment simulation.

5.3 Business Pattern Design for Online Creative Community JD Jian'erhuo

On November 14, 2015, ServiceDesign-Tsinghua analyzed the challenges and problems faced by “JD Jian'erhuo” (As shown in Fig. 2), and initiated co-design by teamwork based on the concept of Living Lab and the method of service design. The studio aimed to establish an extendable creative community for Jian'erhuo using social resources, and attempted to create a sustainable business pattern.



Fig. 2. JD Jian'erhuo web page

Run by JD Finance, JD Jian'erhuo gathers highly sophisticated creative hardware products from home and abroad, collects market feedbacks from ordinary users by winning praises from them, and implements crowdfunding for popular products or mass-produce them locally. Through mass praising, crowdfunding and vowing, JD Jian'erhuo is committed to establishing a social media platform perpendicular to the crowdfunding field.

The phrase “Jian'erhuo” comes from the cracked CD domain. The young people on fire for music and CD collection often call hard-won, expensive, rare, top-class or highly touted CD “Jian'erhuo”. Product positioning on JD Jian'erhuo appears as that creative products are turned into real products and product value is realized. As can be seen, JD Jian'erhuo is a real online creative community and business platform.

From the perspective of Living Lab, JD Jian'erhuo can draw attention from four user groups: consumer, designer, insider and businessman, specifically including the masses that are enthusiastic about high technology, and intelligent, simple life; the makers that love life and artistic creation; the manufacturing plants and people that can provide highly-sophisticated technologies; the investors with a keen sense of smell.

Product positioning on JD Jian'erhuo mainly involves the following five parts: individual customization platform, enhancement of user's life quality, and crowdfunding market fore-end detector, platform for guidance on crowdfunding, efficient transformation

and high-quality project incubation, attraction of attention from entrepreneurs and investors, and supply of a trade exchange platform for aspiring, strong-minded high-quality users to occupy the upper stream of the mass innovation ecosystem, which could help establish a foremost position where user demand leads the direction of market and industry.

The value of JD Jian’erhuo is reflected from four perspectives (As shown in Fig. 3). First, for ordinary users, it can help them find and investigate the information of creative products as early as possible; for manufacturers, it can help them find creative products’ commercial value and achieve profitability; for makers, it can help them make direct communication with users and gain feedbacks from users, and obtain incubator-like entrepreneurial support; for JD, the complete creative ecosystem may be increasingly perfected as more creative products are developed.

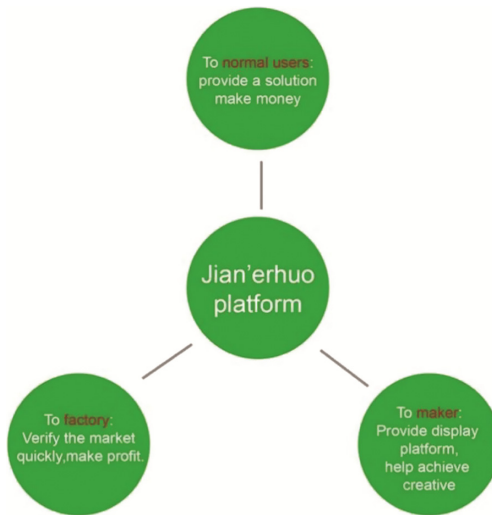


Fig. 3. Jian’erhuo structure platform

The “Creative Community & Service Design” Studio worked with the designers from JD Finance design team, Design Service Center and Tencent ISUX in establishing a Living Lab collaborative studio by the use of some design tools such as stakeholder, service blueprint, storyboard, character portrait and business model canvas. It also created goal-oriented business models, planned activity programs, and made planning for long-term creative community platform construction.

A day later, the studio offered the research achievements of design: in the future, “JD Jian’erhuo” will be further defined as a crowdfunding-oriented social media platform. Continuously integrated design, maker and supply chain resources can help JD retain its high-quality users, transform naive users into regular users, strengthen content operation, and optimize user experience to keep enhancing the attributes of creative community “JD Jian’erhuo”. Besides, “JD Jian’erhuo” should pay more attention to the quality of community content, and enhance its social attributes, so that both professionals

and green hands could get a sense of presence. Also, it should keep strengthening multi-dimensional interaction of information in the community.

To prepare for the “Creative Community & Service Design” Studio developed by “JD Jian’erhuo”, the design team where I work has elaborately designed specific design tools. In practice, these design tools efficiently guided the overall process of studio design, and won praise from the designers. See the figure below for details (Fig. 4):

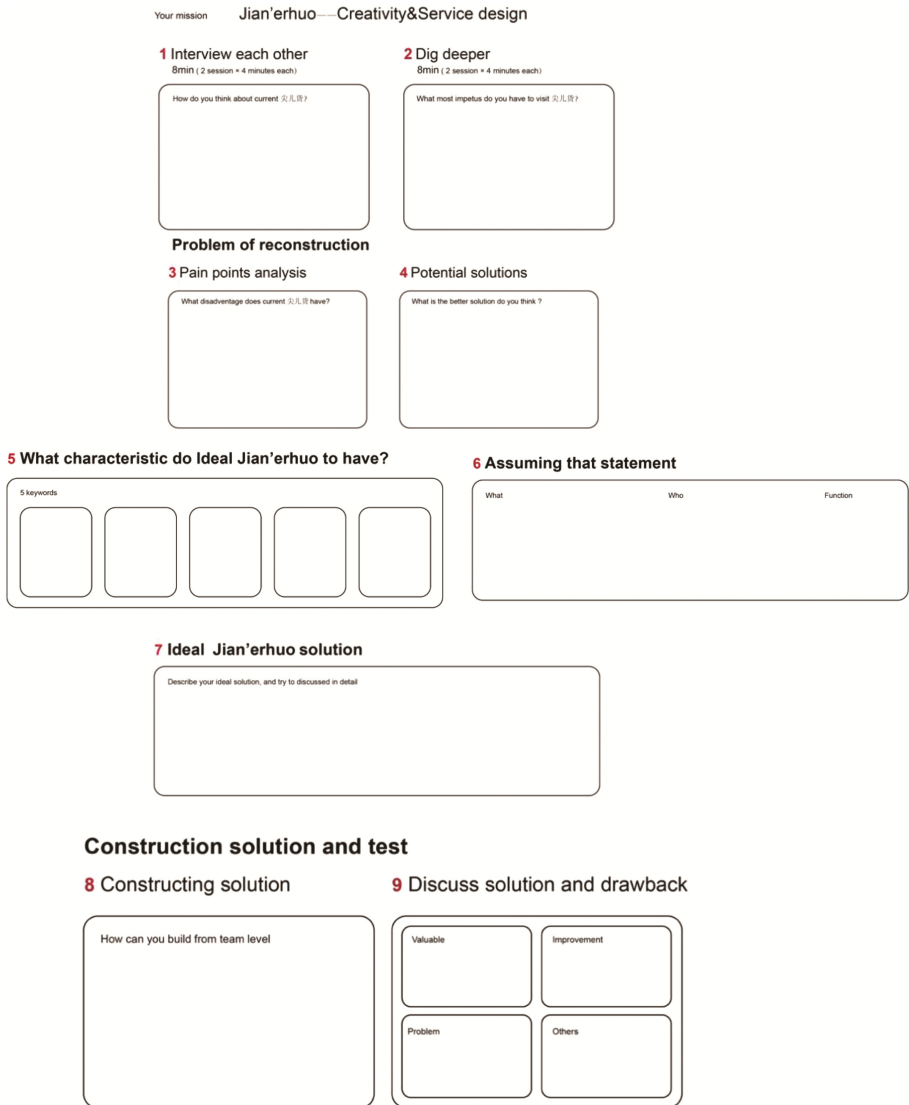


Fig. 4. Service design tools oriented to Jian'erhuo

JD Jian'erhuo is a representative of the extended online creative community and slightly different from a crowdfunding platform. In terms of positioning, JD Jian'erhuo is a social media platform perpendicular to the crowdfunding field. As an online creative platform, JD Jian'erhuo well combines "creative association" with "creative practice". As a collaborative human-centered user value-driven systematic research method, Living Lab is able to enhance innovation abilities in a research environment sustainably. Based on Living Lab, JD Jian'erhuo carries out the concept of mass collaborative innovation throughout the community and enables users to participate in the creative practice of products. This distinguishes JD Jian'erhuo from common crowdfunding activities, and makes it a way of financing. So in design, we should also use service design theories to build a bridge for stakeholders, develop a way of cooperation to enhance the overall value, keep identifying the relationship among various parts according to stakeholders' demand, and make a service blueprint to strengthen product positioning, to differentiate the service from other products to avoid homogeneity.

Compared with the online creative platform based on exchanges of views, the extended online creative platform focuses more on practical value and commercial value, develops sustainable business by collaboration, and uses value strategies to ensure process execution, as well as stakeholders' interests and experience. If the online creative platform based on exchanges of views is a place where users can express their views, the extended online creative platform aims to implement these views to highlight the practical value.

6 Creative Space On-line and Off-line Combined

In 2013, "New Jersey Nets" in the NBA officially moved to Brooklyn, New York, and its home court, Barclays Center, is not only a great architecture, but also is a creative space filled with energy and entertainment.

Unlike traditional basketball arenas, the Barclays Center combines many factors with most advanced high technologies into itself. First of all, the arena sets 360° surround screens in the wave-form entries and the center of the arena, bringing brilliant audiovisual experience to audiences. Besides, the Barclays Center uses the most advanced network technology of Cisco in building the WIFI network of the arena. Audiences will not only able to enjoy DIY information services of playbacks.

In addition, the Barclays Center creatively uses the "Big Data" technology as an information tool to take full advantage of information sources to provide audiences with customized services by building an interconnection between fundamental service devices in the arena with mobile App carried by audiences, considering the requirements of audiences. For example, audiences can order meals on their phones and fetch them from the auditorium after meals are ready, which saves the time of waiting in line and give them better chances to enjoy sports matches. Through designing in the direction of creative thoughts of audiences, new spectacle requirements are captured precisely, which makes customers fit in the environment better.

If the extension of on-line creative space is thought to show some practical values, business values, then the creative space on-line and off-line combined shows emotional

values, which is at a high stage of on-line creative spaces. By a total control of aspects such as brand positioning, brand strategies, firm image designs, brand sales, product designs, space designs, it makes an upgrade of brand experience, and reaches emotional benefit points of customers by designing the brand emotionally and arousing sympathies. It leaves a good impression on customers in the scene through smooth comfortable experience, arouses emotions and thus obtains identifications.

7 Information Framework Designs of the On-line Creative Space

The on-line creative space changes itself into an intelligent information-interaction system by integrating information in the city and building connection between applicable information. The whole information framework of the on-line creative space mainly consists of four levels:

- Perception level: Acquire and collect information mainly, input through intelligent terminal devices operated by users, including information about nature, society, culture, economy, technology, etc..
- Network level: Transmit and deliver information mainly, achieve rapid barrier-free transmission of end-to-end information through connection of a number of nodes and base networks.
- Information level: Process information mainly. The core of information level is compiling all the information collected by the perception level, calculating and analyzing by corresponding models, and give valuable reference information by calling relevant results.
- Interaction level: Make information interacted mainly, where the on-line creative space and creative groups interact. Information can be accessed and uploaded through the interactive interface, and feedbacks are returned to users.

Specific strategies for building the creative space should take these four levels into consideration. A platform using the perception level as the base, the network level as the support, the information level as the link, and the interaction level as the media which provides users information communication methods and emotion expressions has a specific goal, has a spirit and aims to the future. On the one hand, it is because applications of all kinds of information technologies achieve functional goals; on the other hand, it concentrates on promoting the experience of users, and satisfying requirements of users which is viewed as a non-functional goal.

8 Strategies for Building the On-line Creative Space

8.1 Concept of Establishing Flat, Social, Trans-boundary, Sharing Services

A flat and acentric structure is suitable for the on-line creative space. Relatively loose and flat in the organization, without a uniform resource coordination structure, participators should be equal under the condition of programs and services, freely combinations are allowed in the fundamental regulated framework. With the concept of

designing for service, find requirements of benefit relevant parties, depict service blueprints, emphasize on positioning products, and avoid homogeneity. Establish a kind of resource service which is integrated, visible, touchable, transparent and convenient, and a creative space on the service line which is direct, transparent and specific. Use the concept that people cooperate with creating, support enterprises, researching colleges and the government of joining programs altogether. Though the on-line creative space is a creative community ecological circle between time zones, territories and mediums, with the territorial advantages it is still an effective idea of strengthening abilities of creating independently. Complete the corresponding service system “Technology plus finance”, increase the support of technology and finance to creative enterprises, in order to improve abilities of creating for systems. In the Sect. 4, on-line creative platforms like Zhihu, Douban which are based on communicating ideas are actually platforms which are flat and sociable. Furthermore, in the Sect. 5, crowd funding platforms like Jingdongjianerhuo or platforms in other types show the service concept of trans-boundary and sharing officially. Establishing the service concept which is flat, sociable, trans-boundary and sharing is an important first step in the process of building an on-line creative community.

8.2 Blend of Big Data

Big data, cloud computing and Internet of things have been the most popular tools of information technology and applications. In the process of designing to build an on-line creative space, heavy participations of public bring about a great number of big data about user information. If link, analyze and transform these big data resources, present human intelligence will definitely be extended. Establishing a big data information library can make management, analyze, iteration and application more specific, and the design plan of the on-line creative space more appropriate, accelerate the spread of various information functions and services, upgrade rapidly and complete incessantly space information functions and services. In the sixth chapter of this article, the reason that the technology experience museum of the Barclays Center earned such a success is a result of blending big data, cloud computing and Internet of things.

Under the method of on-line creative space designing based of the blend of big data, there will be more function settings of the on-line creative space, and construction plans of interactive, sharing and distributed applications of creative messages will be improved with the technology support. Predictably, resources of information, humanity and creativity of the on-line creative space in the future will be integrated and innovated more systematically in the view of applying big data.

8.3 Strategies Appropriate and Open

Open modules are not the more, the better. Open modules are products or service modules which are offered to customers by the on-line creative space. The threshold of opening is not the lower, the better. The threshold of opening is a regulation which allows entrepreneurs to enter when the on-line creative space offers module services. More the entrepreneurs, bigger the scale of the space platform, but the relation between the

threshold of opening and performances of the space platform is not linear. When the threshold of opening is too high and does not reach the critical point stimulating Internet effects, the development will be limited.

9 Conclusion

In the design blueprint of the on-line creative space, with interactions of creative groups in the society, establishments of on-line creative communities will form environment and carriers for creation one by one, thus leading to build an intelligent city characterized by user creation, open creation, public creation and cooperative creation.

While satisfying the need of information communication, the on-line creative space should focus on practical values and business values, by searching a sustainable business mode through cooperative creation and using the concept of service designing, guarantee benefits and experience of every relevant party.

As a practical environment of building future cities, the on-line creative community should put the need of life and emotion sharing in the first place, create socially around customers, balance social environment, needs of customers and business modes by designing, and discover some original creative plans, products and designs.

The design goal of the on-line creative space should be increase the use efficiency of users as much as possible by promoting functional experience, emotional experience and value experience, meanwhile help users enjoy the process joyfully and the convenience and fluency of experience while using the system. In the promotion of overall socialization experience, user engagement mainly comes from stimulus of psychological experience and behavior experience of users, and it will last. The concept of establishing flat, sociable, trans-boundary and sharing service, blending the great number of big data resources brought by socialization of public management toward cities, making appropriate and open strategies and analyzing things like usage scenes and user behaviors help combine qualitative and quantitative researches and finally make design plans objective and scientific.

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