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How Service Design can contribute in the Lifecycle of Online Communities: the Development of the Chinese Service Design Community

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Abstract

Due to technological advances and epidemics, online communities are rapidly growing. Online community development is concerned with the diversity of members, the complexity of networks, and their participation in activities. Many scholars have discussed this topic from the perspective of management, information science, sociology, and psychology; however, little attention has been paid to service design and how co-design can be employed. This study examines the Chinese Service Design Community (CSDC), a community that exists online in China, and employs participatory action research as a methodology. This paper describes how service design and co-design activities contribute to community development by combining the online communities' lifecycle presented by Iriberri and Leroy with the development of CSDC. In addition, it discusses the different tools used in co-design and the important role that co-design activities perform in the 'Maturity' stage to avoid entering the 'Death' stage (Iriberri & Leroy, 2009).

Keywords: Lifecycle of Online Communities, Co-design, Service Design, Community Development

Introduction

In 2019, people worldwide had to face the challenge of remote working, due to travel limitations imposed by Covid-19. During the pandemic, remote communication has become increasingly common. Socialization has shifted from "real" physical interaction to "virtual" platform communication. People gather online, interact and communicate remotely through social media platforms. Thus, the development of

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distributed innovation organizations, such as online communities, has increased. However, many online communities rise and fall quickly, and online conversations tend to begin loudly but fizzle out without significant progress. Online communities are generally connected by passions and interests instead of explicit benefits which are different from traditional organizations. In these contexts, the boundary between the organizer and the participant is blurred. Online communities have richness of human resources; however, participants are underutilized to build value for community development. In addition, organizers have to face the challenge of involving multiple actors and the need for systematic management. Communities evolve as members gather, and the continuous involvement of community members in building and creating new content is an important reference for external judgment of whether a community is "alive" or not. At the same time, online communities have openness, enabling value co-creation among multidisciplinary stakeholders from different backgrounds. Therefore, the critical challenge lies in understanding how to balance and integrate these resources to allow the community to grow and flourish in time.

Service design has evolved over the last decade from creating service offerings to understanding the needs of different stakeholders, focusing on the organizational transformation (Maffei et al., 2015; Sangiorgi & Junginger, 2009; Stickdorn et al., 2018) and exploring an ecosystem perspective (Ostrom et al., 2015; Vink et al., 2021). Exhisting service design communities, such as Service Design Network, focus on service design as an object of discussion, by sharing best practice; however there is also an opportunity in seeing service design as a tool for online community building and collaborating. Service design has the potential to address the complex ecosystem of online communities. It provides a holistic, collaborative, human-centred, and iterative approach (Stickdorn et al., 2018). As a "transdisciplinary design practice" (Penin, 2018), service design adds value to different stakeholders. It also provides tools for visualization and for stakeholders to engage in collaboration. Co-design as an activity can lead to the creation of service and strategy, and co-design prototypes act as a "physical manifestation" of service design (Meroni et al., 2018). As a result, multiple stakeholders can be involved in the creative process by implementing this approach. In addition, it is also consistent with the "collaborative" and the "human-centred" aspects of service design.

This paper explores how service design and co-design are involved in the online community. Why should we introduce service design into online communities? How can co-design help trigger online community dynamics? And how can co-design help online communities to increase actors' collaboration and growth? These analyses are based on the practical experience of the building of the CSDC. Established three

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years ago, this community is an unofficial organization composed of professional Chinese service designers. They have accomplished 42 projects. Most of these projects rely on co-design practices. CSDC is becoming an influential youth power gathering place counting more than 7500 followers on WeChat.

The research presented in this paper is mainly based on participatory action research since little exploration of service design applied to online communities has been found in the literature. Hence CSDC, the community established by one of the authors, has been the object of analysis and observation. Considering three years of practice within this community and through the analysis of activities of four categories and co-creation activities, the research has shown how service design and co-design can have a positive impact on online community development. This analysis is based on the life cycle model of online communities focusing on the maintenance of relationships in online communities in China, the accumulation and iteration of information in the community, and the aspects that help generate vitality in a community and support its development. Finally, we mention the idea of viewing co-design as a form of organizer-to-community service and make a summary of the existing practices.

Background knowledge

Distributed Innovation and Lifecycle of Online Communities

Online communities as "computer-mediated spaces" (Lee et al., 2003) are becoming increasingly popular due to the growing digital population and digital transition. In the early stage of development, the discussion about online communities focused on software and programming, such as the IBM AlphaWorks and Linux communities (Sawhney & Prandelli, 2000), and gradually involved psychology and sociology which discuss their motivation and collective action (Iriberri & Leroy, 2009). In addition, online communities serve as an important vehicle for distributed innovation (Sawhney & Prandelli, 2000). Many scholars in management and open innovation point out the potential of the online community with distributed innovation, like crowdsourcing, co-design, participatory design and collaborative platforms (Hossain, 2012; Lakhani, 2016; Lakhani & Panetta, 2007; Sawhney & Prandelli, 2000; Yoo et al., 2008). During the pandemic, online communities were frequently used as a supplement or an emergency solution to remote collaboration (Erdogdu, 2022) and are now becoming a recognized practice.

Online communities are not developed linearly, but iteratively, and "the technology and mechanisms that support and ensure the success of online communities should

evolve to match their growth and evolution"(Iriberri & Leroy, 2009, p. 11.15). One of the online community success factors is considered to be the active participation and contribution of members to enrich the community (Akar et al., 2019; Følstad, 2008; Iriberri & Leroy, 2009; Luo & Li, 2022). In contrast, little has been done to document online community development processes and provide guidelines to integrate success factors and design choices efficiently. In this paper, our main reference to Iriberri and Leroy (2009) mentions the online community development model with five steps.

1) Inception: because of some motivation and needs, people come together to form online communities.
2) Creation: the initial group of members interacts within the community and communicates outside the community to attract new members.
3) Growth: the common language is established, and the role of different members are starting to diverge.
4) Maturity: formal organization and rules are established to discuss more diverse and specific issues with the transition of old and new members and the change of identity.
5) Death: Poor participation, lack of producing new and quality content, lack of organization, and of clear recognition of membership.
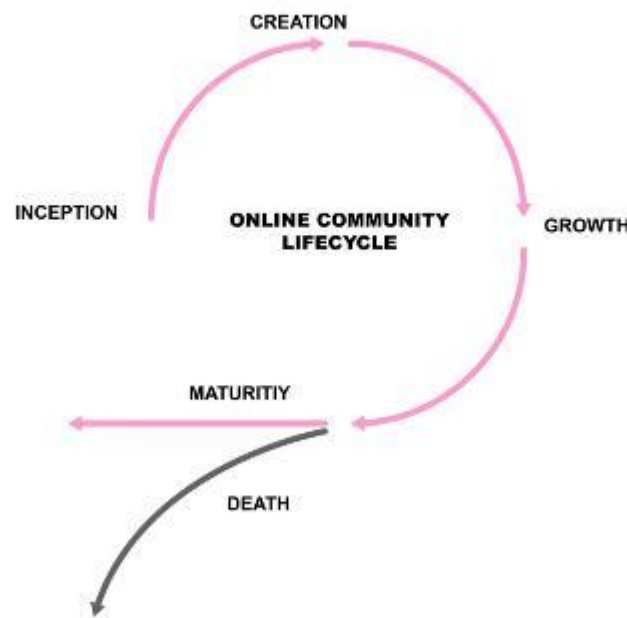

Fig. 1. Lifecycle model of online community (Iriberri & Leroy, 2009), recreated by author.

Service design and Co-design in the Online Community

Community innovation is regarded as a bottom-up innovation with characteristics of democratization (Tang et al., 2011) and it is considered to be a distributed process with different actors and innovations (Yoo et al., 2008). Within the community, different actors with complex relationships collaborate to co-creating value which generates an ecosystem (Rodríguez-López, 2021). The management of the online community needs to engage and coordinate with different actors and maintain this relationship network. These activities are strictly interconnected to some essential features of the service design discipline and practice. Service is defined as a co-creative practice in which "people collaborate in co-creating value in context by integrating resources through usage, to achieve common and individual goals" (Holmlid et al., 2015, p. 546). Moreover, service design can be useful to coordinate different stakeholders and define rules to achieve value co-creation (Stickdorn et al., 2018). Penin points out coproduction as an intrinsic aspect of the nature of service design thanks to participatory and co-creation attitudes and abilities (Penin, 2018). Hence, in this perspective, service design seems to have a set of fundamental characteristics to support the online community operation.

As mentioned by Ezio Manzini: "… where social media connects people (in digital space) …Today, surfing the web, we find thousands of websites that propose doing something together" (Manzini, 2015, p.81). Co-design can be seen as a method that brings together different people with differing ideas and motivations, from a variety of backgrounds and with different skills to take part in a series of conversations that seek to change the state of things (Daniela, 2017). It can facilitate the creation of the "third space" (Muller, 2002), which is an overlap between two spaces and their characteristics. In fact, the online community is the overlap space for knowledge sharing (Faraj et al., 2016). This community creates a place for knowledge to flow and highlights the co-creation of content and knowledge (Mozaffar & Panteli, 2022). Sawhney and Prandelli propose the 'communities of creation' as a mechanism for distributed innovation governance, they mention the importance of establishing rules in the community of innovation (Sawhney & Prandelli, 2000). Although much of the literature deals with co-creation and rulemaking of innovation communities, little effort has been made on understanding how this may work in building online communities. Online communities are often used in design projects as a means of last resort service delivery or as a "backdrop" for service delivery, but an exploration on how co-design and service design can support the development of online communities is lacking.

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The case study of the Chinese Service Design Community

Participatory Action Research as a methodology applied within three years of CSDC

Based on existing literature, there is no clear relationship between service design and how it is involved in building online communities. This research adopted participatory action research as its primary methodology (Avison et al., 1999; Cole et al., 2005; Ozanne & Saatcioglu, 2008) involving participants as part of the research processes, collaborating with them and being sensitive to their needs. It is viewed as a democratic method of analyzing complex systems in order to gain knowledge for social action.

To address the purposes of this study, the action research was conducted within the emerging CSDC in China. Service design is developing during these years in China. However, there is a lack of online communities that try to introduce service design and co-design directly into the community's operation and support distributed innovation. For this reason, CSDC was established on July 17th, 2019. The subsequent three-year iteration journey constitutes the core of the participatory action research conducted in this study. Additionally, it provides a reference based on the lifecycle of online communities in the service design area. The CSDC attracted more than 292 young service designers from more than 40 universities around the world (Table 1). In addition to the development of the community, the group of official members from academia and industry is mainly focused on IT and consulting companies. The purpose of this community is to involve young service designers and explore the possibility of localizing service design practices in China. CSDC is an online community focused on service design, it is mainly operated by six service designers in the Z generation who focus on co-design as a way to initiate and complete projects with community members and followers. The authors are deeply involved in community building as one of the initiators of CSDC, using the community as a research object.

Country & Region	Number of Universities
Europe	8
United Kingdom	6
United States	4

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Australia	2
Asia	24
Total	44

Table 1. CSDC members' incomplete university statistics (Zhang, 2022), redesign by author.
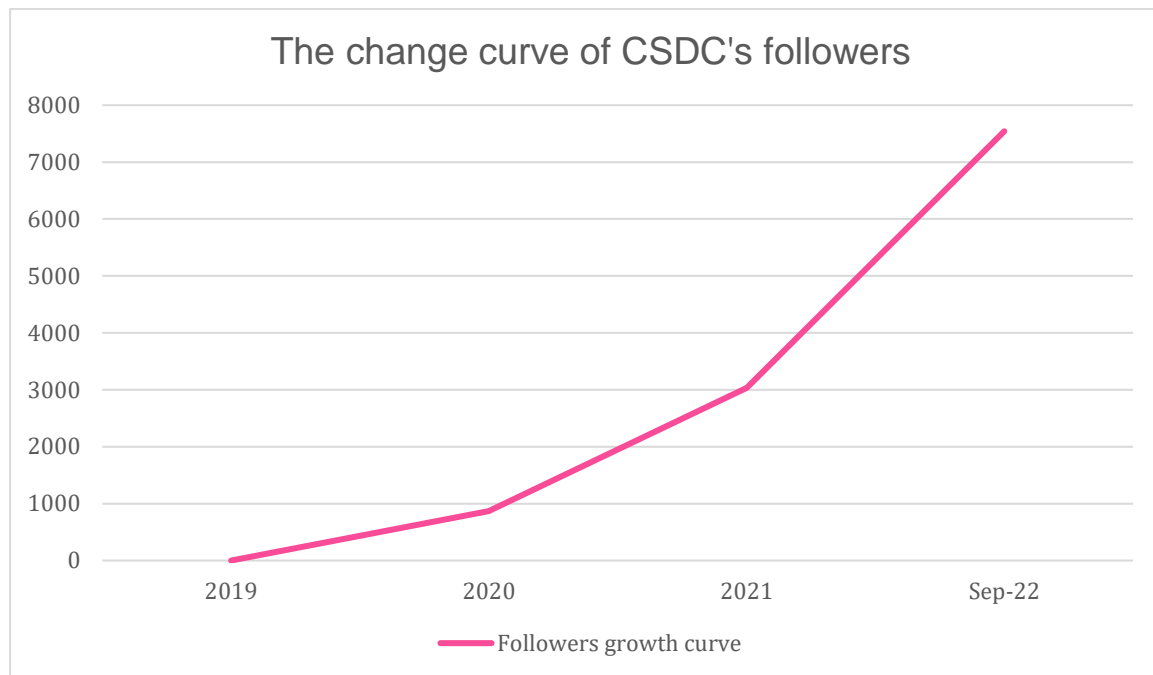

Table 2. The community followers' information, data from CSDC's core team.

Because there is a lack of practical cases for reference on how service design and co-design are used in online community building, CSDC could only establish preliminary expectations through the hands-on experience of actors. Modifications of the expectations and iterative action plans were made after every project was complete. Since its establishment, CSDC has organized and co-designed more than 42 activities with service designers and students and collaborated with multidisciplinary actors (Figure 2). They correspond to four different kinds of project types in the CSDC: 1) Thematic discussion in Chat, 2) Webinar, 3) Online workshops and events, and 4) Cooperation and collaboration projects (Zhang, 2022). In addition, we attempt to better understand how co-design and service design tools can contribute to online community development, especially at the 'Maturity' stage, and avoid the 'Death' end.
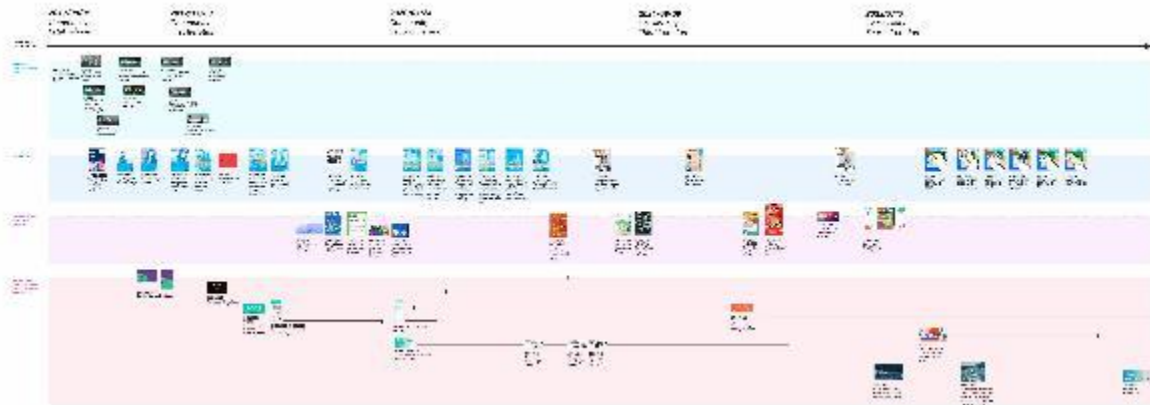
Fig.2 The summary of CSDC's projects and activities (Zhang, 2022), updated by the author.

Three CSDC co-design activities were developed from 2019 to 2022:

1) the Chinese Service Design Youth Festival 2021/2022
2) the "Island Lightkeeper" project
3) Online Roundtable "For Whom Community Building is Made".

The data collection and analysis included:

1) Documents: the planning briefings, project plans, internal meeting records, internal discussion records, and release publishing via the official account on WeChat.
2) Participatory observations: the data content related to observations and records from the author as participants or organizations.
3) Digital traces: the brainstorming and discussion track on the Miro board, the digital materials, e.g., poster, postcode, and meeting video recording.
4) In-depth interviews: semi-structured questionnaire form to interview the different actors in the community, including core team members, community members, followers and external cooperation participants.

The co-design activities within CSDC discussed according to the Community Lifecycle Framework

As a result of three years of participatory action research on the CSDC distributed innovation projects, the finding presents how co-design activities, embedded throughout the lifecycle of the online community, have supported its development. In addition, these findings revealed the importance and the need for co-creation activities and how 'co-design' and service design 'tools' worked in supporting:

1) relationship maintenance;
2) community accumulation and organization of information;

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3) support to self-organized co-design activities to keep the community vitality and to avoid the online community from 'Maturity' to 'Death'.

As already stated, Iriberri and Leroy's community lifecycle framework (2009) was used to summarize the community activity timeline of CSDC. The path to understanding how co-design supports community development in this framework is presented in conjunction with the content of CSDC's co-design activities. These projects can correspond to four steps in the lifecycle of online communities.

1) *Inception:* community establishment with two core members and over 50 students from five universities. A community was established in order to foster learning about service design among different schools and to create an environment in which exchange of knowledge on service design can be achieved. Co-design activities include 'Thematic Discussion in Chat' and 'Cooperates projects - Service Design Bluebook 2022'.
2) *Creation*: first and second iterations of the community, hosting webinars, for example, monthly interviews, and social media to continue to attract new members. The Service Design Bluebook provides an opportunity for participants to build a common language and provides topics for discussion.
3) *Growth:* community roles are gradually being differentiated as a result of the different levels of involvement. There are some bystanders and some active members who are willing to take on the role of curators, co-creators, workshop facilitators, or mentors in online workshops and events.
4) *Maturity:* during the third and fourth iterations of the community, the core team establishes certain rules relating to how new members could join, how members could initiate activities, and how the core team could assist them.

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Discussions on topics related to the motivation of community creation. Lightweight, text chat is conducted, mutual exchange of information is the main focus. Community members can directly invite new members in with a very low threshold.

An in-depth discussion as webinar is shared via online video and audio conferences, podcasts, and more. During a set timeframe, organizers need to prepare interview outlines in advance. The community candidates must fill out a questionnaire before joining as a member.

Community Establishment
INCEPTION

CSDC'S LIFECYCLE (2019-2022)

GROWTH

With the "community manual", a digital technology collaboration platform, and more detailed collaboration rules, community members are enabled to work together and initiate and self-organize activities, and the community can be seen as a service provider to members initiatinging more activities.

More roles have opened up as community members recognize the community. The community core team organizes events, in which community members can serve as mentors, facilitators, and event co-creators.

First Iteration — CREATION
Second Iteration
Third Iteration
Fourth Iteration
MATURITIY

2020
2019
2021
2022

Co-design and Collaborative Activities in CSDC

● Thematic discussion in Chat   ● Webinar   ● Online workshop and events   ● Cooperate projects and collaborated projects
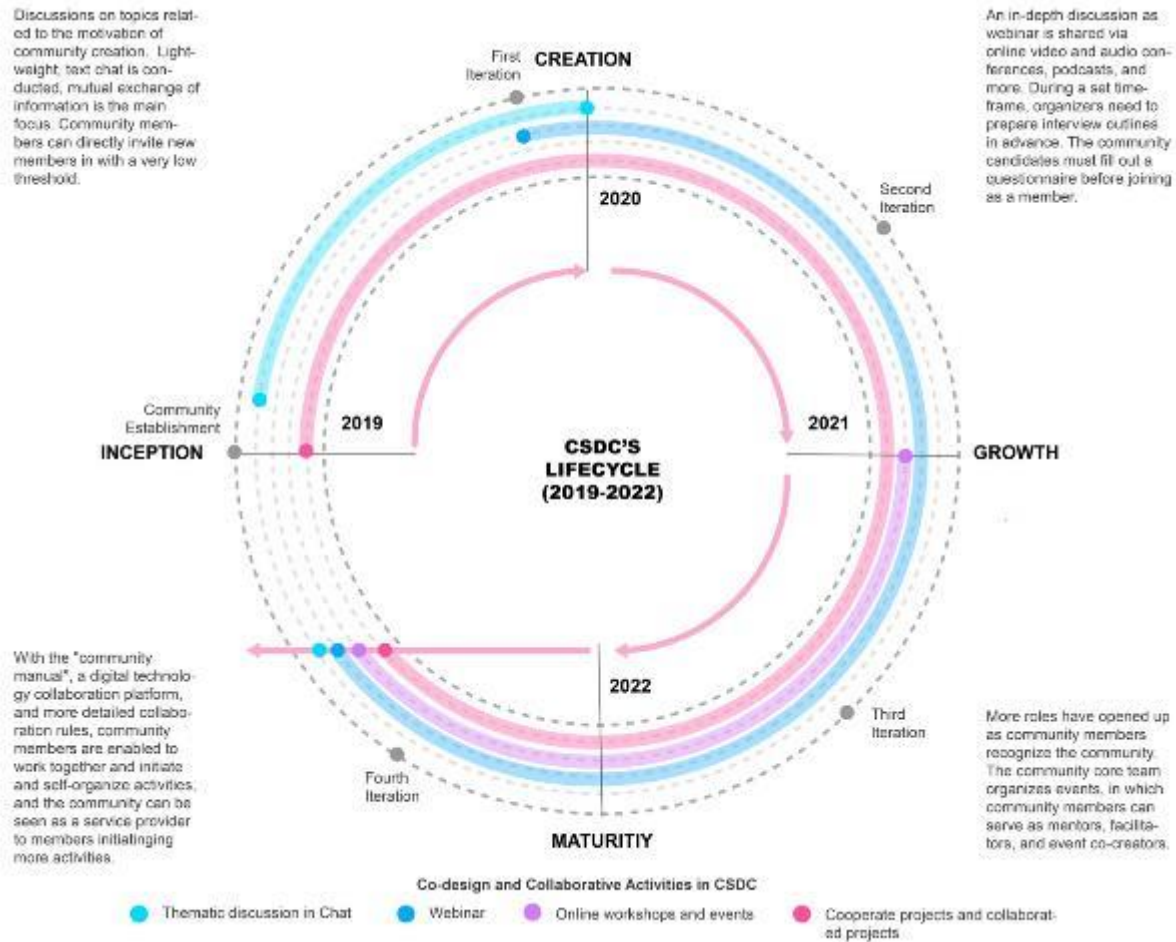
Fig. 3 The lifecycle model of CSDC

Relationships maintenance

A community is composed of people and is a complex network. Throughout the network, each actor represents a 'point', with information flow and relationships as a line connecting them. This constant flow keeps communities dynamic and vital. Keeping the material flowing between a network and its points, including the connections between each point, is critical to its success. A decline in trust is not only caused by the digital platform, but also by a dynamic behavioral change of each actor. Community members' information update is limited, so members may find it strange to meet again even if they used to communicate well. Thus, it is difficult to maintain strong relationships and trust among online community members.

To deal with these difficulties, this study points out how to use 'co-design' and service design 'tools' to help organizers to:

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1. Understand the network: identifying the relationship between different 'points' and understanding their flow is the first step in helping an online community establish organizational rules and clarify discussion directions. Service design emphasizes that organizations should look beyond one actor to a system or ecosystem perspective. Therefore, it provides a perspective on understanding this network and how to collaborate with other actors.

2. Coordinate different stakeholders: online community makes it easier for different pairs of people to connect, but the downside is significant. Participants initially communicated through the internet, then began cooperating. However, such a familiar time for community members is very short. Co-design can give the two participants a buffer zone of mutual familiarity with ice breaks and other interactive activities. These can help temporary teams gain confidence and encourage them to work with other stakeholders. In addition, it becomes a cornerstone for further cooperation.

3. Build a strong sense of engagement: there are various roles in the community. Community development correlates with the involvement of actors (Iriberri & Leroy, 2009). Co-design allows actors to participate in community development. Thus, co-design enables members to feel ownership and creates values that enrich the community. Different service design tools can facilitate this such as the stakeholder's map to help actors understand their position and their relationships with other actors and how to collaborate. Furthermore, it can also be used as a visual tool for community outreach.

"Chinese Service Design Youth Festival 2022 (CSDYF)" as an example of implementation.
CSDYF is a festival whose mission is to amplify the voice of young service designers. CSDC based the festival on bottom-up and co-creative action, which differentiate this initiative from more traditional conferences. CSDYF 2022 represents the second edition of this initiative, and participation is not limited to service designers. In order to reach a wider audience, the organizers chose themes that cross-relate to rural revitalization and service design. The organizational team structure in CSDYF2022 was improved in comparison to CSDYF2021, with the entire team divided into five function groups and mainly responsible for a variety of sections. The team involved in the project was composed of previous year's members as well as community core team members who agreed to participate. Other participants included visual designers, government staff and enthusiasts. During the process of planning, everyone was seen as the organizer of this festival. Thus, participants took ownership of the project increasing the level of willingness and enthusiasm. Through co-design workshops in the process, community members and followers outside of

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the main organizing team were included in the planning of CSDCYF 2022. A stakeholder map allowed multidisciplinary actors to understand their responsibilities and collaborate with other groups in a dynamic environment. Additionally, it also attracted media partners and other industry players to amplify the communication and dissemination of the project. Many participants expressed that the stakeholder map could help them better understand the efficiency of their position, their relationship with the project, and, most importantly, their possible contributions to it and to the community.

First co-design test and graphical meeting recording

Second co-design test and graphical meeting recording

Final Venue of CSDYF 2022
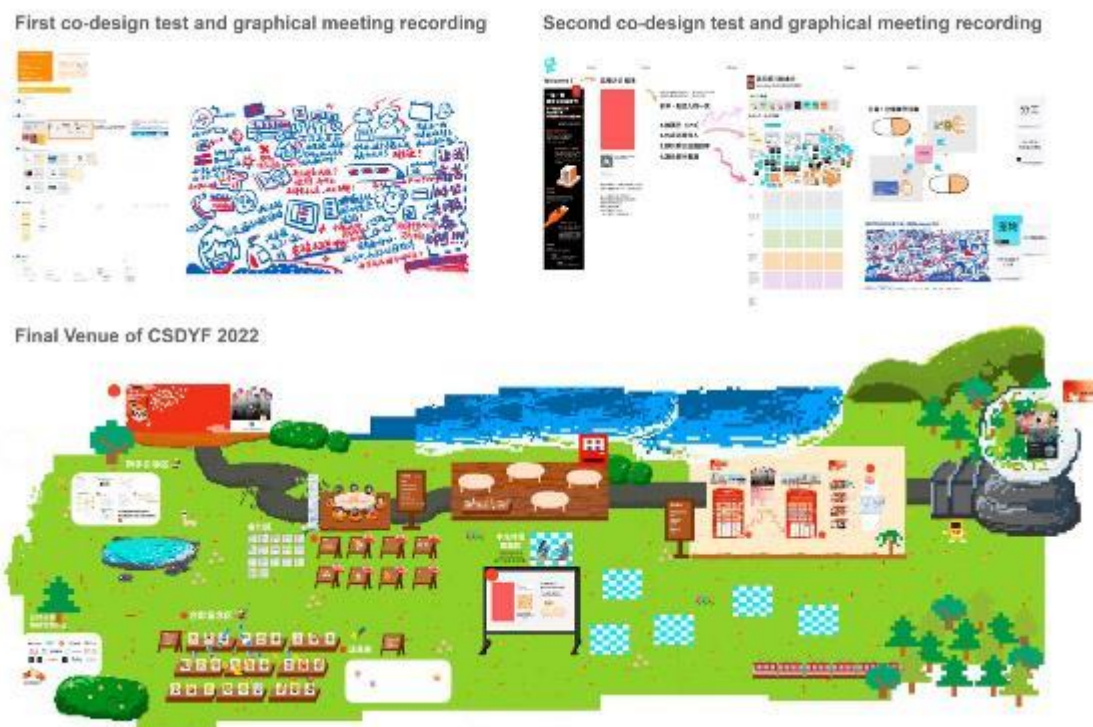
Fig.4 The co-design online whiteboards of CSDYF 2022 on Miro, materials from CSDC's core team.

Community Accumulation and Organization of Information to Drive Iteration

In online communities, communication through text, images, videos, files or links in group chats, and interactions, such as records of people's actions on the platform, generate a large amount of data. This data forms different portraits of community members and becomes a reference for community organizations to make their next actions. In fact, the four different types of community activities listed all rely on the continuous accumulation and iteration of information for their development. At the same time, the exchange and sharing of valuable information, on the one hand, increased the attention of community members to the community, and, moreover, it

became the asset of the community because of continuous accumulation, increasing the value of the community itself (Banto, 2021; Manzini, 2015). Therefore, how to collect and organize these scattered pieces of information is important for community organizers to fuel iteration of innovation projects and enhance the sense of the value of the community for the participants.

In response to this need, this study proposes three directions in which co-design can be used to promote community development by:

1) transforming data accumulation into co-design projects: divide the task of collecting data, clarifying its value to the community and its stakeholders, and visualizing it to build consensus among participants;
2) providing corresponding tools: provide participants with corresponding templates and rules for their tasks, coupled with appropriate guidance to facilitate the completion of the tasks, with the aim to increase their motivation to implement;
3) making the results public: gather content and translate it into materials in the database on the co-creation platform, which will be displayed on social media platforms and used by the community as a public asset.

In terms of the use of tools, highly regarded service design tools include system maps and service blueprints. Through the information flow, the data influence of various actors in the community can be visualized directly, while the service blueprint provides an organized picture of the entire project. In addition, according to our practice experience, a platform and templates for data accumulation were given, including:

1) a toolkit of templates: according to the project process templates are defined, from ice breaker tools to final critical evaluation tools. Participants self-edit templates according to different situations and stages of a project team using tags, images and short descriptions.
2) a co-design backstage: supported by *Notion*, a platform with several modules designed to assist with the display of various types of media data in an effective manner, information cards, bullet boards, and project dashboards are available backstage, and the link can be converted into a public website that allows information to flow between different community platforms. Through the use of a half-open link, participants can keep it updated as a result of their participation.

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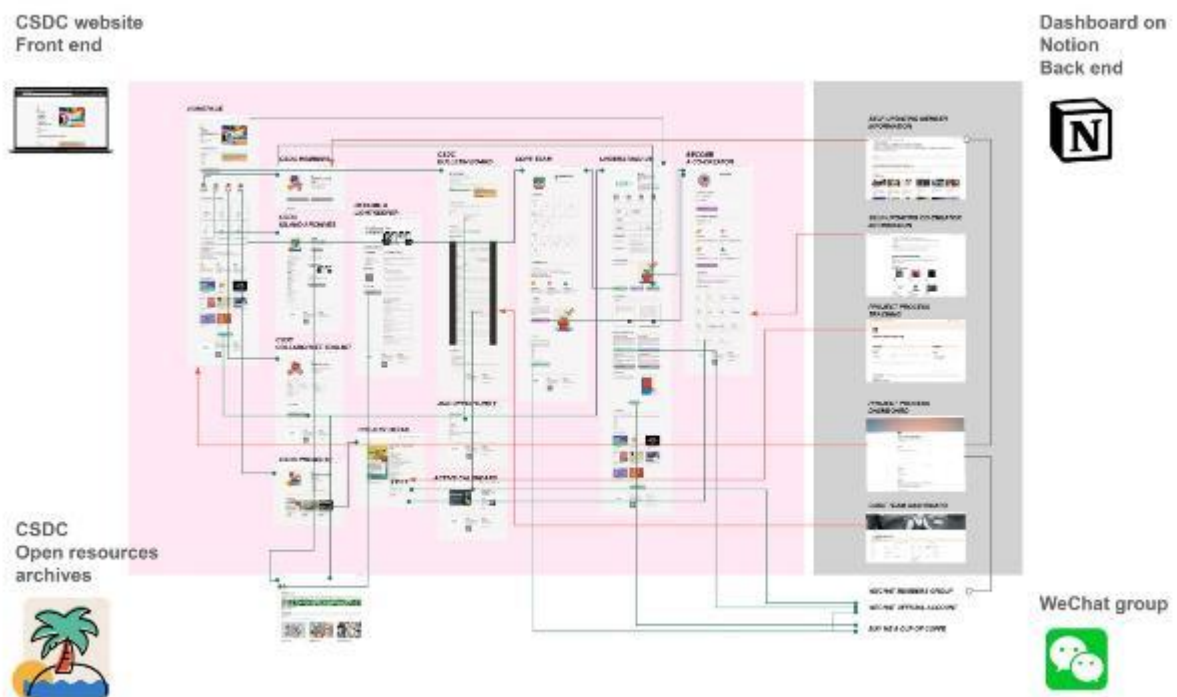Fig. 5 Aha Co-design toolkit (https://csdcommunity.super.site/open-collaborate-toolkits), the final outputs from thesis (Zhang, 2022), materials from CSDC's core team.

Fig. 6 The co-design backstage, the final outputs from thesis (Zhang, 2022), materials from CSDC's core team.

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Island Lightkeeper as an example of implementation

The goal of the "Island Lightkeeper" project was to encourage members to participate in building a CSDC's public online archive. In exchange for the participants' efforts in collecting cases, the organizer set up rules for self-regulatory action and actively monitored the cycle for a six-week period. The collaboration platform was used to create a dashboard prior to the project. This dashboard provides a summary of the project, its rules, and a list of participants, as well as the section of the online repository dedicated to the event. In a group of six to seven participants, each participant can record and accumulate data by punching in and overseeing the collection and deposition of information using an online panel that can be co-created. Participant tasks and progress are visible during the process. Furthermore, the archive has a basic template for each section that needs to be collected, allowing participants to quickly aggregate the collected information, lowering the threshold and improving efficiency. In addition, a public link is provided, and the results can be used together by the participants, as well as the community as a whole. Participant feedback posted on social media platforms encouraged new members of the community to participate and contribute to the database. After three sessions, the average event satisfaction rate reached 4.6 (total score of 5), with an overall upward trend in rating.

Keep the community vitality with self-organized co-design activities

The vitality of a community can be measured in many ways, by monitoring the level of activity and the generation of new content (Mustafa et al., 2022). This new content is the result of active participation by community members in the process of co-creation. Since online communities are relatively loosely connected, the participants are always in a dynamic state of change during the project, and the continuous motivation of participants to participate in the project is one of the ways to keep this dynamic relatively stable, a key to keeping the community alive (Iriberri & Leroy, 2009). Furthermore, stakeholders can provide different perspectives and ideas, which, on the one hand, allows many participants to contribute and on the other hand, can lead to confusion, making it more difficult for organizers to make community development decisions, reducing participants' willingness to participate, and influences their perception of the community.

Online co-design activities provide a means for community members to quickly gather ideas, collect feedback, and maintain an active state of engagement. With online co-design, more community members can contribute and facilitate rapid brainstorming. Participants can join and leave online co-design activities at any time, contributing directly to insights and discussions during a fragmented time period. The online co-design process uses a whiteboard or chat window to record information,

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unlike offline roundtables. Using virtual post-its, for example, one can visualize and move different information for quick clustering, while in the chat one can organize and retain information. In addition, co-design results can be presented intuitively. The whiteboard can quickly transform into proof of participation, while chat messages can be transcribed and written into an article, resulting in new collisions of ideas. In co-design activities, tools are very flexible, and some of them must be reorganized or re-designed depending on the actual contexts. It is most common to use cards with various functions, such as question cards: each card has a variety of questions that surround the ideas, and these are used to stimulate discussion and collect ideas. Cards can be used to separate the content which needs to be discussed, with text and pictures, etc., in order to stimulate deep discussion. As a result of the research, the two methods of questioning, HMW and What if, have been shown to be very suitable for co-design based on chat windows as the conversation environment.

"For Whom Community Building is Made" as an example of implementation
This activity aimed to connect CSDC's service designers with people involved in offline community development for conversations and experiment with the co-design rules and tools formulated by the CSDC's core team. For example, the four recruited event organizers and participants were asked to create personal cards in the community's database for information accumulation and co-creation icebreakers. Firstly, the team conducted desktop research including information about community and service design, stakeholders, and case studies related to this project. Before the event, the team used case cards and question cards that were very effective in icebreaking and facilitating quick discussions among participants from diverse backgrounds. Participants were invited to an online meeting with academics, community workers, residents and service designers. One team member facilitated the discussion, and another clustered post-its on Miro to prepare for further discussion. This whiteboard was exported as a commemorative document and the link was made public after the event. After the discussions were compiled, an article was published on the CSDC's social media platforms, which received over 1,000 reads and was retweeted several times. In a follow-up, this activity prompted members of the participating organizations to take the initiative to organize another offline discussion.

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Fig. 7 The co-design online whiteboards of the online round table "For Whom Community Building is Made", materials from CSDC's core team.

Conclusion

Service Design has the potential to support online community development and engagement in many fields. This research has experimented with this potential within the community of service designers in China and has demonstrated how participative approaches and design methods can support the creation of online innovation networks.

Online communities can break geographical limitations, incorporate more stakeholders, and facilitate communication and interaction. Although online communities, an important part of distributed innovation, are seen as a balance between closed and open organizations, they have always lacked attention until this pandemic.

Co-design contributes to CSDC's maintenance, knowledge accumulation, and generation of activities. Community organizers co-create activities with community members by setting rules and providing support, motivating community members to participate in activities and creating high-quality content continuously. In addition, co-

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creation can be considered as an actual form of service that organizers provide for community development.

The introduction of co-design into online communities' lifecycle not only facilitates better dialogue among different stakeholders but also provides an opportunity for different actors to join in building the community, making full use of the "democratic" environment of online communities, which is built in a distributed context and offers the possibility of linking beyond geography to include more marginalized areas. The rich community activities in CSDC and the continuously growing number of followers also confirm this.
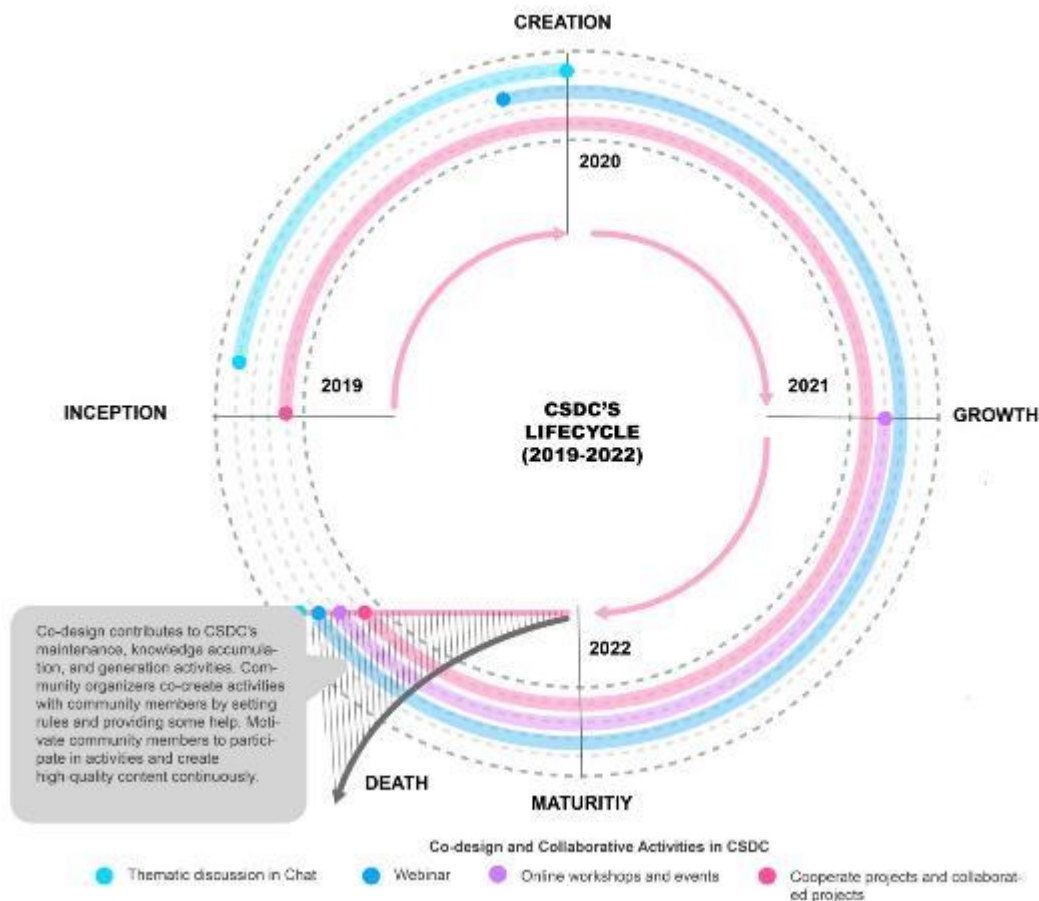
Fig. 8 How co-design helps the online community stay alive in the maturity stage

Therefore, the purpose of this study is to contribute to find a way to revitalize online communities and achieve their sustainable development through service design interventions and co-design approaches. In this research, co-design is proposed as

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an approach to keeping online communities alive, and the entire research process is accomplished through a summary and analysis of three-year participatory action research of service design communities. Firstly, at the level of community co-creation, the results of the study present the performance of the four co-creation activities of the service design community at different lifecycle stages of the online community. Furthermore, the study discusses the different tools used in co-creation and the important role that co-creation activities provide in the 'Maturity' stage to avoid entering the 'Death' stage, by maintaining relationships, by helping to accumulate and organize community information to drive iteration and by keeping the community alive through self-organized co-creation.

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