

How can we adapt Service Blueprint for future crises? Lessons learned from government services under COVID-19

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Abstract

COVID-19 crisis highlighted some wicked challenges in designing government services. While no standardized solution was found, government workers responded flexibly to uncertain situations. Service Blueprint (SB) is one of the useful design tools to understand, analyze, plan, and implement government services. However, it does not flexibly adapt to unsystematized information and unconventional services. Although SB needs adaptability for such uncertainty issues, there have been few studies on SB in governments under COVID-19. Therefore, this study explores how to adapt SB to government issues for future crises. A qualitative study of COVID-19 vaccination services in Hino Town, Japan found five flexible actions to deal with uncertainty. Based on them, we proposed three issues and the future direction of SB. This study extends the possibilities of service design tools that design disciplines can provide for governments and promote strategies for future crises.

Keywords: Design for Policy, Service Blueprint, Adaptability, COVID-19

Introduction

This paper explores how to adapt design tools to government services with uncertain and variable public issues under crises. Today, researchers and practitioners in various fields think of design approaches as important tools. Especially since the 2000s, the design practice has been expanding from the private to the public sector (Bason, 2016, p.3). The nature of design approaches such as user-centered design and prototyping are thought to be suited for dealing with public problems in the current social environments and policymaking contexts (Da Silva, 2021). On the other hand, public service requires a level of responsiveness and agility to capture insights quickly and frequently as well as to iterate and enhance services

accordingly, because of the constant flux of social and economic challenges (Junginger, 2017; Mintrom & Luetjens, 2016). These capabilities are a particularly important factor in crises.

The responses of governments in various regions to COVID-19 revealed rapid and flexible decision-making (Mazey & Richardson, 2020; Nagel, 2022; Capano & Toth, 2022). This indicates that governments faced and dealt with wicked issues that cannot be predicted in designing services under COVID-19. The experiences from COVID-19 and other past pandemics provide government service designers with valuable lessons to apply to future crises (Woo, 2020; Lee et al., 2020).

Various tools that visualize service elements have been introduced and used in government. Service Blueprint (SB) by Lynn Shostack in 1982 is a representative example. SB has been used as a holistic and comprehensive visualization tool to understand, analyze, plan, and implement services. However, it has been pointed out that SB only partially observes the entirety of a service (Korper et al., 2021) and challenges in representing unsystematized information (Roggeveen & Rosengren, 2022). The uncertain nature of services, such as the changing circumstance and diverse stakeholder involvement, emphasizes the challenges of SB, requiring adaptability.

Following the experiences under COVID-19, SB needs adaptability to the wicked problems (Rittel & Webber, 1973) that arise during crises in governments. However, few discussions have been held on the possibilities and limitations of SB to government service design under crises, despite other service fields search the new solutions of SB. Therefore, this study explores how to adapt SB to the issues with future crises, learned from the government service blueprinting process under COVID-19.

Using qualitative research, this study examines a COVID-19 mass vaccination service by Hino Town, a local government in Japan. By conducting a diary survey and unstructured interviews with stakeholders, we identify the challenges they faced and the decision-making process involved in designing and operating the service. We also categorize and organize the data to identify three crucial issues.

In the discussion part, considering three issues and the nature of SB, we discuss the following two points for the adaptable service blueprinting.

- How can we use SB to deal with issues under crises?
- What factors should be considered in future design tools for issues that existing SB cannot deal with?



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This study provides useful data for discussing adaptable and flexible service design tools that can contribute to the issues in government services. Demonstrating the relevance of design approaches to the public policy field encourages collaboration between these disciplines (Howlett, 2020).

Service blueprinting tools and government service under COVID-19

Service blueprinting tools

Various methodologies for designing services and tools supporting each step have been developed for more than forty years (Ryu et al., 2020). Among these tools, Service Blueprint is the first attempt to view service encounters from a customer's perspective and this format is still used in various situations (Shostack, 1982). In this study, we define "service blueprinting" as a series of design activities to understand, analyze, plan, and implement services. Furthermore, we define "Service Blueprint (SB)" as a format that is used popularly today with two axes and multiple lines to separate interactions into layers (Bitner et al., 2008).

Researchers have extended SB with various perspectives such as Product-SB (Geum & Park, 2011), Information-SB (Lim & Kim, 2014), and Offline-to-Online-SB (Ryu et al., 2020). We call these design tools, including SB itself, "service blueprinting tools". Service blueprinting tools based on SB will continue to be used because of their effectiveness in various situations in the public and private sectors. However, through these developments, some arguments regarding the challenges of SB can be found.

First, SB has a limited capacity to visualize service interactions that have become increasingly complex with changing technological trends and customer expectations (Lobo et al., 2019). Second, SB is not capable of visualizing the diverse service delivery channels and stakeholder touch points at the same time (Ryu et al., 2020). Thus, the increasing volume, variety, and complexity of the information constituting a service indicate a limitation in the ability of SB to communicate information. This has also diminished its function of facilitating communication between service designers and stakeholders (Barann et al., 2022).

In addition, some researchers mention the uncertainties that make up the service. First, unsystematized information about the experience, such as the background and context that brought about the service-related behavior rather than the results of it, cannot be put on the SB (Roggeveen & Rosengren, 2022). Furthermore, it has been pointed out that it is not appropriate for service providers to design user experience in a dichotomous way in the first place (Trischler & Westman Trischler, 2022). Thus, SB



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needs the ability to flexibly adapt to unsystematized information and unconventional services.

As social uncertainties impacting services will become more serious in the future, it is necessary to extend the capacity of services to flexibly adapt to uncertainty. Therefore, this study explores the adaptability of SB, focusing on government services under crises.

Wicked problems and the responses in governments under COVID-19

Wicked problems describe any policy problem today and pandemics represent the worst characteristics specifically (Auld et al., 2021). Pandemics uncover the difficulties of public problems such as the lack of information, inadequate previous experience, or scarce resources, as in that COVID-19 first wave burdened public sectors all over the world (Nagel, 2022).

Table 1 shows the challenges that arose during the process of designing policies and government services under COVID-19 and responses to those challenges. From these cases, the following challenges were found:

- Flexible service changes are always needed without seeing the whole picture (Capano & Toth, 2022; Lee et al., 2020).
- Faster decision-making than normal is required (Capano & Toth, 2022; Nagel, 2022).
- Building resilience is not possible without trust among stakeholders and cooperation from them (Lee et al., 2020; Yuncg et al. 2020; Yen, 2020).

In considering these factors, government service design under COVID-19 requires quick and flexible decision-making for unpredictable challenges with no end in sight. Furthermore, understanding and cooperation from stakeholders are essential to building resilience.

SB gives government service designers basic visualization and analysis capabilities for decision-making. However, unconventional situations and unsystematized information under COVID-19 have highlighted the challenges of governments. Therefore, SB needs to be more adaptable and flexible to such situations. This study identifies issues in the government service blueprinting from case studies, especially qualitative research of the Hino Town vaccination services under COVID-19, and explores how we can adapt SB tools for future crises.



| Government | Findings |
|--------------------------------------|---|
| Emilia–Romagna, Italy | With a clear goal of ensuring that seriously ill patients were treated, the strategy shifted from not investigating new patients to seeking out new patients as much as possible (Capano & Toth, 2022). |
| Vo' Euganeo, Italy | Immediately after the first infectious disease victim, an infection test of the entire population was conducted, followed by an unexpected second test at the suggestion of the university, which resulted in the collection of important data (Capano & Toth, 2022). |
| Saaremaa and Tallinn, Estonia | In the emergency cases, experienced decision-makers, not the whole organization contributed greatly to the success of the project (Nagel, 2022). Local government crisis units as new and relatively small groups are more compliant in their decisions and conflict-avoiding (Nagel, 2022). |
| South Korea | The government changed its assumptions many times in response to changes in the external environment and publicized the changes (Lee et al., 2020). Various methods and formats were used to convey information quickly and efficiently (Lee et al., 2020). The government collected data with the cooperation of the private sector and adopted citizen ideas/applications (Lee et al., 2020). |
| Macao | The government prioritized the establishment of transparent relations with citizens and used maximum media channels and networks (Yuncg et al., 2020). |

Table 1. Findings from reactions of governments to COVID-19

Qualitative Research of public service under COVID-19: The case of Hino Town

Vaccination service: A Case study of Hino Town

According to the official document (2022), Hino Town has a population of 21,036 inhabitants as of September 1, 2022 (p.28), and the government have 224 employees as of April 1, 2022 (p.18). In Hino Town, there are various service types



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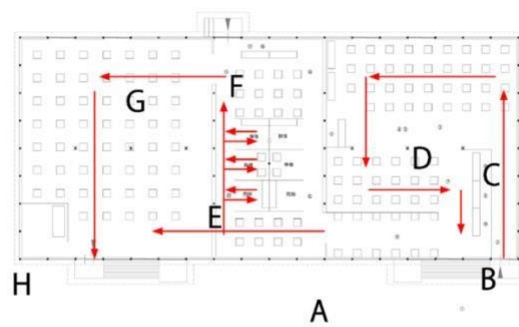
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for the first and second vaccination, including government mass vaccination services, the Japan Self-Defense Forces vaccination service, and individual vaccination at hospitals. The mass vaccination service was mainly operated by the “COVID-19 Mass Vaccination Promotion Team” (VP team) established in the health and welfare department. The first and second mass vaccinations were conducted from May 17, 2021, to November 13, 2021. The total number of vaccinations during this term was 22,520 doses. The vaccines used for the first and second doses in Hino Town were Pfizer vaccines distributed by the Japanese government.

To promote the mass vaccinations, a special venue was built as a temporary building and used from June. From the start of the mass vaccination in May until June, the service was operated at Hino Town Hall Watamuki Niji and Hino Town Forestry Center, a facility a two-minute walk from the Hino Town office. We visited the special sites in August and November 2021 to observe the vaccination service operations. Because this information is important for the decision-making of the service stakeholders, we indicate the layout and photos of the service vaccination venue as of August in Figure 1.





A. Parking area of the temporary vaccination venue



B. Entrance (Multilingual guidance)



C. Hallway



D. Reception of preliminary medical checksheet



E. Medical interview and vaccination booth



F. Reception of vaccination certificate



G. waiting space for 15 minutes observation



H. Exit (outside the venue)

→ : Service Flow Line
A - H : Photo Points
Photo: The Authors
Date: August 6th, 2020
Plan: Hino Town

Figure 1. The layout of the special mass vaccination venue and photos

Research approach

To clarify the design process of the vaccination service in Hino Town, we interviewed ten stakeholders (Table 2). Kenjiro Higashi, Policy Adviser (PA), documented events related to the daily work of the vaccination service, and we conducted unstructured interviews based on the document to review the events in chronological order.

We conducted unstructured interviews with PA via an online meeting tool for approximately 45 minutes each time, and interviews with the other nine interviewees in person for 60 minutes each. All interviews were recorded, transcribed, and analyzed using qualitative coding. The interview and transcription were conducted in Japanese and translated by the author. The notations for each interviewee are shown in Table 2. Information on job titles is current as of February 2022.



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| Interviewee (Abbreviation) | Involvement in the mass vaccination service | Interview Dates (Number) |
|--|---|--|
| Policy Adviser Kenjiro Higashi (PA) | - Reservation system meeting adviser - Hino Town vaccine meter designer - Management meeting adviser | June 29, 2021 to February 1, 2022 (22) |
| Vice Town Mayor (VM) | - Management meeting chairperson - Reservation system meeting chairperson - Contact person for acceptance regarding the demonstration of My-Number-Card reservation | August 6, 2021 November 5, 2021 (2) |
| Welfare Manager (WM) | - Chief manager of the mass vaccination promotion team - Reservation system meeting member (2) - Management meeting member | August 6, 2021 November 5, 2021 |
| Health and Welfare Director (HD) | - Operation manager of mass vaccination service - Reservation system meeting member - Management meeting member | |
| Concurrent staff A (CA) | - Team member assisting in the completion of a preliminary medical form | November 5, 2021 (1) |
| Concurrent staff B (CB) | - Team member checking a preliminary medical form | |
| Concurrent staff C (CC) | - Team member issuing vaccination certificates ※Management meeting member | |
| Doctor (DS) | - Professional member in charge of medical interviews | December 3, 2021 (1) |
| Nurse (NS) | - Professional member in charge of vaccinations | |
| A volunteer member of the Japanese Red Cross Society (VR) | - Free position supporting the operation (She participated from May 2021) | December 3, 2021 (1) |

Table 2. Information of the interviewees



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Five categories of actions in service blueprinting

We categorized the specific elements found in the interview data with a qualitative coding method. In this section, we describe five categories of significant actions adapted to uncertain situations. The remarks are introduced in the format “Contents of remark (Abbreviation of the interviewee, The date of interview)”. The date of the interview is indicated as a six-digit number. For example, 29 June 2021 is shown as 20210629.

(1) Iterative service design and allowance for mistakes

Before the start of mass vaccination, local briefings and service organization simulations were held on April 14 and 28. Toward the simulation, the VP team visited the neighboring municipalities and prepared as “the medical association in HigashiOmi had said OK for a simple tent for vaccination booths, so we adopted it (HD, 20210806).” However, the facilities and layout were pointed out by a medical professional who said, “I have not seen other places, but it is a bit far from what I imagined (DS, 20211203),” and soon after that, they updated the manual to the next version.

From the simulation to the completion of the dedicated venue for mass vaccination, temporary venues were used on weekdays and weekends, respectively, for about two months, and the equipment was moved by the management staff. The policy advisor made the following remarks about these emergency design activities. “We are struggling to design the venue layout through trial and error in a constrained environment that is not optimal for vaccination (PA, 20210629).”

Such a cycle of trial and error also occurred many times after the service operation began. Each time the venue changed, the layout had to be changed, manuals had to be reworked, and factors such as equipment, layout, and the number of people who could be vaccinated per hour had to be adjusted in detail. For example, “it would be easier if it were the elderly from start to finish, but each target group responded completely differently (WM, 20210806).” Regarding the feeling of WM, who was the central decision maker in the design and simulation, PA described that he had “vague anxiety about the future (PA, 20220111).”

(2) Information exchange among government, council, and citizens

A prominent example of information design in Hino Town is the Hino Town Vaccine Meter (Figure 3). It was built mainly by PA with a data visualization platform, Tableau Public, and published on the official town website on May 28, 2022. It disclosed and posted the number of vaccinations and vaccination rates in Hino Town, as well as the rate nationwide and in Shiga Prefecture, using the Vaccination Record System, which is open data, as the main source of information. The data was updated daily



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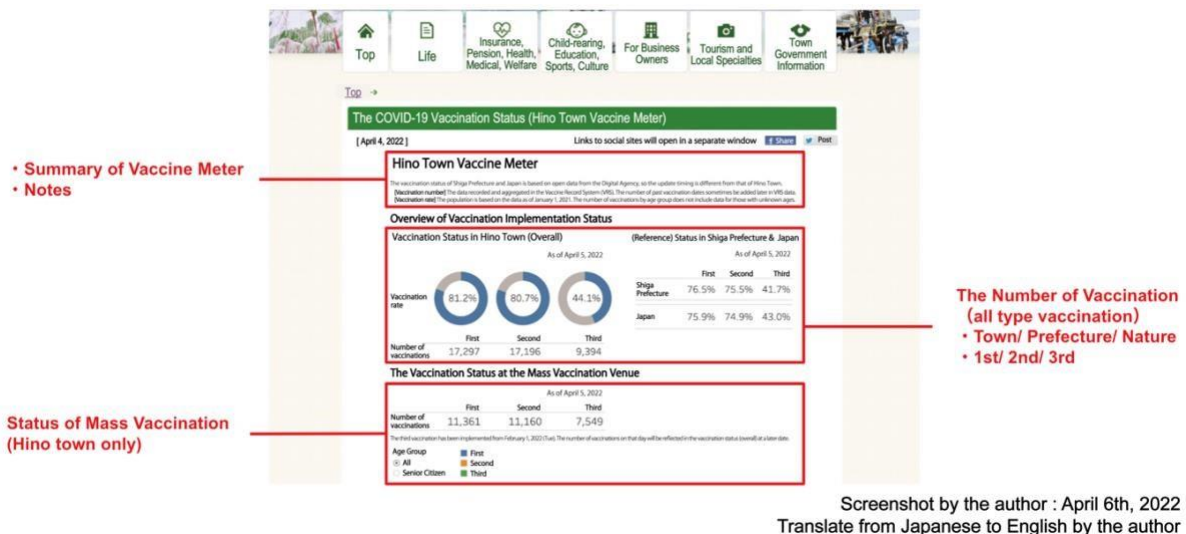
while mass vaccinations were in operation, although the update frequency differed depending on the phase. Hino Town staff utilized this for evidence-based decisionmaking, as in “whenever we talk about vaccination, we bring out the vaccine meter and talk based on it (VM, 20210806).”

PA mentioned the considerations in designing and operating this vaccine meter. As for the design, he said, “while I think the national government will do it ... let's make a solid dashboard as an internal in Hino Town by ourselves (PA, 20210706).”

Therefore, he created decision-making material in Hino Town that is not dependent on the national government operations. He said also, “we do not know the exact numbers ... so we will properly present the numbers that should be comparable for service operation at as realistic a level as possible (PA, 20210713).”

As for information disclosure to the townspeople, “although townspeople reserve the vaccination by themselves ultimately, the actions of those around them can also be an important factor in their decision-making (PA, 20210629),” and “it is also used in

Congress as ‘according to the vaccine meter’, like a big announcement (PA, 20210921).” It is also used as one tool of various channels to share information with stakeholders outside the organization.



Screenshot by the author : April 6th, 2022
 Translate from Japanese to English by the author

Figure 2. Hino Town Vaccine Meter (Version 5)

(3) Decision-making focused on speed and flexibility

A Cab subsidy ticket service highlighted the decision-making required to combine flexibility and speed in an emergency. On May 10, the service began making telephone reservations for vaccinations for townspeople over 90 years old. Shortly thereafter, the government call center received comments that cab fares were too



expensive for some residents living far from the venue. On the 11th, in response to that, the government launched a subsidy service for cab use to the vaccination venue. The system was the decision-making of “somewhat of a foregone conclusion with the budgetary allowance (PA, 20210629).” In addition, “the time was shortened because it was based on the gasoline cab coupon, which was operated as part of the policy for the disabled (WM, 20210806).” In Hino Town, “this kind of emergency situation is handled by diverting the budget, and later the council votes to restore the appropriation (VM, 20210806),” and there is “a relationship of trust based on close communication between the council and the town office (VM, 20210806)” behind that.

On the front line of service operation, there was a delegation of decision-making responsibility to the team of each section, based on a shared understanding of the manual's content at a minimum. As said, “I don't feel the manual is so necessary, and I think it is better for individual staff to respond flexibly (CA, 20211105).” Another remark was that “there is no point if they are exhausted by having created a perfect manual (PA, 20210713).” The operation of the service on-site was “very different from what the manual indicates (HD, 20210805).” While casual chats were used to quickly share information among managers since September, no such tools were found on the front lines.

(4) Building a sustainable organization system

The vaccination services were operated with a structure that mobilized all government workers as concurrent staff other than the VP team. A concurrent staff member in the field expressed their sense of mission to support public resilience, saying “from the beginning, we have considered this service equivalent to a disaster response (CC, 20211105).” The operation team was further strengthened through collaboration with medical staff, volunteers, and others outside the government.

Within this structure, the VP team adopted the system that “teams from different divisions are in charge of each phase of the vaccination (PA, 20220629).” The team had the stance that “we expected that the VP team alone could not control all from the beginning, so we asked each concurrent team to take responsibility for decision making (WM, 20210805).” As a result, “a sense of autonomy like we have to do somehow (WM, 20210805)” was developed in each team.

This system was effective to make minor changes to the service. However, the burden on the staff was increasing. A striking example of this is that managers guided the townspeople in the parking lot who came by car. The statement “there are only managers left (WM, 20210805),” clarifies that they provided hospitality services even in a situation with few resources to spare. The concurrent staff members were also barely keeping up with their work and did not express their opinions on the



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overall service, as in “even if I felt that they were being too polite, I cannot express opinions to them (CC, 20211105).”

(5) Organizational learning to increase team and individual acceptance and awareness

Hino Town tried to increase the acceptance of each staff member and the organization as a whole through two experiences: cooperation with a private company's demonstration of “a world like a fantasy”, and long-term learning that extends the individual's experience during a pandemic to the organization.

First, the phrase “a world like a fantasy” was an expression in conversations between PA and other staff when Hino Town accepted an unprecedented initiative, a demonstration experiment for vaccination reservations with electronic IDs called My Number Card, proposed by a system vendor company. PA said, “Hino Town cooperated with the idea that we wish we could do such a thing in a world like a fantasy (PA, 20210720).”

Second, we found long-term organizational learning through experiences under the pandemic. The most prominent example is the training for general staff on the subject of the vaccine meter with PA as an instructor in November 2021. They aimed to promote using the experiences not only in vaccination but also in a wide range of other work according to the intents of PA, “providing the vaccine meter mechanism so that each staff member can subdivide their work and think about how to link data (PA, 20211109).”

Analysis and Classification with multiple cases

Collecting various government cases under COVID-19

In this section, to construct a theoretical logic from five action categories found in Hino Town, we refer to multiple international cases. We refer not only to vaccination cases but also other government services during the pandemic crisis of COVID-19 and compare them with the case of Hino Town.

(1) Iterative service design and allowance for mistakes

The VP team in Hino Town designed the service with input from other municipalities and experts but was unable to produce a generic solution to the fluid situation. Therefore, they had to make trial and error by repeatedly adapting to the situation allowing mistakes. In Emilia Romagna, decision-makers of the government were required to drastically change the mindset from defensive to proactive by changing the policy tracking COVID-19-infected people (Capano & Toth, 2022). The Korean



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government revised their policy assumptions repeatedly and successfully took appropriate changes to the situation of COVID-19 pandemic (Lee et al., 2020). These cases indicate that the fluid situation under COVID-19 required flexible and drastic changes repeatedly. Furthermore, these changes required a mindset allowing mistakes and failure, which made decision-makers fear.

(2) Information exchange among the government, council, and citizens

The Hino Town vaccine meter was designed to provide citizens with information about internal staff decision-making. As a result, this dashboard was used as an indicator for the service strategy, discussion themes between residents and the government staff, and a reference for questions in the council.

The Macau government focused on transparency in decision-making, adopting "dialogic communication" (Yuncg et al., 2020). The Korean government promoted rapid and efficient communication through a variety of platforms. In addition, inclusive governance of Korean governance succeeded in gaining cooperation from citizens and private sectors (Lee et al., 2020). These cases demonstrate that open information promotes understanding among the stakeholders and stimulates discussion. Additionally, we found the way of presenting information should either change depending on its use or be consistently neutral.

(3) Decision-making focused on speed and flexibility

In Hino Town, the touchpoints between townspeople and the government enabled the VP team to receive feedback from residents and to respond flexibly based on it. In addition, the speed of decision-making was increased using casual chat tools among managers. In Vo' Euganeo, Italy, the government accepted a suggestion by a university professor about twice infection testing. As a result, this created an important dataset (Capano & Toth, 2022). In Taiwan it was also suggested that government-citizen interaction has a significant impact on the decision-making factors for policy change (Yen, 2020). These cases show flexible and rapid decisionmaking requires good relationships among stakeholders to allow casual communication. In addition, information-sharing touchpoints seem to play the facilitation role.

(4) Building a sustainable organization system

In Hino Town, the VP team built the operating system that left the vaccination process to be managed by each concurrent team. In Saaremaa and Tallinn, Estonia, it was found that crisis management in small units is suited for decision-making that is conformable and conflict-avoidant, but stress is a significant factor influencing decision-making (Nagel, 2022). While the decision-making system of the small team



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was effective for dealing partially with services that cannot be centrally managed, it also made it difficult for the frontline workers to afford and share opinions.

(5) Organizational learning to increase team and individual acceptance and awareness

The Hino Town staff training program used the vaccine meter as a subject to learn about data utilization and decision-making approaches. This can be seen as an activity that extends the experience of a particular individual or team to the entire organization. In addition, the experience of a situation called fantasy increases organizational acceptability.

In Singapore, Taiwan, and South Korea, crisis management teams have been established that were effective in using their experience and knowledge from previous pandemics (Yen, 2020; Woo, 2020; Lee et al., 2020). Also, in Saaremaa and Tallinn, Estonia, unrealistic and little training for crisis situations caused the team to rely mainly on decision-making of experienced personnel (Nagel, 2022). We found that organizational learning about pandemics is necessary and effective in reducing the burden on individuals.

Three issues that emerge with service blueprinting under crisis

By comparing the five action categories, we conclude that they are not completely separate issues, but are rather multi-layered and related to each other. Therefore, we describe three important issues associated with multiple categories. Categories are denoted by (1) - (5) above.

"Fear of failure" of the service designers under social anxiety

In all five categories, vague anxiety to social uncertainty was a factor in the services. All stakeholders, including citizens as well as front-line workers, service designers, and experts, were confused and anxious about the difficult challenges for the first time. In particular, service designers had to design with fear that misjudgments due to lack of control over too many uncertainties would be criticized by the parties involved. Based on the assumption that this is related to (1), (2), (3), and (4), it is an important issue how government officials "prepare for/avoid/respond well" to the fear of failure.

Lack of shared understanding among the stakeholders

Various strategies related to (2) were found not only in Hino Town but also in governments around the world. The various approaches have the common intention to (3) through information exchanges based on understanding. At this point, it is important how to utilize data. If data is not shared, the accuracy of the service



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decreases, creating a non-profit for all layers of people, therefore (1) will not be achieved. A system accessible and easily understood by all stakeholders is needed.

Dependence on individuals based on the lack of organizational experience

While (5) was effective in dealing with individual problems and (1) was effective as an emergency response to a problem, it has the limitation of increasing stress on staff and relying on individual experience. As in the case of learning from past pandemics in COVID-19, on the other hand, (5), based on (2), builds organizational capacity and awareness over the long term. The ideal scenario is to combine these to enable crisis response through rapid organizational learning that exceeds the limits of traditional decision-making processes.

Discussion: Future Design Directions

How to use SB to adapt to future crises

Through designing government services under COVID-19, the actions of finding and optimizing the pain points were found, therefore SB is needed as a tool to visualize them objectively. However, the following flexible use of SB is required to adapt to the three issues.

To deal with designers' fears, preparing multiple SBs for various situations during normal times is necessary. In an emergency, they can use one of them most surely, and if it still fails, they can utilize another SB. This process saves design time and reduces mental stress. To deal with the lack of shared understanding, it is necessary to recognize the importance of constantly changing and updating elements of the SB. The information cycle among stakeholders should be kept active by using dashboards and communication tools as touchpoints. Based on them, the questions and suggestions should be reflected quickly in SB. To deal with the lack of organizational experience, it is necessary to utilize the experience of individuals and other organizations for organizational learning. Using SB in observing various services can uncover valuable topics necessary for further improvements of the organization.

How to adapt SB for future crises

In addition to the practical use of SB, we propose the idea of adaptable SB "Service Blueprint for collaborative simulation". This idea is based on the following questions:

- How can we make service blueprint iteratively not to feel fear of fail?
- How might we engage stakeholders to share understanding?



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- How might we learn more effectively to enhance the collective experience?

Simulating services in a specific crisis and sharing the lessons learned in such simulations in an immersive 3D space as a virtual world will allow us to expand our imagination about future crises and flexibly respond to emergencies. On the other hand, elements such as the development and use of open data, ease of use, ease of creation, speed of creation, rules for use and copyrights, and degree of reality are also required. Therefore, it is necessary to create design requirements and verify them.

Conclusion

In this study, we collected qualitative data on the service blueprinting from the Hino Town COVID-19 vaccination service to explore how to support adaptable service blueprinting processes toward wicked public issues under future crises. To deal with the challenges under the COVID-19 situation in Hino Town as well as in other municipalities, stakeholders inside and outside the government took flexible and rapid actions. We categorized and systematized these actions into five categories, and discovered three issues.

To consider tools that can be adapted to these three issues, we evaluate SB, a tool used in a whole phase of service design. While SB can be used with certain conditions, it is difficult to use in phases with many uncertainties. Furthermore, the communication facilitation function of SB is problematic in co-creation work with a wide range of stakeholders. Therefore, we proposed design directions for the government stakeholders to imagine and simulate their idea for the future. This would build flexible and healthy governance that would help alleviate social unrest and would allow us to respond, adapt, and learn to uncertain situations in cooperation with stakeholders.

There are two limitations to this research. First, the case study does not fully consider the differences in regional context or organization scales. Second, it does not address all the tools directly or indirectly involved other than SB. It is necessary to further examine the issues and approaches of specific tools under certain conditions.

Acknowledgments

This paper is based on the Adaptive Service Blueprint, a joint project in Kyoto Institute of Technology/ KYOTO Design Lab and Parsons School of Design in 2021.



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We would like to thank Dr. Lara Penin, Dr. Eduardo Staszowski, and all the students who participated in the course, Public & Collaborative Services at Parsons School of Design.

We would like to thank all staff members in Hino Town, the medical staff, and the JRC staff for their cooperation in the interviews and for exchanging opinions. We especially thank Mr. Kenjiro Higashi for the long-term cooperation in various scenes of the research.

We also thank the expert members who participated in the qualitative coding process, including Mr. Sunagawa, Ms. Tajima, Mr. Kawachi, Ms. Hantani and Mr. Habata, and Mr. Nakayama.

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Linköping University Electronic Press

Opinion Research, 8(3), 265–296.

<https://doi.org/10.15206/AJPOR.2020.8.3.265>



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