The role of contextual conditions in systems development: The impact of design context on participation in Norwegian Welfare Services

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Abstract. Human-Computer Interaction and adjacent fields agree that citizen participation is vital in designing digital public services. However, a gap remains between recommendations and how participation is facilitated in practice in the public sector. As challenges to participation remain even in the face of established design standards and best practices, contextual conditions warrant more investigation. Based on this discrepancy, we must clarify how the design context impacts participatory activities. This paper presents an exploratory case study of how designers and caseworkers seek to involve vulnerable persons in a public service project's digital solution development. We identified three interconnected contextual conditions that impact participation in the design process: 1) organizational complexity, 2) recruitment and representation, and 3) power imbalances. This paper contributes to a more nuanced understanding of the role of context as a determinant of participatory outcomes in digital public system design.

Keywords: design context, participation, digital public services

1 Introduction

Researchers and practitioners have long recognized the importance of end-user participation in public system development, citing motives ranging from instrumental, i.e., improving the quality and efficiency of the service to normative, i.e., democratic principles and empowerment of end-users [1]. This is particularly prevalent in design projects aimed at vulnerable and marginalized citizens [2], such as people with cognitive or physical disabilities [3,4,5], patients [6], and children [4,7], leading to unresolved tensions in many design projects [1]. Issues in the socio-technical context can prevent vulnerable citizens from meaningfully influencing design outcomes [4,8]. Despite the best intentions of IT-experts and public sector officials, design context is detrimental in shaping participatory efforts [7,9]. Svanæs and Gulliksen defined the context of design as a project's boundary conditions that "impact user-centered design activities, and hence the success of the end result of the project" [9, p. 353]. Contextual factors include internal factors (organisational relations, agendas, developmental methodology, and tools) and external factors (stakeholder relationships, handover issues, and conflicting requirements). Based on examples where user-centered design

efforts were constrained by contextual factors, they recommend identifying factors in the context of design that pose a risk to the quality of participation and the end-product[9]. Dittrich et al. [10] saw design practices as something that needed investigating "in the wild". Using examples from public service administration, they found that practices were shaped by preconceived notions of participation embedded in the context. Research highlights participation challenges, but often ignores contextual challenges that affect design participation. Despite the importance, contextual factors' effects on participation are still poorly described [11]. Thus, participation in design must be empirically investigated in a given context. Therefore, we ask the question: *how contextual conditions impact participation of end-users in a public digital service development project?*

We answer this question by presenting a Norwegian citizen services digital solution for interaction with Child Welfare Services (CWS). An exploratory case study of Norwegian CWS design projects for caseworkers and citizens was conducted. This new solution was envisioned to allow children, parents, and other caretakers to communicate with municipal CWS via digital chat and access case documentation. We found that the socio-technical context of systems was a barrier to the participation of citizens in design, based on interviews with CWS and IT experts and observations of project management meetings. We demonstrate how organizational complexity, recruitment practices, and embedded power imbalances complicate end-user participation. This paper contributes to participation theory by highlighting how context affects citizen-user participation in municipal public service development.

2 Related Literature

2.1 Designing with vulnerable citizens

In recent years, research on citizen-users' participation in design processes has indicated how to elicit vulnerable and marginalized voices. However, a literature review on underprivileged users in design projects found guidance for designing with "groups facing more barriers to participation" [2, p. 1] lacking. When common understandings were reached, differences were addressed, and participants felt valued, many of the reviewed studies succeeded [6,8]. Due to use context challenges, practice-led projects struggle to implement and replicate these studies' successes [11,12]. Positive participatory activities require a shared understanding to foster mutual learning, trust, and openness between participants and designers, which is a major challenge [2,3,8]. Not doing so exacerbates misunderstandings arising from social and professional contexts [2,13]. Few studies on vulnerable users in design projects included them in the entire process, and fewer in building activities, like prototyping, and validifying/testing [2]. Considering a high dropout rate, designers had to rely on other practices than direct participation for parts of the projects [5,6,14]. These can include relying on personas, documentation, and user requirements [7,14], or other people, such as caregivers friends and partners [3, 4, 7], or stand-ins [6]. Sustaining

participation of vulnerable user requires organizational resources and time spent on building trust and adjusting to the participants' capacity [5, 15].

Andersen et al. identified difficulties including vulnerable children in a CWS design context, “the stances of participants are translated and overtaken by policy reports, evaluations and prototypes before they are manifested in action” [7, p. 254]. They found from empirical research on the introduction of communication technology in CWS that children would always participate with others, unlike fully independent adults. Children only partially participated in the project from the start leading to external actors and those in the children’s network representing their interest. In summarizing eight case studies including vulnerable populations, Mulvale et al.[5] identified challenges of participant engagement, power imbalances, health concerns, funding, and economic and social conditions. Power dynamics were a challenge in all cases due to previous negative experiences that made participants afraid to voice negative views. Participant inclusion was often negotiated before the project due to power dynamics.

In sum, literature highlights significant challenges, particularly when facilitating the participation of vulnerable citizens in the design context.

2.2 Participation in design contexts

Many research fields, including user-centered design and codesign [1,7,9,15], participatory design [2,3,10,14], Computer Supported Cooperative Work [13], and Information Systems [11,12], promote end-user participation in design. Most practice-led projects state instrumental reasons for participation, such as improving system quality while theoretical contributions often cite normative reasons, such as empowerment and equalizing power imbalances [16].

In this paper, we draw on Bratteteig and Wagner’s [13] view of participation and define participation as *having an influence on the decision-making process*. Regarding the design context, they state that ‘the participatory context of a project may be bounded by structural elements that limit the possibilities for joint decision-making’ [13, p. 33]. Gartner and Wagner [16] recommended mapping actors and agendas in political and organizational design participatory efforts. They see context as interconnected social arenas where actors at different organizational levels negotiate design.

The International Organization for Standardization [17], adhered to by designers and developers worldwide, issued a standard describing the principles of the Human-Centered approach and emphasizes understanding the user's experiences, needs, and context of use. This version also includes that usability relates to the wide range of use contexts for all users. As addressed by Svanæs and Gulliksen [9] the previous ISO standard was predicated on the absence of conflict between users’ interests and the organization meaning that this was not foreseen as a concern for designers. Though providing requirements for participation, the ISO standard still centers usability when promoting participation in the development process [17]. Research has identified barriers to participation in the design context such as a lack of motivation or resources, changes of the project over time due to internal conflicts, and the complexity of managing multidisciplinary teams [18].

In specialized contexts, the facilitation of participation changes character as the complexity of the design context adds to the difficulty of facilitating meaningful participation. Mosleh and Larsen [19] underscored participation as something that materializes between actors in a context. Participation can therefore not be understood separate from its context. Morrison and Dearden [8] linked the issues of the public participating to being situated into existing 'language games' - i.e., the rules of how and when one can speak - that take place in specialized care contexts. Anderson et al. state that "participation becomes first and foremost a relational and heterogeneous network achievement running through specific designs processes and projects" due to context complexity [7, p. 253]. In practice, the design context can help or hinder user participation, as these theoretical contributions note. Therefore, it's crucial to identify contextual conditions that facilitate participation.

3 Case background

This paper is based on research on a project on Digital Child Welfare Services (CWS Digital). This project provided a unique case study on how Norwegian CWS involved children and families when developing a new user interface. This 'Citizen Services' interface enables children and families to communicate digitally with municipal caseworkers. CWS assists children, adolescents, and families in difficult living situations and in cases of child abuse and neglect. This is a complex task that creates requirements for information systems and work practices that account for the legal requirements that CWS must adhere to. Current communication is slow and requires sending physical letters which is considered the most secure. In the assessment process, families often lack information about the justification for life-altering decisions made by CWS. Citizens receive little information about the general practices of CWS, and getting specific information or participating in one's own case is difficult and time-consuming. By implementing new digital solutions, the Norwegian government hopes to increase the transparency and explicit decision-making reasoning in CWS.

CWS Digital is a partnership between several municipalities, the Municipal Interest Organization (MIO), and the state's Directorate for Child, Youth, and Family Affairs. Motivated by a lack of information and autonomy for children and families in contact with CWS, the project grew from the development of a case management system to include Citizen Services as a subproject, which is the focus of this paper.

The project goal was to develop an easy-to-use digital system led by Municipal A and MIO to expand the channels for citizen-CWS communication. The system must be secure, user-friendly, and allow asynchronous chat communication both for adults and children. The term service describes the relationship between the system being created and the work practices consisting of many interactions between CWS caseworkers and families. The novelty of this project has been stressed in project documents and by informants due to the collaboration between municipalities and MIO, and none of the parties have made similar solutions before. Implementing Citizen Services and a new

case management system, in addition to a reform of the Child Welfare Law, will mark a substantial shift in municipal CWS's work practices in Norway.

We initially became interested in the case because the project management team wanted to involve caseworkers and families in design and development. The Citizen Services sub-project engages with end-user participation in two ways. Firstly, the representation of citizens is seen as an important aspect of the development process of the service. Second, the project aims to increase citizen participation through the solution, by disseminating information and facilitating continuous communication digitally in addition to physical meetings. The goal of the service is to expedite citizen participation as content producers in their own case documents while facilitating communication and the sharing of information.

4 Methods

Data was collected from the fall of 2020 to the beginning of 2023. As most work with citizens was done previous to 2018, we relied on the perspective of those leading the workshops to describe the process and were unable to talk directly to citizen representatives due to pandemic restrictions in 2020-2022 and project delays.

The data presented in this paper comes from a case study (Yin, 1981; Flyvbjerg 2006) of the process of facilitating participation of end-users in the development of systems for CWS. Data collected from August 2020 to February 2023 from meeting observations, semi-structured interviews, and observations of user testing (Flyvbjerg 2006;). Our research strategy is based on an interpretive approach (Walsham, 2006) following the development process led by the municipality. This approach has involved conducting interviews with managers from all subprojects and meetings with the project management team in a large Norwegian municipality (municipality A) leading work on citizen services. This approach as beneficial in attempting to faithfully present an example of public digitalization initiatives for welfare services without normative interventions by us as researchers. However, discussions with informants were inquisitive in nature and did include reflections on participation of end users and development practices. In interviews, we asked questions that related to participation of end-users in addition to questions that aided in understanding the different aspects and concerns in the project, especially in how future practices and communication would be supported during and after implementation of the new systems.

Table 1. Data Collection.

Data type	Informants	Number (1 hour each)
Interviews	CWS workers from 3 different municipalities	6
	Designers and IT experts	4
Observations	Status meetings with project manager and/or project management team	15
	User testing with citizen-users	2

Fieldnotes were written during observations of meeting and user testing. During interviews with willing informants voice recordings were done, transcribed, and analyzed using the qualitative analysis program Nvivo. The analysis was done in stages inspired by Tjora's (2018) stepwise deductive induction. The first step of coding inductively captured the original intent of the informant without interpretation led to over 150 unique codes. After this first stage was completed, the utterances were coded based on aspects of participation, specifically focusing on the contextual conditions that impact participation of citizen users in the project, leading to the following overarching codes: 1) organizational complexity, 2) recruitment and representation, and 3) power imbalances. All quotes have been translated from Norwegian and are presented using pseudonyms to ensure the anonymity of informants.

5 Findings

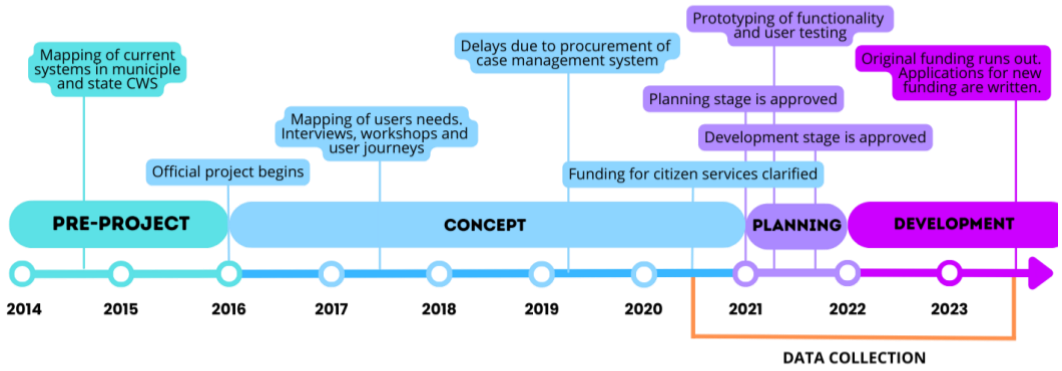

Figure 2. Citizen Service timeline

5.1 Organizational complexities

CWS Digital started with municipal and state initiatives. In 2015, Municipality A mapped CWS caseworkers' needs and found that a new case management system was needed. Similarly, the Directorate of Children, Youth, and Family Affairs found that current CWS systems did not adequately support caseworkers professionally in their work practices, raising concerns about the quality of decision-making across municipalities. In 2016, the project expanded in two ways. First, in that MIO, the directorate, and seven municipalities collaborated on the project. Second, by

developing a digital solution for citizens to communicate CWS. Since 2016, the project management team has consisted of members with caseworker experience from CWS (CWS experts), and IT experts.

"It started with a mapping of needs during fall 2015 [as a] local project for developing a new case management system. (…) The actual project began at the end of 2016 with seven municipalities. (…) One of the subprojects consists of developing a [case management] system with the [Directorate for Child, Youth and Family Affairs] that focuses on quality and is connected to the other subproject that is Citizen Services for the municipality. In Citizen Services we are concerned with participation which includes [promoting] understanding and disseminating information, and communication as a supplement to physical meetings". (Interview, caseworker, project management, June 2020).

The project's size, timeline, and collaboration between different organizations made coordination, funding structures, and expectations more complex, leading to project congestion. Work on Citizen Services got postponed while waiting for other parts of the project to be done. Delays at the state level led to delays in developing the case management system, which led to delays in the design and development of Citizen Services. Organizational-level funding for each phase and other major project changes had to be decided upon by the steering group.

"The steering group has consisted of representatives from the participating organizations, (…). The project management team, which has been responsible for producing deliverables in the project, has been led by me as the project manager (…), with a service designer, two professional resources [CWS experts from two different municipalities], and one IT resource. The project group, which has been responsible for participating in workshops and in the market dialogue [for procurement of a case management system], has consisted of participants from all participating organizations. The project has been financed by all participating municipalities, [the municipal interest organization], and the [Directorate for Child, Youth and Family Affairs]." (Project manager, status meeting, September 2020)

This organizational division in decision-making was seen as necessary by the project management team but presented bottlenecks that impact communication and ultimately the timeline and resource allocation. An interviewed CWS expert from another municipality that participated in a reference group expressed not being updated on what was going on in the project.

"What we have struggled with in [our municipality] is the communication from the steering group down to the project. We have just now established a group internally in [the municipality] which I think is great, to have a group that covers and has authority in areas such as finance, archives, IT, and on [CWS standards]. Finally, [project management] has managed to get a project organization. This time he said that there is a budget, and there are funds, but there are no funds linked specifically to the project." (Interview, social worker, municipality C, September 2021)

In addition to communication problems between municipalities, issues in communication between CWS experts and IT experts from MIO arose. At one status meeting, they discussed 'branding' as MIO had hired a new IT experts to work on this. After a while, one social worker asked what the term meant in this context. She had

heard it before but was unsure what branding, and therefore this IT expert, would bring to the project. The project management team had established roles and common ground through continuous dialogue and cooperation throughout the entirety of the project. Adding new experts required time and resources to build a common understanding.

In status meetings during late 2022 and early 2023, this continued to be a problem when previously established wishes for system functionality were challenged in discussions with new IT experts. For example, in a status meeting in September of 2022, one team member described that an IT expert from MIO had suggested reusing existing functionality and municipal systems for citizens to communicate with CWS. A CWS expert in the project management team worried they did not understand how sensitive the citizen's situation would be and that incoming communication should not be displayed alongside other municipality information. This difference in understanding also related to the communication and information functionality envisioned: “We are having to work a bit with the tech-people to make them understand that the communication model [i.e. the way in which CWS is trained to communicate with citizens] is central to the development of the service. It is key to understand your own case.” (Project status meeting, CWS expert, Municipal A, September 2022).

Another concern that came up was the need to differentiate between types of documents in CWS, like meeting summaries and legal decisions, which have different functions and recipients. Sensitive documents mandate guarding access. Designing for these distinctions required a deep understanding of the rules and practices in CWS.

Delays finally led to the Citizen Service project running out of municipal funding before functionality was developed and the project management submitted new funding applications in spring 2023 to be able to finish the project.

5.2. Recruitment and representations

The project management team conducted several workshops early on in the concept and planning stages. The workshop participants were recruited from interest organizations through the Directorate for Child, Youth and Family Affairs: “The invitation went out to the different organizations. I can’t remember exactly how many where there (…) but I know that the national association for CWS children was there and the association for parents was there (…) at the same time.” (Interview, CWS expert, Municipality B, July 2020.

Having a diverse group of participants was seen as a benefit: “Well, I think that we encompass it quite well when we included the interest organizations in contact with [the Directorate for Child, Youth and Family Affairs] because they encompass many. And then it is a bit up to them who they send from their organizaitons so we think is was very ok to do it that way. Then you have both biological parents who have had lost custody, children in foster homes, queer youth, youth mental health and disability organizations.” (Interview, CWS expert, Municipality A, August 2021).

The project management team described workshops as mutual learning experiences as CWS took on the role as facilitators for citizen participation. “We have had many teenagers in [workshops]. It is a bit unfamiliar to me to talk about the subject (i.e., CWS) in that way with teenagers. (…) It went very well. And we have taken a lot with

us, I think. So, we have absolutely taken the input we received very seriously, especially on what goes on in the Citizen Service project." (Interview, CWS expert, Municipality B, June 2020).

Additionally, they were able to explain the reasoning behind some of the limitations in functionalities to the citizen representatives. "Initially they wanted to be able to contact CWS 24 hours a day. I think that most [of the participants] have an expectation that if you send a [chat] message, then you will get a response very quickly. So, I was almost thinking that, wow, should we have applied for funding to get more people to follow up this chat [service]? (…) So we had to explain this." (Interview, CWS expert, Municipality A, August 2021).

During the workshops, needs expressed by participants were noted by a designer from the project management team: "I like to exemplify users' needs with [direct] quotes. During the workshop [with citizen representatives] we noted good quotes from what was being said. These 'one liners' illustrate a specific need or a target user group depending on which [project] phase we are in. We use an activity like user story mapping where we group quotes that are about the topic and these needs become the functionality in the project." (Meeting observation, designer, municipality A, August 2021).

Early design activities included creating tangible representations of end-users, such as personas. These personas were presented as anonymized personifications of the different target groups. 6 personas representing citizens were developed based on workshops with representatives from interest organizations. These personas were seen as crucial by the project management team in the design process in meeting with other stakeholders, such as external designers. In an interview, the same designer stated: "Analysing the target group brings empathy into the mapping of needs. The activities we used in workshops show how decisions affect people. The personas that we used have different degrees of IT knowledge, knowledge of the child welfare service, trust in the child welfare service, and the like. [...] Using personas lifts the weaker user groups forward that otherwise are difficult to involve. We've done customer journey workshops using personas and user journeys with caseworkers. The purpose with user journeys is to map the users' needs and experiences of the service from the first to the last point of contact." (Interview, designer, municipality A, February 2021).

Quotes from the workshops formed the foundation of users' needs and user journeys. User journeys were given names relevant to CWS like the 'trust journey', the 'participation journey', and the 'availability journey', all representing different aspects of the connection between caseworkers and families over time. Thereafter, they were used to find potential points of conflict when citizens interact with the service, prompting the project management team to work on finding solutions for these potential conflicts. Using personas and user journey descriptions was an active choice by the project management team to build empathy and being able to see the position of the citizens in meeting with external caseworkers representatives and developers from MIO.

Workshop participants included citizens that had been in contact with CWS either as children or parents. Therefore, the project management team acknowledged that participating in the project would place participants in a vulnerable position. After the

concept phase, personas and user journeys played a bigger role in representing users' needs in meeting with other stakeholders, as citizen-users were not directly included in such meetings. Design representations were important in interacting with external stakeholders, validating service design approaches as having merit in public innovation.

Further on in the later stages of the project, recruiting citizen participants seemed to become more difficult. Apart from two observations of user testing of prototypes in the summer of 2022 – notably the participants expressed only positives about the initiative and prototype – inclusion of citizens became overshadowed by other concerns like collaboration with external IT experts in observed status meetings. During meetings from the fall of 2022, most of the discussions shifted from participation of citizens to the challenges they faced in working with MIO. This progression suggested the existence of power imbalances embedded in the context.

5.3 Power imbalances

Power differences among stakeholders involved in the project became apparent in several ways**.** Issues emerged right from the beginning when we negotiated access to the project. It became clear that as outside researchers, we could not research the context as first envisioned, as there was no guardian that could sign off on us collecting data from participants who are underage and in foster care. The inability to obtain informed consent from children in CWS was another reason for including interest groups, as it provided a formal way to include vulnerable citizens. This partly explains the reliance on personas and customer journeys in the development phase. During the aforementioned workshops, children and parents expressed a feeling of there being a wall between them and CWS thus bringing the difficulties of including such a vulnerable user group in the design of services to light.

The vulnerable situations citizens in contact with CWS find themselves was highlighted by the project management team throughout. In an interview with the project manager, the need for discrete contact both in development and in how the service will function was emphasized: "For those who have a case with CWS, the most important thing is that no one else knows that they have a case, and secondly that the case is handled in a good way." (Interview, Project manager, Municipality A).

Throughout the project, CWS experts would advocate for citizens needs even when citizen representatives or other representations such as personas were not directly included. They would often voice the needs of citizens in interviews and observed meetings. This was problematized by a consultant with experience from IT projects during an interview: "Yes, there has been very well-informed participants [included] from CWS throughout the process, but they have taken over for the user and that is something that can be problematized all the way up to the steering level". (Interview, IT expert, September 2021)

In discussing the participation of citizens in the workshop, a member and designer reflected on the ethical implications of user participation. In being asked about participation in workshops, he responded: "The ethical guidelines and implications are important here. There are many different emotions that can arise during workshops for the user of the service. We want to acknowledge that and illustrate their needs while

not putting them in an exposing situation. (Meeting observation, service designer, municipality A, August 2021).

The issues concerning recruitment seemed exacerbated by the project management team having to defer to the Directorate for Child, Youth and Family Affairs, as the responsibility for recruiting participants for testing lay there, and this became an additional step in the development work. In a meeting late in 2022, after spending most of the meeting discussing the functionality agreed upon with MIO and what they can deliver, a CWS expert asked if there were any more plans for user testing of prototypes and was told by a designer that there will be no more testing of prototypes, meaning that testing would be suspended till a solution was developed. Therefore, developers from MIO were never in direct contact with citizen representatives. In the design context, embedded power imbalances between citizens, the project management team, and MIO as the organization in charge of development came to light through discussions and expressed concerns as well as practices like trying to shield vulnerable citizen-users from the rest of the design context.

6 Discussion

As society becomes more digital, public services have begun to follow suit, implementing new ways of delivering services to and communicating with citizens. However, this presents new challenges in terms of how to develop services and systems that cater to the most vulnerable citizens. In researching a case of digitalization in Norwegian CWS including a system to aid communication between citizens and CWS, we asked *how do contextual conditions impact participation of end-users in a public digital service development project?*

Throughout meetings and interviews with the project management team, they emphazised the importance of adequate and broad participation of citizen-users in defining their needs and functionality of the Citizen Services interface. However, contextual conditions related to the organizational complexity, recruitment and representation, and the embedded power dynamics shaped the participation of citizen-users. In the case of designing Citizen Services, we saw how the project management used design techniques to represent citizens in the construction of personas and user journeys that informed the creation of mockups and prototypes. Since CWS experts maintained key roles in within the project, they are the ones who often relayed the needs of citizens as well as their peers in meetings with other organizations, similar to findings of vulnerable citizens participating in other design projects [5, 7,13]. Much of this has to do with the way the responsibilities for recruitment and development was organized and distributed among several public organizations as well as the perceived vulnerability of citizen-users that led to the project management team shielding them through the use of personas and other representations.

In the project, participation had been an explicit goal, as a part of both the final service and the design of it, from the beginning. However, this required considerable work to been done by the project management team to create a common understanding and language for all stakeholders. Previous research showed that a lack of common

understanding and language was an obstacle for participation in design as this leads to lack of trust and proliferations of misunderstandings [2, 3, 8]. In the project CWS experts were employed in full time positions in the project together with IT experts. Both groups identified this as a key success factor to develop digital services that aligned with the needs and practices of CWS as this allowed for more time to develop a common language and mutual learning. However, when new IT experts from outside of the project management team were introduced into the project they struggled to understand both CWS work practices and the needs of citizen-users. This shows that even with intentions of direct and effective participation, the context can place serious limitations on how participation is enacted in practice.

This aligns well with Bratteteig and Wagner's [13] understanding for what factors effect participation in design work and the importance of understanding the contextual before design can take place highlighted by Svanæs and Gulliksen [9]. The context can limit the possibility for collective decision-making and determine whether the result become participatory [13]. However, many projects do not account for this when planning what design work needs to be done [2, 9]. The time and resources that it takes to build trust with vulnerable citizen-users was understood by the project management team but not supported by other stakeholders who stood for expertise or resources.

Presenting the different perspectives on the service requires interpreting what different user groups can contribute of expertise based on what is of use to the end user representative and what is of use to the project.

In addition to the workshop participants, customer journeys and personas were used in a way to illustrate the user without putting their life story on display in development, similar to other projects [2, 7, 8, 15]. This was thought to be an adequate solution during negotiations with the developing organization and would be followed up by user testing of the finished solution. However, these practices could become problematic when citizens were included in a lesser degree in the later stages of the development especially considering that sometimes CWS experts and citizens would have conflicting interests in the functionality, like how long the response time on a chat solution could be.

As discussed in the findings, the feedback and input that came up in the participatory activities were not always possible to implement in the final solution. Through the workshops with different stakeholder groups, priorities and needs came up that did not align or became challenging because of technical aspects or lack of resources. To what degree participation in development and design activities influenced the decision-making of the finished product would therefore vary. If citizen representatives are not included throughout the process, they are likely not privy to the technical and recourse aspects that limit what functionalities are possible to develop. Therefore, their conclusion might be that their contribution is not valued by developers. Though HCI researchers see a great value in use of personas when designing with vulnerable populations [c.f. 15] an overreliance on such proxy representatives can be seen as problematic as vulnerable citizens could end up being further marginalized in the process. Such representations might not be able to convincingly portray the inherent power imbalance embedded in the context [5, 17], and exacerbating misunderstandings [2, 5].

Based on the findings of this case study and the lack of resources, we see the need for clearer guidelines for municipalities and other public institutions on how to include end users. Such official guidelines can be used by those developing public services in order to argue for participation outside of domain specific laws available for when developing services for certain user groups. Additionally, the scale of the project and inclusion of IT experts in development that were not present during workshops with citizen representatives presented a challenge in that common understandings of the importance of some functionality had to be reiterate, leading to time and resources being spent and ultimately the fate of the project to be uncertain.

In accordance with previous research, the CWS Digital encountered dfficulties in the process of facilitating the participation of vulnerable citizen-users due in a large part to the contextual limitations that the project management team met as the project progressed through stages of conceptualizing future digital solutions, organization, receiving funding, prototyping, and developing. Despite having intentions of broad participation, contextual contingencies shaped what participation was possible to facilitate in practice.

6 CONCLUSION AND LIMITATIONS

In this paper, we have addressed the way in which context of design greatly impacts participation of vulnerable citizen-users even when participation is an agreed upon goal among those in charge of the project. Finding that contextual conditions predicate how participation is employed in practice, we isolated three specific conditions based on a case of how designers and CWS experts facilitated participation: the organizational complexity, recruitment and representation, and power imbalances.

This study builds upon other research in an ongoing project; therefore, the focus is limited to citizen representatives. Other publications will take into account the social worker perspective and the development of a case management system. However, though we voiced a desire to speak directly to citizen-user representatives, this proved to be challenging partly due to the challenges presented in this paper, the vulnerability of representatives, and the organizational structure. Additionally, the length of the project made it difficult to do data collection on the early phases as these were exploratory in nature and the project was not well-known or publicized at that point.

References

1. Liang, C.A., Munson, S.A., Kientz, J.A.: Embracing Four Tensions in Human-Computer Interaction Research with Marginalized People. ACM Trans. Comput.-Hum. Interact. 28, 2:14, 47 p. (April 2021)
2. Galleguillos, M.L.G., Coşkun, A. How Do I matter? A Review of the Participatory Design Practice with Less Privileged Participants. Proceedings of the 16th Participatory Design Conference 2020 - Vol 1, 11 p, Manizales, Colombia. ACM, New York, NY, USA, (2020)
3. Spiel, K. Brulé, E., Frauenberger, C., Bailley, G., Fitzpatrick, G. In the details: the micro-ethics of negotiations and in-situ judgements in participatory design with marginalised children, CoDesign, 16:1, pp. 45-65, (2020)

4. Çarçani, K., Bratteteig, T., Holone, H. et al. EquiP: A Method to Co-Design for Cooperation. Comput Supported Coop Work 32, pp. 385–438, Springer Nature (2023)
5. Mulvale, G., Moll, S., Miatello, A., Robert, G., Larkin, M., Palmer, V.J., Powell, A., Gable, C., Girling, M. Codesigning health and other public services with vulnerable and disadvantaged populations: Insights from an international collaboration. Health expectations: an international journal of public participation in health care and health policy, vol. 22,3 (2019)
6. Bjerkan, J., Hedlund, M., Hellesø, R. Patients' contribution to the development of a web-based plan for integrated care – a participatory design study, Informatics for Health and Social Care, 40:2, pp. 167-184, Taylor and Francis Group (2015)
7. Andersen, L.B., Danholt, P., Halskov, K., Hansen, N.B., Lauritsen, P. Participation as a matter of concern in participatory design, CoDesign, 11:3-4, pp. 250-261, (2015)
8. Morrison C, Dearden A. Beyond tokenistic participation: using representational artefacts to enable meaningful public participation in health service design. pp. 179-186. Health Policy (2013)
9. Svanæs, D., Gulliksen, J. Understanding the Context of Design – towards Tactical User Centered Design. NordiCHI 2008: Using Briges, Proceedings of the 5th Nordic conference on Human-computer interaction: Lund, Sweden (2008)
10. Dittrich, Y., Eriksen, S., Hansson, C. PD in the wild: Evolving Practices of Design in Use. In Proceedings of the Participatory Design Conference, T. Binder, J. Gregory, I. Wagner (Eds.), Malmö, Sweden (June 2002)
11. Roland, L.K., Sanner, T.A.; Sæbø, J. I., Monteiro, E. "P for Platform. Architectures of large-scale participatory design," Scandinavian Journal of Information Systems: Vol. 29 : Iss. 2, Article 1, (2017)
12. Melchiori, C.E., Sanches, B., Cortez da Cunha Cruz, M., Diniz, E.H., Cunha, M.A. Digital Welfare and Vulnerable Citizens: A Literature Review, ECIS, Research-in-Progress No. 58, AIS Electronic Library (2023)
13. Bratteteig, T., Wagner, I. Unpacking the Notion of Participation in Participatory Design. Computer Supported Cooperative Work (CSCW), vol 25, pp. 425–475, Springer Link (2016)
14. Wärnestål, P. Svedberg, P., Nygren, J. Co-constructing child personas for health-promoting services with vulnerable children. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14). Association for Computing Machinery, New York, NY, USA, (2014)
15. Bødker, S., Grønbæk, K. Cooperative prototyping: Users and designers in mutual activity. International Journal of Man-Machine Studies, *34*(3), 453–478, Elsevier (1991)
16. Gartner, J., Wagner, I. Mapping Actors and Agendas: Political Frameworks of Systems Design and Participation, Human–Computer Interaction, 11:3, pp. 187-214, Taylor and Francis (1996)
17. ISO 9241-210:2019 Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems (2019)
18. Chammas, A., Quaresma, M., Mont'Alvão. A Closer Look On The User Centred Design. 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE, Elsevier (2015)
19. Mosleh, W.S., Larsen, H. Exploring the complexity of participation, CoDesign, 17:4, pp. 454-472, Taylor and Francis (2021)