Clicking on Users' Behalf: How Intermediaries Enable Engagement with Digital Services

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Abstract. Under the premises of efficiency and cost savings, service providers are increasingly going digital. As a consequence, underserved groups experience digital services as an additional barrier to participating in society. To overcome those barriers, many rely on often-invisible support networks, including family or friends, as well as governmental organisations and NGOs. In this article, we draw on qualitative studies of two NGOs, one based in Helsinki and the other in Lisbon, to reflect on the work they do to support people who use digital services. Our findings show that intermediaries support them in at least three interrelated ways. First, through complementary practices such as teaching and advising, configuring spaces to lower engagement thresholds, and translating complex information. Second, by participating on behalf of users, for instance, when contacting service providers or acting as proxies in design processes. Third, by sustaining the efficiency of digital services through invisible work. We contribute to research on digital inclusion by showing how intermediaries shape both access to and users' agency in digital services.

Keywords. digitalisation, intermediaries, infrastructures, NGOs, digital support

1 Introduction

Governments across the European Union are engaged in a highly coordinated effort towards digitalisation. These directives aim to boost infrastructure, transform business and government services, and increase citizens' skills under the auspices of promoting democracy while simultaneously pursuing cost-saving actions (European Commission, 2025). However, the increased deployment of digital services creates new social margins for those regarded as having low levels of digital literacy. This higher threshold for accessing services and, consequently, for participating in society, is not only due to a lack of digital skills; it also reflects a shift in service provision in which citizens are increasingly expected to perform tasks previously handled by administrative staff and caseworkers (Madsen et al., 2022). This shift in service provision can, as intended, improve everyone's access to services, or it can simply create a new form of red tape (Sunstein, 2021). While this is potentially a

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society-wide problem, it primarily affects older adults, who have long done things a certain way and are now expected to learn to use new technologies and operate services independently (Cerna et al., 2020; Vines et al., 2012), as well as others in vulnerable socio-economic contexts (van Dijk, 2012).

As people's daily routines become increasingly mediated by digital technologies, we align with those who call for digital citizenship that goes beyond securing access and instead emphasises critical agency (Ylipulli and Vigren, 2024) and world-making as relevant measures of equity (Varanasi et al., 2025). These critiques open up a broader understanding of what digital inclusion entails. There is a growing body of work that shifts attention away from technology itself and access to it toward care work (Parnaby et al., 2025) and non-valorised goods involved in maintaining digital infrastructures, as well as the affective costs associated with this work (Pei and Crooks, 2020). While this lens captures the relational and affective dimensions of digital support, it tends to focus on the interpersonal level, leaving the structural position of the organisations that provide it unexplored.

This study joins a long tradition of research on organisations that support people navigating digital services, with public libraries among the most studied examples. Libraries are widely studied as sites for digital support infrastructure in the Nordic countries (Christensen et al., 2022; Ehrenberg et al., 2024; Serholt et al., 2018; Ylipulli and Luusua, 2019) and the United States (Jonas, 2022). Building on this, prior research identified recurring themes that point to broader patterns in the organisation of digital support for lay users. For instance, a study into volunteer-based IT help desks in the Nordics has highlighted the limitations of outsourcing essential support services to informally trained volunteers (Christensen et al., 2022). Conversely, research on community help desks in a low-income neighbourhood in a Southern European country revealed that residents prefer these help desks to traditional service counters, especially when they operate on the principles of relational autonomy, trust, and care (Pires et al., 2025).

While these studies provide detailed accounts of digital support practices, they overlook how these organisations are positioned as intermediaries between service providers and service users, both in the design and use of digital services. We adopt the notion of intermediaries rather than, for instance, carers, to foreground this structural positioning: caught between the logics of service providers and the needs of service users. This framing allows us to ask not only how support is provided, but how these organisations navigate, absorb, and sometimes contest the tensions that arise from that in-between position. We therefore analysed data from two research studies on NGOs that support people who use digital services in Lisbon and Helsinki. We address this gap by asking the following research questions:

- How do these NGOs position themselves between the interests of service providers and service users?
- And how does this positioning affect the way in which service users engage with digital services?

We contribute to the discourse on digitalisation by deepening understanding of how this intermediary positioning functions to support access to and agency over digital services. By using theories of infrastructures and intermediaries (see section 2) as theoretical lenses, we show that intermediaries support participation in the digital society in at least three interrelated ways. First, by employing a series of

complementary and overlapping practices such as teaching and advising, arranging the space in particular ways to lower the threshold for engagement, or by translating complex information. Second, by participating on behalf of users either when they need to call a service provider or when they are asked to act as proxies during the design process of a digital service. Third, by sustaining the efficiency of digital services through largely invisible work that supports users while absorbing the costs of service providers' mistakes. By bringing these findings together, we map how the same intermediaries can operate across different moments of digital service provision and how their positioning affects their visibility to other actors.

2 Theoretical Framing

In this article, we draw on two bodies of research to address the research question. First, we build on infrastructures theory to bring a relational lens to digital services and their use. This literature helps unpack the layered arrangements of technologies and organisations that sustain participation beyond formal service provision. In particular, we leverage Marres et al. (2025) conceptualisation of participation as infrastructural to situate intermediaries within the broader digital service ecosystem.

Second, we engage with research on intermediation and intermediaries. We draw specifically on the modes of intermediation described by Hernberg and Hyysalo (2024), as they offer an analytical framework for identifying and categorising intermediary practices. This body of work allows us to move beyond seeing what intermediaries mediate and the actors between whom they mediate, towards understanding their practices and positioning.

2.1 Participation in the Digital Society

We draw on Marres et al. (2025) understanding of infrastructural participation, which distinguishes between two related dimensions: *infrastructuralization* and *infrastructuring*. *Infrastructuralization* refers to situations in which user participation becomes a necessary component of digital systems, often mandated from the top down by service providers. Digital services function only if users perform prescribed actions, such as entering data, clicking through interfaces, or complying with procedural requirements. For instance, to book an appointment with the doctor, people must fill out an online form with their personal information and submit it. However, as infrastructure theory has long emphasised, these forms of participation are often rendered invisible once systems become stabilised (Star, 1999; Star and Ruhleder, 1996). Infrastructures tend to fade into the background, becoming visible only when they break down. This invisibility obscures the layered arrangements of technical systems, organisational routines, and human labour that sustain everyday participation.

By contrast, *infrastructuring* participation is understood as open-ended and agentic (Marres et al., 2025). Here, participation involves the ongoing involvement in shaping, adapting, and maintaining digital systems. The verb of transition in infrastructure shifts the focus from a completed thing to an ongoing process (Karasti and Baker, 2004). In such processes, people have the opportunity to affect the design and maintenance of digital products or to use digital technology to expand their

participation. Examples of the first type, which affect creation and maintenance, have been widely explored in participatory design (Karasti, 2014), where infrastructuring participation enables adoption and appropriation beyond an initial or fixed design, moving towards design-in-use (Botero et al., 2010; Ehn, 2008).

2.2 Intermediaries in Service Digitalisation

In design studies, the concept of mediation has been explored across various frameworks, particularly related to the design and design-in-use of digital services. Notions such as infrastructuring (Karasti, 2014) and institutioning (Huybrechts et al., 2024) are regarded as mediating practices in which ideas and ways of doing are contested and negotiated among the parties involved in the entire design process. Design researchers and practitioners often identify themselves as intermediaries within design processes that involve grassroots or community actors and hierarchical organisations, typically government organisations. This position has been described as "middle-out", in contrast to bottom-up or top-down approaches (Dow et al., 2018). In this line, intermediary practices are designers' efforts to advance the interests of community groups in pursuit of institutional change (Teli et al., 2022).

Since the focus of this article is not to study designers as intermediaries, we also examine other fields and how they have defined and studied intermediation when carried out by other actors. In public administration, intermediaries are defined as *"nongovernmental actors who have professional knowledge and participate in public service delivery. They can be from the third or private sector"*(Haug, 2024). They function as knowledge brokers or add a layer in service delivery processes. These roles are expanded in innovation studies, where intermediaries are conceptualised as actors whose work spans multiple phases of the technological systems pipeline, from design and development to use (Stewart and Hyysalo, 2008). In this account, intermediaries include design consultants who shape technologies during development, as well as actors such as IT help desks that support users once technologies are deployed. Although much of the literature has focused on intermediaries involved in design and development processes, intermediaries operating on the use side of digital services often remain less visible and more fragile, despite their central role in sustaining everyday use (Stewart and Hyysalo, 2008).

Hernberg and Hyysalo (2024) recently proposed a framework that encompasses four modes of intermediation: *brokering* relationships between actors and resources, *configuring* technologies and practices, *negotiating* institutional arrangements and expectations, and *facilitating and capacitating* participation through learning and support. These modes can be applied to empirical studies to illustrate how intermediaries' practices are pursued across different modes. Using the four modes in our analysis will help us understand what is needed to make digital services inclusive.

3 Methods

Having outlined the theoretical frameworks, we apply them through a secondary analysis of two prior studies on digital support organisations. The studies were

conducted between 2022 and 2025, one set in Helsinki, Finland, and the other in Lisbon, Portugal. Both were carried out as part of larger research projects that examined how organisations provide digital support to residents. The cases offer a useful basis for comparison, as they highlight both common patterns and contextual differences across Northern and Southern Europe. Although the contexts differ in digital literacy levels, institutional arrangements, and digital service ecologies, both are shaped by shared policy frameworks, such as the European Union's Digital Decade program (European Commission, 2025).

3.1 The Cases and Contexts

This article explores two cases of what we call intermediary organisations providing digital support in different European contexts, Southern and Northern Europe: one community-based NGO in Lisbon and one volunteer-based NGO operating in the Helsinki metropolitan area.

In Lisbon, the service aims to support residents facing social and economic exclusion across several neighbourhoods. The initiative operates within the Metropolitan Plan for Integrated Operations in Disadvantaged Communities and is supported by Lisbon's municipality through the EU Recovery and Resilience Plan. It offers in-person, proximity-based support by providing access to computers, the internet, and multilingual materials, and by assisting residents with tasks related to public services, employment, taxes, and housing. The organisation positions itself as a bridge between residents and public, private, and social service providers, combining opportunities for autonomous use with hands-on assistance when needed. Although digital public services are expanding, this work takes place in a context where 40% of the population lacks basic digital skills (Eurostat, 2025), making in-person support a central part of everyday access to services for many residents.

The Finnish case is embedded in a more mature digital environment, with over 80% of the population having basic or above basic digital skills (Eurostat, 2025). The case concerns an NGO that has organised digital peer support for older adults in the Helsinki metropolitan area for over twenty years. The organisation operates in a highly digitalised service environment, where many public and private services are mainly accessed online. It relies primarily on a large network of retired adults who volunteer to provide peer support, with a small number of full-time staff. They collaborate closely with public libraries, which provide space and booking systems for the help desk activities. Beyond one-to-one support, the NGO offers lectures and occasionally participates in user testing for companies and public agencies developing digital services. The organisation is well integrated into local digitalisation networks and embedded in a context where support for navigating digital services is distributed among municipalities, public libraries, and NGOs.

3.2 Data Collection and Analysis

Interviews constituted the primary data collection method in both cases. In the Portuguese case, interview data were complemented by field notes from ≈ 20 hours of participant observation conducted at the service desk (≈15 hours) and during internal organisational meetings (≈5 hours). The material consists of four interviews with service desk technicians, two with service desk users, and six observations (see

Table 1). The Finnish case comprises eight interviews with NGO staff and volunteers (see Table 1). In this case, interviews were conducted in English, whereas in the Portuguese case, they were conducted in Portuguese. This linguistic difference may have shaped the data, as participants in the Finnish case were not expressing themselves in their mother tongue, potentially resulting in more restrained or less nuanced accounts.

Encounters	Participants & Pseudonyms	Duration	Location	Organization	Years
Interviews x8	senior association CEO x1 (I1/FI), coordinator x2 (I2-3/FI), volunteer x5 (I4-9/FI)	40 – 90 min	Online	Finnish NGO	2022, 2025
Interviews x6	project coordinator x1 (I1/PT), technicians x3 (I2-4/PT), neighbours x2 (I5-6/PT)	40 – 60 min	In-Person	Portuguese NGO	2023, 2024
Observation x6	technicians x5, around 30 users (OBS1-6/PT)	30 – 120 min	In-Person & Online	Portuguese NGO	2023, 2024

Table 1. Encounters and Participants

The datasets consist of interview transcripts and observation notes. Interviews from the Portuguese case were transcribed using Whisper AI [1]. In the Finnish case, some interviews were transcribed by a professional transcription service, while others were transcribed using Outlook's built-in function and then manually checked and corrected. All transcripts and field notes were compiled and managed in Atlas.ti [2] for analysis.

The data were re-analysed using abductive thematic analysis, combining iterative engagement with the empirical material and theory-informed interpretation (Thompson, 2022). The analysis aimed to identify shared practices, recurring patterns, and meaningful differences in how the two organisations operate as intermediaries within digital service ecosystems. Throughout the analytical process, the research team held regular meetings to discuss emerging interpretations, reflect on analytic decisions, and iteratively refine the analysis's focus.

The coding process proceeded in several stages. First, data were coded into three broad categories based on the actors involved in each segment: interactions between users and intermediaries, between intermediaries and service providers, and situations involving all three. Within these categories, we developed descriptive codes to capture more specific activities, concerns, and practices. In a later stage, thematic units were constructed by examining relationships across codes and categories through the theoretical frameworks outlined in the related work. These thematic units structure the analysis's sections and subsections.

[1] https://github.com/openai/whisper?tab=readme-ov-file
[2] https://atlasti.com/

4 Findings

The findings are organised into three sections. The first, which is primarily descriptive, uses intermediary modes as an analytical lens to categorise the practices through which intermediaries support residents in using digital services. The second draws on the concept of infrastructured participation to examine how intermediaries intervene on behalf of users when representing them to service providers. The third analyses how the essential work performed by intermediaries becomes rendered invisible within ongoing digitalisation efforts, as service providers design their systems without accounting for the real costs of this work.

4.1 Intermediary Activities in Digital Service Use

People usually approach intermediaries to resolve a specific digital or bureaucratic problem. However, in both organisations, support often goes beyond addressing the immediate issue. Instead of focusing solely on fixing problems, intermediaries seek to help citizens and strengthen their ability to navigate digital services. In this section, we will explore the practices and strategies that intermediaries employ to help people seeking assistance with using digital services, and how these practices fit into the modes of intermediation outlined by Hernberg and Hyysalo (2024). By drawing on three of the four modes, *brokering, configuring, and facilitating and capacitating*, this section conceptualises the practices through which the NGOs perform their core function: helping people make use of digital services. By focusing on these practices, we can understand what is required to make digital services more inclusive and how intermediaries bridge the gap between service providers and users.

4.1.1 Exchanging Knowledge as Facilitating and Capacitating

Intermediaries often become the first point of contact for people who struggle with digital services. While people typically seek help to resolve a specific problem, the support they receive often extends beyond that problem. Meaning that when helping people, intermediaries engage in *facilitating and capacitating* by developing activities such as teaching, advising, and exchanging knowledge in ways that build users' capacity to act. Thus, in both organisations, the strategy is to move beyond problem-solving and instead encourage learning.

Teaching is done by actively involving people in support sessions. Intermediaries use these encounters as opportunities to teach users how to navigate digital systems independently in the future. As one volunteer explained:

> *"The key point for me is to teach people to use their devices so that they don't need so much help after that. So, the teaching or advice is not for the special problem, but it is for [developing] their thinking about how they could solve their own problems in the future."* (I4/FI)

While teaching may appear primarily beneficial for those seeking help, several accounts from both cases show that intermediaries also describe learning through these activities themselves. This learning takes different forms. In some situations, intermediaries acquire new technical knowledge when they encounter issues they

were previously unfamiliar with. In others, they describe broadening their perspectives by getting to know people who face challenges different from their own.

4.1.2 Translating Complex Information as Brokering

The exchange of knowledge done as part of teaching also overlaps with activities that fall under another intermediary mode: *brokering*. An example of *brokering* is when they need to translate technical knowledge into accessible terms and to adapt explanations to users' experiences and concerns. *Brokering* can consist of either explaining bureaucratic processes or abstract concepts around digitalisation. For instance, in many cases, the technicians at the Portuguese NGO make sure that the person understands their rights in certain bureaucratic processes, which sometimes include searching for and printing legal extracts.

They act as experts in specific domains, which requires them to understand the problems themselves and translate them into simple terms. In the Portuguese case, technicians explained that some team members are more knowledgeable about tax administration, while others specialise in job-seeking platforms. Similarly, in the Finnish case, some volunteers are more experienced with various operating systems and software, while others focus on social media advice. However, translating this technical knowledge is not straightforward. As one volunteer, who identified as an expert in computer systems, described, he uses *"pen and paper"* (I5/FI) to explain abstract concepts such as cloud storage or email communication. This example leads us to the next mode, *configuring*.

4.1.3 Using Material Aids and Re-arranging the Spaces as Configuring

The *configuring* mode occurs through the organisation of physical spaces and material arrangements that support learning and knowledge exchange. Rather than relying solely on verbal explanations, as the previous quotes showed, intermediaries configure their environments to make concepts more accessible and to encourage participation, for example, by drawing abstract concepts. These material aids help translate technical ideas into tangible representations, which is especially important for older participants seeking to develop a clearer understanding of the support they receive. We observed something similar in the Portuguese case, where technicians provide printed extracts of the law to neighbours, ensuring the information remains accessible and usable even when intermediaries are no longer present.

In the Portuguese case, re-arranging the spaces was central to their operations. The organisation maintains a computer that a technician can remotely control, allowing neighbours to try tasks on their own while receiving guidance. This way, the neighbours can try to resolve things on their own while staying safe. In other instances, technicians reconfigure the spatial setting more informally by stepping outside the office and sitting on a bench in the street, where neighbours more easily approach them. These spatial and material configurations lower the barriers for engagement and create conditions in which users can learn, experiment, and participate more actively in the support encounter.

Overall, these findings align with earlier work, which noted that volunteers' most important skills are not the technical or problem-solving, but the social skills (Christensen et al., 2022)

4.2 Two-fold Representation

There are two ways intermediaries represent users. The first is when they need to act on their behalf, supporting them in using the service. The second occurs when they participate in decision-making spaces and act as proxies for service providers, enabling access to users and designing with them. These two forms of representation fit into (Marres et al., 2025) categories of *infrastructuralization*, which refers to situations in which user participation becomes a necessary component of digital systems, often mandated top-down by service providers, and *infrastructuring*, which is understood as open-ended and agentic.

4.2.1 Advice, Call, Click, Tap, and Swipe on Users' Behalf

In the first form of representation, intermediaries sometimes need to act on behalf of users to make services work. This involves performing actions such as clicking, tapping, or submitting information to complete a transaction. These actions are typically rigidly scripted by service providers as part of the *infrastructuralization* of participation. What remains outside this script is the assumption that users may require support or that participation may be mediated by another person. In practice, this means that intermediaries perform forms of participation that the system attributes to the user. Participation is formally present but enacted through informal representation. From the service provider's perspective, the user appears to be making decisions independently. In fact, the interaction often involves two people, one advising and sometimes acting, and the other seeking support.

Ideally, intermediaries seek to guide users without performing actions on their behalf. In practice, however, the boundary between advising and acting is often blurred, especially when the immediate priority is to resolve an urgent problem. This willingness to step outside the script is one reason people turn to intermediary services, as service providers are far less able to deviate from standardised procedures (Pires et al., 2025). In the Finnish case, volunteers expressed visible discomfort when discussing these situations, acknowledging that such actions are formally discouraged but sometimes unavoidable if meaningful support is to be provided. As one volunteer explained: *"Public services, we can advise. Obviously, we cannot advise on anything related to bank accounts. That is official. Sometimes I have to just do it, not as part of [Finnish NGO], but only as myself"* (I6/FI). This form of representation is particularly challenging because intermediaries generally lack formal legal grounds to act on users' behalf. Yet, without doing so, effective support may not be possible. As discussed in previous work (Christensen et al., 2022; Ehrenberg et al., 2024), intermediaries occupy a precarious position in between users and service providers, navigating legal, ethical, and practical constraints simultaneously.

In the Portuguese case, these tensions remain a topic of discussion, particularly regarding data protection and the risk of data breaches. Given the organisation's focus on helping neighbours access essential services, staff members frequently reflect on how to balance problem-solving with safeguarding personal data, even when these goals come into conflict: *"Above all, it is important that we protect people's personal data. But often, to make things easier and to try to solve problems, this issue of personal data has to be somewhat overlooked."* (I2/PT). To mitigate this legal and ethical grey area, the organisation has adopted formal consent procedures that authorise intermediaries

to act on neighbours' behalf when necessary. Observations show that each person served signs a form granting permission for the use of their data, which is stored and reused across visits:*"They also have a file with forms that people have filled out authorising the use of their data. Each person served has a form that only needs to be signed once."* (OBS1/PT). While this strategy offers some protection for intermediaries, it does not fully resolve the issue. Acting on behalf of users continues to raise questions about responsibility, liability, and the limits of representation, highlighting the need for stronger and more nuanced legal frameworks that account for intermediary work at the margins of digitalised public services.

4.2.2 Advocating on Users' Behalf

Intermediaries also represent users in interactions with service providers beyond individual support. This form of representation takes place in decision-making spaces, such as government-organised working groups, or when intermediaries are invited to test and evaluate new digital systems. While this practice is currently observed only in the Finnish case, it represents a form of engagement that could potentially scale within the Portuguese ecosystem in the future as well. In Finland, service providers actively invite NGO staff and volunteers to participate in such arenas as part of what the organisation describes as its advocacy work.

This advocacy role is grounded in the assumption that NGO workers and volunteers possess situated knowledge about users' needs, constraints, and capacities. Volunteers occupy a hybrid position. Many are older adults themselves and therefore have firsthand experience with digital services, while also supporting others who struggle with these systems daily. Because of this dual perspective, they develop an understanding of how systems function and how they break down in practice, making them valuable information *brokers* (Hernberg and Hyysalo, 2024). As one staff member puts it:

> "*[the volunteers] know also quite well the situation because they see them [the seniors who seek help] in guidance. So they can also get this kind of point of view, about what a person would think if he or she wasn't good with computers. They have kind of good knowledge about that also."* (I2/FI)

This way of representing the users is also a way of *infrastructuring* participation (Marres et al., 2025). However, instead of directly infrastructuring the user's participation, the service providers invite intermediaries to bring their experience and knowledge to digitalisation working groups and contribute feedback during testing processes. In doing so, intermediaries extend their role from supporting use to subtly shaping how digital services are adjusted, refined, and maintained over time. This type of representation is a form of *structural negotiating* (Hernberg and Hyysalo, 2024), in which intermediaries influence how service providers define problems, anticipate user behaviour, and incorporate assumptions about digital competence into the design and governance of digital services. As one staff member described: *"It's only just telling other organisations, telling the outside world about the problems and good things about seniors and their use of ICT."* (I1/FI)

4.3 Digital Services' Reliance on Essential yet Invisible Work

The digitalisation of services is commonly framed as a way to improve efficiency, cut costs, and expand access. Yet, the high demand for support services from intermediaries shows a different picture. Observing the everyday work of intermediaries makes it clear that the apparent success of digitalisation policies depends heavily on their continuous work. Digital services function as "efficiently" as they do because intermediaries compensate for their limitations by hiding the service's cracks. Still, because this work remains external and invisible to service providers, the actual costs of maintaining a digitalised society remain largely unaccounted for.

4.3.1 Analogue Work To Maintain Digital Infrastructures

As the previous sections illustrate, the services provided by intermediaries are essential for enabling access to and agency with digital public and private services. In line with Christensen et al. (2022) 's description of service desks as a *quasi-public service*, one of the staff in the Portuguese NGO reported: "*this is, in practice, a public service that we are providing. There is no other way to put it.*" (I1/PT). Intermediaries exist precisely because digitalisation has shifted bureaucratic work onto citizens, who are now expected to have certain administrative competencies to operate the services (Madsen et al., 2022). Shifting the workload from service providers to citizens is often presented as "cost-effective" for service providers, since fewer human resources are formally required to perform tasks that users are assumed to handle. However, our findings show that this is not the case, as many users cannot absorb this workload, and it is instead transferred to the support network, in this case, the intermediaries. As one technician from the Portuguese case articulated:

> *"And so, in other words, there is a whole system inefficiency and overload. Because we facilitate this, people either send it online or only go there once. Anyway, it greatly reduces the number of times these people will occupy these counters and, therefore, naturally, this also has benefits for the system as a whole."* (I1/PT)

In practice, the workload does not disappear. Instead, it is informally outsourced to third-sector help desks and community services. From this perspective, digital services function efficiently only when people who struggle can reach out for support. Our analysis shows that intermediaries produce this efficiency by knowing users by name, understanding their concerns, and often being familiar with their family situations. This allows them to select the most appropriate paths for resolving each problem. Rather than directing users to isolated digital platforms or siloed service providers, intermediaries enable people to address multiple, often unrelated issues in a single visit, which aligns with proposals for one-stop shops to make public services work more effectively (Krayter et al., 2025).

From this perspective, intermediary work functions as a form of system maintenance. Rather than being absorbed by the imagined figure of the autonomous user, this work is carried out by users whose autonomy is relational, made possible through networks of support that enable them to use digital services (Pires et al., 2025). Efficiency, then, does not stem from digital services alone, but from the proximity and care that intermediaries provide, thereby strengthening users'

autonomy. It is through this work that users can engage with digital services in ways that isolated service providers or digital platforms cannot.

4.3.2 Maintenance work = Invisible Work

Despite being an essential actor, intermediary services remain poorly supported and weakly recognised within the broader service ecosystem. In both Finland and Portugal, intermediaries receive public funding primarily through short-term or yearly projects. The Portuguese service desk is funded through the EU Recovery and Resilience Plan, the central government, and the Lisbon municipality. The Finnish NGO is funded by the Funding Centre for Social Welfare and Health Organisations (STEA) under the Ministry of Social Affairs and Health, but relies heavily on volunteer labour. In both cases, this project-based funding requires organisations to reapply frequently, reinforcing uncertainty and fragility in what is, in practice, ongoing service provision. As one staff member in the Portuguese case notices by claiming: *"And it makes no sense for us to be dependent on short-term funding"* (I3/PT)

At the same time, the service that benefits from this work rarely accounts for the actual costs of sustaining it. In the Finnish case, where volunteers carry out a significant share of the work, this invisibility was explicitly problematized:

> *"Especially if you have, uh, free support, the danger perhaps with this voluntary support is that the cost doesn't show up in any, uh, balance anymore. But I mean, in other systems, [...] if the cost shows up in some balance sheet, then those who make the decision, they see that, we have a problem because this requires so much, so much support."* (I8/FI)

This means that intermediary labour absorbs the practical consequences of digitalisation without becoming visible in institutional accounting or evaluation. By compensating for system inefficiencies, intermediaries prevent breakdowns from surfacing. From an infrastructural perspective, this reflects the tendency of infrastructures to fade into the background when they function smoothly, rendering the human arrangements that sustain everyday participation largely invisible (Star, 1999).

This invisibility is also reflected in intermediaries' limited influence over how digital services are designed and governed. In the Finnish case, they occasionally participate as proxies in design-oriented activities, but their involvement remains conditional and constrained. Service providers retain control over agenda-setting and determine the extent to which intermediaries may intervene, reflecting their dominant position within the service ecosystem (Haug, 2024). In the Portuguese case, this lack of recognition was described even more emphatically, with staff calling for closer collaboration as a way to move from a poorly outsourced support role toward a more stable and visible position: *"More collaboration and partnership with public services. To make things easier not only for them, but also for us and for the neighbours."* (I2/PT)

Taken together, these findings suggest that intermediaries are central to the everyday functioning and maintenance of digital services, yet their work remains precarious, underfunded, and invisible. They support people in participating in the digital society and ease pressure on service providers. Still, they do so from a fragile position within the system, as is the case for most intermediaries operating on the use side of the product pipeline (Stewart and Hyysalo, 2008). In this sense, digital

services often appear efficient precisely because the labour that makes them workable in practice is not recognised and acknowledged.

5 Discussion

In this paper, we examine how NGOs position themselves between the interests of service providers and service users, and how this positioning shapes users' ability to engage with digital services. First, drawing on modes of intermediation from the literature (Hernberg and Hyysalo, 2024), we identified three overlapping modes that structure intermediary work at the point of use: facilitating and capacitating, brokering, and configuring. In practice, this involves teaching and advising users, translating technical knowledge, and organising spaces and materials to support engagement with digital services.

Second, we introduced the concept of two-fold representation to describe intermediaries' positioning between users and service providers. Building on Marres et al. (2025) 's notion of infrastructured participation, we show that intermediaries can represent users at different moments: when supporting users (in use) and when acting as proxies in interactions with service providers (in design). While we observed this positioning only in Finland, it demonstrates that such dual roles are both possible and strategically mobilised.

Third, we show that intermediaries occupy an thankless position: by supporting users to navigate digital systems, they prevent breakdowns from surfacing, while their work becomes another largely invisible layer of the infrastructure, with its costs absorbed outside service providers' accounting. Taken together, these findings point to a key implication: The visibility of intermediaries is not fixed but relational and situated, depending on who, along the chain of service provision and use, demands their services within the service infrastructure. Intermediary work appears differently to users than to service providers, a difference that is structurally produced by how digital services are designed and governed.

5.1 Intermediary Visibility Across Supply and Use

From supply to use of digital services, intermediaries are most visible to users, where they perform their core function of supporting engagement with digital services (see Figure 1). From the users' perspective, intermediaries become visible at moments of breakdown, uncertainty, or exclusion, when digital services cannot be used independently. By contrast, from the service providers' perspective, this same work remains largely invisible. Digital services register participation as the successful input of data or completion of actions, without indicating whether these actions were carried out independently or with support. The design of digital services thus renders intermediary labour indistinguishable from regular use, obscuring the support that enables such participation in the service. In this configuration, intermediaries are invisible to service providers because their work takes place behind the interface. Visibility, in this sense, is shaped by infrastructural arrangements.

At the same time, the Finnish case shows that intermediaries can become visible to service providers under certain conditions. In a more mature digital ecosystem, intermediaries are recognised by service providers as holders of valuable, situated

knowledge about users' challenges. In these moments, they are invited to act as proxies, representing users by testing services or providing feedback, temporarily shifting their position from use-side support to a complementary role higher up in supply and development. In this position, their role resembles what Teli et al. (2022) describe as design intermediation, advocating for users whose perspectives are systematically under-represented in service providers' design processes. This form of visibility is directed toward service providers rather than users and takes place in backstage settings, such as testing sessions or working groups. While this recognition grants intermediaries limited influence in the design and improvement of the digital services, it remains conditional and controlled by service providers, who ultimately decide when, how, and to what extent intermediary knowledge is considered (Haug, 2024).

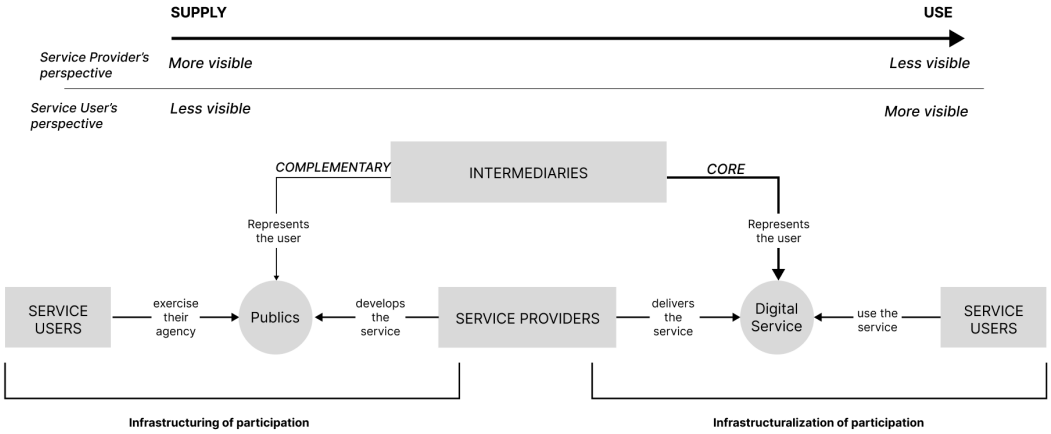

Figure 1. Intermediaries positioned between users and service providers in the service infrastructure.

Almost twenty years ago, Stewart and Hyysalo (2008) noted that use-side intermediaries remained understudied, with most scholarship focusing on intermediaries in the development and supply. Based on the newest intermediary literature in design, the gap persists. Most design intermediary literature focuses on designers as intermediaries (Dow et al., 2018; Teli et al., 2022); thus, it continues to foreground either the design side or design-in-use, making empirical cases in which the same actor serves as an intermediary in both design and use at separate moments remain rare.

Our contribution lies in pairing intermediary literature, which in design scholarship is typically used to study designers' practice, with the concept of infrastructural participation to unpack the in-between position of NGOs in digital service provision. By positioning the modes of intermediation (Hernberg and Hyysalo, 2024) across different moments of the service pipeline (Stewart and Hyysalo, 2008), and considering the infrastructural characteristics that take place in each moment, we could observe how intermediation shifts: who performs it, for whom it becomes visible, and at what point. This is particularly productive for studying digital service delivery, which, despite the complexity of the actor networks that govern it, still follows a more or less linear and iterative logic between design, use and redesign. Tracking intermediation across that pipeline, rather than at a single moment, is what allowed us to surface the position intermediaries occupy and

the infrastructural arrangements that keep their work invisible to service providers. We believe this framing extends beyond our cases. The dual role we observe, where NGOs first support users in navigating services, are then mobilised as knowledge holders in co-design processes or public consultations, is likely a recurring pattern in contexts where civil society organisations collaborate with government on public service provision (Haug, 2024), and one that warrants further investigation, specially as the third sector's role's is that of mending broken spaces in service provision (Osborne, 2008).

5.2 Limitations and Future Work

This study offers valuable insights by centring intermediaries' perspectives and practices, providing a foundation for understanding everyday digital support. The Portuguese case enriches this approach through user interviews and observations, while the Finnish case relies mainly on intermediaries' detailed accounts of users' experiences. These intermediary accounts reveal important patterns in how support is provided and experienced in practice. However, as a secondary analysis of two prior studies, this work carries inherent limitations. Beyond the differences in data between the two cases, the reanalysis is constrained by what could not be asked or observed retrospectively, and by the need to navigate the original researchers' interpretive decisions, which required ongoing reflexivity throughout the abductive process. Building on these findings, future research should incorporate direct user perspectives, complementing the intermediary and infrastructural lenses and offering a more comprehensive understanding of how support practices shape users' experiences with digital services.

As briefly noted in the introduction, the support function of intermediaries may also be a society-wide need in the making. As digitalisation adds new layers of complexity to bureaucratic processes Sunstein (2021) and private platforms decrease in quality once widely adopted Doctorow (2025), the populations these organisations currently serve (often framed as marginal) may increasingly reflect a mainstream experience.

6 Conclusion

We contribute to research on service digitalisation by examining how intermediary organisations position themselves between citizens and service providers in the context of EU digitalisation efforts. We showed that their work shapes both access to services and users' agency, not only by teaching and brokering information but also by translating complex procedures. Intermediaries engage in two complementary forms of representation: acting on users' behalf to complete scripted transactions when needed, and participating as proxies in design and decision-making spaces, which aligns with distinctions between infrastructuralization and open-ended infrastructuring. These practices help keep digital services running smoothly, even as much of this effort remains informal, invisible, and located externally in providers' accounts. Recognising this role can inform more inclusive digital service design and governance, as well as problematize how current infrastructural arrangements affect this service provision.

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