Street-level Bureaucrats as Policymakers in the Implementation of New Technologies

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Introduction

New technologies provide an important answer to the challenges, such as limiting resources, inherited old service models, and personalization coupled to equity issues unmet in one-size-fits-all service models, public sector organizations are facing (Haug, Dan & Mergel, 2023; Kinder & Stenvall, 2022). Technologies might, for instance, shape public services making them more sustainable and inclusive (see, Eriksson, 2022; Perikangas & Tuurnas, 2023). Overall, technological transformation is 'concerned with the changes digital technologies can, for instance, bring about in organizations' model, products or organizational structures' (Nadkarni & Prugl 2021; Hess et al. 2016). In particular, the challenge is how to integrate technology with the work and actions of frontline professionals, here, street level bureaucrats, in a meaningful and effective way (Buffat, 2015; Busch & Henriksen, 2018; Høybye-Mortensen 2019; Kuoppakangas et all. 2023).

The study field of street-level bureaucracy, e-government, ICT and new technologies has also focused on the consequences of technological developments for discretion, legitimacy and the ethics of street-level bureaucrats (later, SLBs) (Bovens & Zouridis, 2002). Buffat, 2015; Busch & Henrikssen, 2018; For instance, Buffat (2015) offers an extensive summary of e-government and SLB as curtailment and enablement theses. Her study shows that e-government (and overall, ICT) does not have negative or positive consequences for SLB *per se,* but the outcomes depend on context and implementation. This study contributes to the street-level bureaucracy literature specifically from the viewpoint of the implementation of technology within the public service ecosystems. In our paper we focus on social care services, where direct contact with service users and frontline discretion plays a key role (Evans & Harris 2004). Implementation of (social) policies in social work entails negotiations and creation of meanings on the frontline with clients and colleagues, as well as with managers (see,

Carson et al. 2015). Thus, Nothdurfter and Hermans (2018, 8) underline the political role of social workers: "Social policies do not work automatically; their internal ambiguities permit and require considerable discretion for their implementation and street-level delivery".

Against this backdrop we ask, *how do street-level bureaucrats implement a new technology in social services?* For analytical purposes we utilize a framework of public service ecosystems. Empirically, we focus on the implementation process of a client and patient information system (later, IS), called 'Apotti', which is a large-scale, technology-driven development initiative in Finland. The data consists of ten in-depth, narrative interviews with professionals working at social care services in a mid-sized city in Helsinki-Uusimaa region. In the analysis, the professionals' experiences about how they implemented the new IS in the practices of their everyday work are foregrounded through an interpretive, phenomenon-driven analysis method. We argue that technology implementation, in practice, is done by the public service professionals who in their everyday work constantly make decisions of which available institutional arrangements (aims, values, beliefs, assumptions and practices) they are to follow (see, Lipsky, 1980; Rossi & Tuurnas, 2021).

Implementation of New Technologies through the Framework of Public Service Ecosystems

In this article we focus on implementation of new technology from the perspective of street-level bureaucrats. We utilize an analytical framework of public service ecosystems (PSEs). The approach of PSE recognizes that multiple actors and components are interrelated in multi-level, dynamic and overlapping PSE, where institutional arrangements both enable and constrain the processes taking place in that particular context (Rossi & Tuurnas, 2021; Vargo & Lusch, 2016; Vargo et al., 2015). Following Cabrera et al. (2001), technology should therefore be considered as only one, although an inter-related component affecting the processes, decision-making and behaviours of actors undergoing technology-driven change.

Foregrounding the interdependencies between the different components, such as technology, of a PSE, is a 'both-and' situation – the technology could be designed to fit the organization's current structures and ways of working or the structures and practices need to be reformulated to meet the operational logic of the new technology (Cabrera et al., 2001). Accordingly, new technologies can, for instance, foster changes in

organizations' structures, processes, products or services (Nadkarni & Prugl 2021; Hess et al. 2016; Kuoppakangas et all 2023). In turn, new technologies may cause disruptions in practices, which means changes that make previous products, services and/or processes ineffective (Millar et al. 2018). There even might be an inherent expectation about the problems (for example, fragmented social and healthcare service sector) and solutions (for example information systems fostering the integration of social and healthcare services), to which the new technology is considered as an answer.

To better understand the nuanced and multilayered functions of digital technologies within public services, there is a growing body of public service literature utilizing public service ecosystem (PSE) as an analytical framework (see, e.g., Leite & Hodgkinson, 2023; Petrescu, 2019; Rösler et al., 2021). Petrescu (2019) describes PSE as a unifying framework to understand and analyse the complexities of public service delivery and value creation at the societal, service, and individual levels. According to Strokosch and Osborne (2020, 436), PSEs "move us beyond the transactional and linear approach associated with NPM, towards a relational model where value is shaped by the interplay between all of these dimensions and not least by the wider societal context and the values that underpin it.". Thus, the PSE literature better recognizes the policy-making role and interconnectedness of street-level workers who implement new technologies by shifting the focus from the intra-organizational aspects and structures of organizations to the multi-actor, multi-logic, and multi-level PSE' (Rossi, 2021; Rösler et al., 2021).

Public service ecosystem, *a dynamic, interactive and tension-filled entity comprising of constellations of living and non-living, co-existing, co-evolving and co-dependent components*, provides a more holistic understanding of the complex contexts and interlinked processes of these components (Osborne et al., 2023; Petrescu, 2019; Trischler & Charles, 2019). As Vargo et al. (2017) foreground, ecosystems are holistic entities, turning one's attention to the dynamics and interconnectedness of the ecosystems' components. For analytical purposes, scholars often divide PSEs to micro, meso and macro levels to better understand the individual (micro), organizational (meso), and institutional (macro) aspects and their interrelations within the context of public service ecosystems.

Understanding technologies as non-living components of PSE, we turn our attention to the street-level bureaucrats and their experiences about the implementation of new technologies and ask, what happens when street-level workers are required to cope with new technologies in the processes of implementation (Isett et al., 2006; Jansson &

Erlingsson 2014; Selten et al., 2023). That is, how street-level workers and new technology are interlinked; how the street-level workers are able to implement a new technology; and ultimately, what limiting and enabling elements within the particular context of social services does the focus on street-level workers' experiences reveal.

Street-level bureaucrats as policymakers and as sources of reform

Michael Lipsky's classic study of 'street-level bureaucracy' (1980) focused on frontline work public organizations and was pioneering in this respect. Lipsky drew the attention to the policy-making power of frontline workers, as he pictured street-level bureaucrats 'the people who make decisions about other people' (Lipsky, 1980, 161). Street-level workers can be seen as active actors in policy implementation and a reform resource (May & Winter, 2007; Meyers & Vorsanger, 2003). While street-level bureaucrats, such as social workers, teachers, or nurses, are hierarchically on the "lowest" organisational level they still have the possibility to create their own ethical codes and apply rules based on their own understanding (to certain extent) due to discretion that they use in their everyday work practices (Evans & Harris, 2004; Evans & Hupe, 2020; Lipsky, 1980). This gives, for instance, an explanation for the results of policy implementation in which street level bureaucrats may have a strong effect on the content of changes in the organisational context, but also beyond that.

As Carson et al. (2015) note, frontline discretion is a complex phenomenon entailing also interorganisational rules and policies and governance frameworks. Rice (2013) offers a valuable illustration of the systemic nature of SLBs work, as she combines a street-level perspective with micro-institutionalism. Her comparative research contribution identifies different layers that influence the implementation process of activation policies: the professional identity of the caseworker; caseworker's ideas of the worthiness of clients; organisational characteristics; and wider political, economic, cultural and social developments and institutions that frame and/or restrict the actions that are relevant, appropriate or permitted in certain types of situations. Moreover, Isett et al. (2006) underline the importance of frontline acceptance to systemic changes: SLBs perceptions of system changes affect attitudes towards the work environment, even if the new system is more effective and efficient. This, according to the authors, may lead event to systems failure if not handled well.

Whereas many SLBs can be seen also as professionals, the theoretical and analytical angles differ in following way: Evans (2015) notes that SLBs are seen to

implement policy goals whereas professionals formulate their own goals. According to previous research, social workers can be categorised as both (see, e.g. Ellis, 2007), but as Trappenburg et al. (2020) suggest, social workers are more SLBs than professionals, as they implement policies to meet the needs of their clients, bending the rules and applying policies to fit their street-level practices, albeit the notion that professional codes and rules are the basis of their discretion (Carson et al., 2015).

New technologies are seen in this study as an instrumental context for examining SLBs policy implementation. Therefore, we do not focus on the question, what kinds of negative or positive consequences new technologies have for STBs work. In short, there are conflicting views on such consequences: some researchers assume that technology has an especially negative effect on street-level bureaucrats and often the negative consequences are connected with the decreasing level of discretion. For instance, Ellis (2011) notes that new technologies help managers monitor SLBs more easily and make it more difficult to bend rules in frontline implementation. Then again, there are also views according to which SLBs can use ICT as action resources (Buffat, 2015). Overall, new technologies are a broad umbrella term, and it is the context and special conditions in the usage of the technology that define the impacts for SLB´s work (see, Buffat, 2015, 158). In this study we focus on the process of implementation by asking, how do street-level bureaucrats implement a new technology in social services?

Context and methods

Our study focuses on the implementation of a social and health care client and patient information system commissioned by the Hospital District of Helsinki (HUS) and the municipalities of the Helsinki Metropolitan Area, Finland (Helsinki-Uusimaa region) in 2016. The implementation of the new information system took place during the years 2018-2022. This client and patient information system is software developed by the Epic Systems Corporation. One crucial promise of the new IS was to enhance the integration of social and healthcare services by creating, first in the world, an electronic client and patient record and system combining social care and healthcare data into “a single, unified record” (Apotti Oy, 2023).

Other Nordic countries Denmark and Norway have also commissioned Epic Systems Corporation’s healthcare software and thus have their own Epic implementations. The Danish implementation was contracted late 2013 and the implementation took place in hospitals of two regions between years 2016-2017 (see,

e.g., Hertzum et al., 2022). Norway's Epic implementation, Hellseplatformen, first took place 2022 in the city of Trondheim in Central Norway. However, a strong resistance towards the information system has sparked among the Norwegian healthcare actors (see, e.g., Ellingsen et al., 2022). Unlike in Denmark and Norway, the Finnish implementation of Epic was not restricted to hospitals, rather, both the primary healthcare and, importantly, social care were included. As part of the Helsinki-Uusimaa region, the city of Vantaa was the first organization world-wide to implement Apotti to social services in 2019.

The data was collected through narrative interviews, and these interviews with the professionals working at the city of Vantaa's social services were conducted in November and December 2021, approximately 1,5 years after the implementation of the new IS. We utilized a purposive sampling to select informants who had experienced the implementation of the client information system (Charmaz, 2006; Jupp, 2006). The informants were all professionals working at the City of Vantaa's social services, and they were thus expected to be able to hold sufficient knowledge about the phenomena under study. The data was collected through narrative interviews, and altogether ten informants were interviewed. One interview lasted approximately 60 minutes. All the interviews were fully transcribed afterwards, and the transcribed data consists of 94 pages of text.

Narrative interviews, in which the informants make sense of their experiences about the implementation of the client information system, are particularly useful as they allow the researchers the opportunity to explore beyond the implementation process as such. In addition, the hidden aspects, emotions and thoughts underlying the felt meanings and lived experiences that ordinary discourse sometimes fails to engage with can be addressed (Allen, 2017; Charmaz, 2006). The aim of the narrative interviews is to give voice, time and possibilities for the informants to express and reflect on their experiences about the studied phenomenon, connecting the past, present and future at the point of telling (Hyvärinen, 2016; Rossi, 2021). In practice, researcher asked open-ended questions so that the informants could reflect on and make sense of the experiences they have had and the expectations they hold to provide examples of situations where experiences took place and how they acted, felt and thought about what has happened (Charmaz, 2006; Hyvärinen, 2016).

The phenomenon-driven, interpretive analysis was aimed at gaining understanding about how the professionals justified their actions, decisions and choices

in their everyday work about the usage and implementation of the new information system. Therefore, a five-step coding scheme was utilized to systematically describe the meaning of the qualitative data (Gläser & Laudel, 2013; Rossi, 2021):

1. In the first data-driven step of the analysis process, the relevant and meaningful passages from the transcribed data are marked to capture the meaning of the told experiences.
2. These meaningful passages are paraphrased in the second step, staying close to the original expressions of the informants in order to ensure data-driven analysis.
3. In the third step, the third-level categories are formed by summarizing similar paraphrases. This step can also be regarded as clustering the meanings of the relevant paraphrases. Maintaining the informants' original experiences without interpretation is crucial at this step of the analysis process.
4. In the fourth step the second-level categories are generated by clustering the third-level categories based on their similarities. In this step, theoretically informed concepts can be utilized to interpret and understand the lived experience.
5. The fifth and final step is structuring the recently formulated second-level categories under the first-level categories. In this step, the theoretical concepts suitable for explaining the phenomena and experiences play an important role, and the process progresses from a data-driven to a theory-driven analysis. Yet, instead of testing theories, this step focuses on understanding the experiences related to the phenomena under study and through this, exploring what may be helpful to further develop the theoretical and analytical framework.

Altogether, 148 third-level categories, 22 second-level categories, and finally, six first-level categories were formed during the analysis.

Second-level categories	Third-level categories
Need to familiarize oneself with the new IS to reduce uncertainty	Uncertainty because professionals did not know what to expect from the IS Lack of knowledge and skills caused uncertainty and negative interpretations about the IS Due to the lack of knowledge professionals were worried that the IS would derive too heavily from healthcare services logic Lack of knowledge about the IS caused uncertainty and hesitation towards the IS Would have been easier to start using the IS if you would have known what to expect Less uncertainty for those who were already familiar with the IS
Need to learn the features and functions of system which is implemented at the training sessions	The IS was not completed causing frustration and lack of trust towards the IS The IS was developed further after the training sessions The IS looked difficult because it had changed, and professionals had forgotten what they had learned (timing) Professionals had forgotten what they had learned in training sessions when the implementation took place (timing) The implementation was frightening because professionals did not remember what they had learned (timing)
The trainings did not serve the implementation and usage of the IS in practice	The training sessions were too abstract It was difficult to understand how to use the IS in practice Motivation to learn the IS at training sessions was poor

Table 1. An example of the categorization related to the first-level category “lack of knowledge and practical relevance”.

First-level categories	Second-level categories
Lack of knowledge and practical relevance (created uncertainty about how to use the IS in practice)	Need to familiarize oneself with the new IS to reduce uncertainty Need to learn the features and functions of system which is implemented at the training sessions The trainings did not serve the implementation and usage of the IS in practice
Unlearning old practices and operational logic (of the previously used IS was seen difficult)	Comparison of the operational logics between the old and new IS' caused uncertainty and frustration Different operational logics created a need to unlearn old and to learn new practices and ways of working Terminology of the IS guided the practices of everyday work
Attitudes, beliefs and lack of support (guided the implementation process)	Negative atmosphere affected the implementation process and professionals' expectations towards the new IS Uncertainty and worries towards new and about own skills affect the attitudes towards new IS Own positive attitude towards new technology and learning Lack of support from the managers on how to use the IS in practice
Implementation happened individually (during the everyday work practices)	Learning the features and logic of new IS requires time Support from colleagues was crucial when learning to use the IS in practice Choosing the features used during the everyday work leading to individualized practices Developing shared practices and mutual ways of using the IS are needed and take time
Ensuring the interaction and engaging with the clients (guided the ways the IS was used in practice)	The characteristics of social services enhanced the street-level workers to choose how to use the IS in practice. In everyday work the focus is on engaging with the clients, not in using the IS Choosing to use the IS and its features for the benefit of the clients
Technical, organizational and institutional aspects (affected the implementation process)	IS helps to govern the workload IS is too complicated Terminology of the IS should derive from social services Operational logic of the IS and access to information is dependent on the organizational structures and work roles (makes the multi-actor collaboration difficult and causes delays in everyday work) Data Protection Act limits the use of IS in practice

Table 2. First and second-level categories

In practice, data analysis is always an iterative process alternating between data, analysis and theorizing (Cunliffe & Coupland, 2011; Eisenhardt, 1989; Strauss & Corbin, 1998). To conclude, the research approach relies on the interpretation of experiences of the professionals about the implementation of the new information system and the ability of the case study to identify the being as the logics and mechanisms of institutional arrangements (the ontological dimension) behind the doing as the observed action (the epistemological dimension).

Results

Next, we will explore how the professionals experienced the implementation and usage of the new patient information system. The findings reveal that (1) lack of knowledge and practical relevance created uncertainty about how to use the IS in practice; (2) unlearning old practices and operational logic of the previously used IS was seen difficult; (3) attitudes, beliefs and lack of support guided the street-level bureaucrats' expectations towards the implementation process; (4) implementation happened individually during the everyday work practices; (5) ensuring the interaction and engaging with the clients guided the ways street-level bureaucrats used IS in practice; and (6) technical, organizational and institutional aspects affected the implementation process.

Lack of knowledge and practical relevance (created uncertainty about how to use the IS in practice)

When remembering the time prior to the implementation, the street-level workers recognized *a need to familiarize oneself with the IS to reduce uncertainty.* They had experienced uncertainty because they did not know what to expect from the new technology. The fear was that they lacked knowledge and skills to use the IS in practice, causing hesitation and negative interpretations about the new IS. In addition, the street-level workers were worried that the IS would be too heavily reliant to the logic of healthcare services.

> Just because we were the first group [who implemented the new IS in social services] and none of us knew. There was not, what the second and third groups have, that they already know that someone has used it and that they have survived, and we will also survive... We didn't know what to expect... although we had used the test system at the trainings, but then, it is just not the same than using the actual system. (H2).

There was a time gap between the training sessions and the actual implementation of the new IS. The version of the IS used at the training sessions was not completed, causing frustration and lack of trust towards the IS. To ensure the practical relevance of the trainings, the street-level workers emphasized *a need to get accustomed with the features and functions of the IS which is eventually implemented.* After the training the IS was developed further. Thus, the workers were expecting the implementation with hesitation and even fear. When the implementation finally took place after several months, the IS

seemed difficult due to the changes made, and because the street-level workers had already forgotten what they had learned.

Overall, the street-level workers' experience was that the training sessions were too abstract, and it was, for them, difficult to understand how they would be using the new IS in practice during their everyday work. Thus, *the training sessions lacked practical relevance which would have fostered the implementation and usage of the IS.* Looking back at the time of the interviews, the street-level workers stated that they lacked motivation to learn the IS at the training sessions.

Unlearning old practices and operational logic (of the previously used IS was seen difficult)

Prior and also during the implementation, *the comparison of the operational logics of the old and new IS' caused uncertainty and frustration* among the street-level workers. The workers wondered whether the newly recruited staff was in a better position because they did not have expertise about the previously used IS and, therefore, learning to use the new IS would be easier for them. Thus, without experience of the previous systems there is no need to unlearn old practices.

> A: I think that it might just be that... when you have used a certain system for tens of years, it is then difficult to give up, like I said that it [the old IS] affected even the language they used and the ways one made sense of their work. And this relates to the old IS.
>
> Q: It [the implementation] might have been more difficult for those who have unlearned the old...?
>
> A: Yes. Versus me who came in as a new and takes over the new IS. (H7)

The overall impression was that the previously used IS did not guide the work practices, were much more simplistic and, thus, easier to use because workers knew where to find the information needed and how to navigate the system. Due to this simplicity, the previous information systems were also seen as outdated.

> Our old system was, like, really old [laughs] and really simple. You couldn't do anything with it, like there were perhaps three things that you could do there. It was really simple. And this was a good and bad thing about it, of course. And what was difficult at least for me was that Apotti was so versatile, even too

> versatile. We were told over and over again that one cannot make too big a mistake there even when you would not do things in a certain way. Yet somehow, when you were accustomed with the previous, like, there was only one way of doing things because the old system did not proceed if you did not tick a box. (H5)

The street-level workers emphasized that *the differences between the IS' operational logics created a need to unlearn old and to learn new practices and ways of working.* For them, it was difficult to give up on the previously learnt practices and therefore the implementation of the new IS was difficult; the street-level workers knew how to use the previous system but not how to operate with the new, more up-to-date and nuanced IS.

> It was like 'this is impossible, this system, it's impossible to learn how to use it and only if we could still use the previous system, and this we did not need to do in the old system...' We felt that the menus were difficult and where is everything, and we kind of got stuck to these little details like... 'what is this, I cannot get pass this because I don't know what to click or, where do I find this and that, or how do I start to get accustomed with the view which has these different options', like this kind of basic stuff. (H1)

In addition, the new IS was based on different terminology than the previously used information system. Even after the implementation, the street-level workers had noticed that *the terminology and commands used in the previous IS were still used, guiding the practices of their everyday work.* They stated that this was one source of frustration and confusion; people were still using the outdated terminology to make sense of and to help others in their everyday work.

Attitudes, beliefs and lack of support (guided the implementation process)

Prior to the implementation, *negative atmosphere among the street-level workers affected their attitudes and beliefs towards the implementation process and the new IS.* The street-level workers admitted that this negative atmosphere towards the new IS caused difficulties for both learning and development of the system. Partially, the negative interpretations about the new IS were created and strengthened by the news media, impacting the street-level workers' motivation and willingness to use and to further develop the IS.

> And perhaps, I feel that the negative views about Apotti is due to news media also, like what I have seen is that the news, which might not have anything to do with Apotti, but the headlines scream Apotti and something [laughs] negative after it, it is quite funny for me because I have used the system since the implementation and it troubles me that this ready-made negative atmosphere does not help, I mean that the employees have these negative attitude beforehand towards the system. It's a shame. (H4)

The street-level workers were *worried about how the new IS would change their work and its practices*. All in all, the uncertainty experienced about the new IS as well as worries that would their own skills be sufficient affect the street-level workers attitudes towards new IS. The uncertainty about one's capabilities as a learner, fear of mistakes as well as lack of courage and skills sustained the negative attitudes towards the implementation. The street-level workers' impression was that a successful implementation of the new IS required technical skills, curiosity towards the new and unknown as well as courage to try-and-possibly-fail when using the IS in practice. Curiosity and courage were needed mostly because the street-level workers felt that the operational logic of the new IS was profoundly different to the ones they had previously used, and at the implementation phase the street-level workers' focus was heavily on questioning the operational logic of the IS. In addition, they did not feel that they had possibilities to influence this operational logic, which made it difficult to accept the change causing frustration. Using and testing the new IS in practice, thus, required skills and courage to try, and those street-level workers who felt that they lacked the skills needed, were hesitating to use the IS and feared that they would make mistakes: "I noticed that people are extremely cautious with Apotti, there are all kinds of arrows and stuff, yet people are afraid to open or click those, people are super cautious to utilize all that you could do with it [the IS]. "(H5)

The street-level worker's *own positive attitude towards new technology and learning* was seen as a crucial aspect of a successful implementation process. They relied extensively on the individual's capabilities, attitude and willingness in learning to use the new IS and technology in general. Indeed, the implementation was not difficult for all street-level workers, and those who were both interested in technology and had a positive attitude towards learning were more positive towards the implementation: "And somehow, this colleague said that it [the implementation] is not a big deal for her, it's like

starting a new job where you have a new system that you need to learn, it was not that big of a deal to many." (H3) In addition, street-level workers' attitude towards the new IS, its implementation and their own capability to learn were more positive when they had already had previous experiences of successful implementation processes or had previously learnt to use different information systems.

When the new IS had been in use for a while – approximately one and a half years by the time of the interviews – the street-level workers had noticed a change in attitudes and beliefs towards the IS: " I think that people only noticed Apotti's positive aspects after using it for some time, when I was in the middle of the chaos in the beginning, the talk was really negative and people got stuck to the negativity." (H1) When they had incrementally learnt to use the new IS in practice, the attitudes were more positive, and the IS had become a common tool for their everyday work. Changes in the attitudes from criticism towards acceptance had clearly benefitted the implementation process. However, this change in attitudes took time.

Although leaning extensively towards the individual workers' attitudes and their capabilities to learn, the street-level workers talked only little about the role of their managers. This absence of managerial impact for the implementation process is something worth reflecting; was *the lack of support from the managers on how to use the IS in practice* influencing the street-level workers' ability to successfully implement the new IS?

> And it was just bypassed [by the managers] like, 'don't use it, then as long as you do something'. Or that you don't need to use it. Or just try... this was the conversation. And of course, if you give your employees the possibility that they can do something difficult if they want to, then obviously they won't do that and will use the easier way, Perhaps in some units the managers have stated more clearly that this is how we do things, everyone does like this, and there are no other options. And when people start doing it, that is when you learn, and it becomes a routine. (H5)

Importantly, the street-level workers lacked understanding about the IS' usage for statistical and reporting purposes, and they felt that it was the managers' responsibility to ensure that these requirements were sufficiently met. Thus, managerial support and vision about how to implement the new technology in practice was lacking and called after.

Implementation happened individually (during the everyday work practices)

The implementation was done during the street-level workers' everyday work with the clients. Due to their busy schedules, *learning to use the new IS along with the everyday work felt difficult.* The street-level workers felt that there was no time for them to focus on really understanding how the IS operates. Instead of fully understanding the operational logic, the time restrictions limited the use of the IS only to the crucial features necessary for everyday work practices.

> I have to say that the more work I have and the busier and more clients I get, the less I will... Like then you just use the IS the way you have learnt to use it and you think that, well, this is the way I have done things so far, I will just try to learn the new things later. (H1)

Evidently, the street-level workers *needed sufficient time and motivation for the implementation*, that is, learning to use the IS' logic and features that were needed to ensure the continuation of work practices. The learning process was time-consuming, and sometimes, caused delays in everyday work. When the street-level workers had no time to learn and concentrate on the use of the new IS, or when the IS' features seemed too complicated and untrustworthy, the workers simply bypassed the IS and continued practice-as-usual.

Due to the organization of their work, the street-level workers often worked alone. That being, they also were mostly by themselves when learning to use the IS during the implementation. Yet, *support from colleagues* was one of the most *crucial aspects the street-level workers needed when learning to use the IS in practice*. When encountering problems with the IS or when one did not know how to use the system, the street-level workers turned to their colleagues for support and advice.

> But then, due to the nature of our work, after the first few weeks when people more actively returned to do their own work, travelling and stuff, we quite quickly were in a situation in which we did not necessarily meet our colleagues so often. And after that it was like you first tried to figure it out on your own and then tried to seek help... And always someone helps and ponders things with you. But when you do not have that colleague nearby, then you try to figure it out by yourself […] Or at least I think that we have all started to enact many things in our own way. (H2)

Evidently, the street-level workers did not often have either the possibility or time to reach out for help from their colleagues during their everyday work. In practice, the street-level workers made choices of what features of the IS they used individually, resulting to a situation where they had learned *individualized ways of using the IS:* "everyone just uses the system in their own way, despite of what the instructions say or what has been talked about in the trainings, everyone have just started to interpret and make their own choices." (H10)

> Perhaps there was this uncertainty because we did not have any shared practices or understanding of how to do things [use the new IS], within the city or within the units, like how we will do the recordings, or how, if we meet our clients, how we will record the meeting to the system […] Previously, it was just that people did whatever they wanted to do [laughs], everyone just did how they know how to. And perhaps that also created resistance, we did not have shared practices, one did this and other did that. (H1)

Amid the everyday work, the features which seemed the most suitable for the work practices were taken to use, and others that seemed too complicated, difficult or time-consuming were left out. The street-level workers also put a blame on the busy schedule when explaining that they did not even have time to check out the IS' instructions, and when they did, the instructions were interpreted from the individual's perspective, only strengthening the individualized ways of using the IS: "I think that during the everyday work, people just don't remember nor have time to check the instructions, and they will just do something [laughs]." (H8)

Partially the individualized way of using the IS were caused by the system itself, which enables different ways of conducting the same procedures. Eventually, when the co-workers had already learned the different ways of using the IS, confusion and uncertainty about the need for shared practices emerged. Over an year after the implementation the street-level workers emphasized *a need to develop and learn shared practices and ways of using the IS.* They felt that standardizing the ways of using the IS and mutual understanding about why the IS was used in a particular way were crucial to unleash its potential. However, it was stated that it is difficult to change the ways of using the IS when the individualized ways had already been learnt. Again, time was needed to ensure the learning and unlearning.

Ensuring the interaction and engaging with the clients (guided the ways the IS was used in practice)

The street-level workers emphasized that their work at the social services was not as urgent as the work in healthcare services, and *the characteristics of social services enhanced the street-level workers to choose how to use the IS in practice.* Indeed, the extensive criticism towards the IS in the news media derived its source from healthcare service sector to where the IS was first developed. Paradoxically, it seemed that the operational logic of the new IS was more suitable for the social service sector: the street-level workers pointed out that the everyday work done in social services was not dependent on IS, or whether it was functioning properly. For example, it was possible to first use Word – or paper and pen – to document the necessary information about the clients and their situations instead of using the IS.

In the everyday work, *it was more important to focus on engaging with the clients, not using the IS.* The street-level workers felt that especially in the meetings with clients the issues dealt with were sensitive and required them to be present in the situation for their clients: "I don't do registrations during the phone calls, there are so strong emotions, agony and needs that I find it silly to start typing, then, in my work, one must concentrate on the client." (H8). They choose, for example, not to use the IS for real-time registration. Instead, the street-level workers relied on their capability to remember the necessary information to ensure that their focus remained on clients, and used the IS only after the meetings. From the street-level workers' point of view, even using any technology – that is, having their laptops at the meetings – would interfere with the interaction with their clients, especially when the work was done alone.

> I feel like if I have my laptop with me, it affects how I can encounter my clients, I think that it prohibits good interaction which is crucial in those situations. That, like, then my focus is on what I write and what my fingers are doing and not on what the client says and what facial expressions and gestures they communicate with me. That is the reason I do not use it [laptop] at all. I find it easier to write one or two words in a notebook, and that does not take me away from the interaction. But the laptop in between cuts off the connection with the client. (H10)

An overall agreement was that the street-level workers c*hose to use IS and its features for the benefit of their clients*. They stated, for example, that all the recordings made in the IS should be done for the client and neither for statistical purposes nor for the sake of the IS' operational logic. One crucial feature of the new IS, the structured form for recording, was considered beneficial for statistical purposes but not suitable for recording the individualized situations and needs of the clients. Instead of the structured recording, the street-level workers preferred to use the IS' free text feature, which, from their perspective, better allowed the clients' life situations and needs to be heard:

> Well, I think that the most important features are the ones with free text where the voice of the client is written, and what he or she talks about their lives within that particular moment. For example, one thing that has been seen problematic within our team is substance abuse. There is 'yes' and there is 'no'. It rarely is either or. If I click 'no', there will be no open space for text to be written, it is just 'no'. And then you must write it down somewhere else that the client has previously used intravenous drugs but has been clean for an year. Or something. That does not always serve its purpose. (H8)

The street-level workers felt that the IS could also encourage their clients to participate in the service processes to benefit their own wellbeing as well as to increase the transparency of the social services. Client participation was enhanced through a client portal called Maisa, where it was possible for the clients to message street-level workers and to see their own recordings and decisions. From the perspective of the street-level workers using the IS this meant that they needed to be aware of the data visibility and data security issues when making the recordings. In addition, a sensitive and respectful approach towards their clients was called after. Yet, often due to time restrictions, the street-level workers needed to choose ways of using the IS which contradicted the benefit of their clients. For example, individualized recordings were seen important for the clients but not often compatible with their colleagues' data needs as well as too time consuming to do.

> We work in Family Services unit […] I criticize that we must do it [the decision] to every family member. Because that takes an awful lot of time, then. […] I think it's clumsy, there are sometimes seven, even eight children in the family, it really is a terrible [laughs], terrible waste of time. But then again, I couldn't use the same decision text to everyone because all these children are individuals […] Easily, it

> feels like doing assembly line work, the child's own personality is not necessarily made visible and it feels wrong, I guess. But this is required, so shortcuts are needed. (H9)

The street-level workers stated that the IS needs to be so reliable that their crucial everyday work could be carried out without the need to test the system with the clients. Also, when encountering problems with the technology, support should be provided immediately to ensure that the work tasks, such as decisions, can be done without delays. Reliable and trustworthy IS meant better cooperation and trust in their interaction with clients.

Technical, organizational and institutional aspects (affected the implementation process)

When it comes to the technical aspects, the street-level workers felt that *the IS helped to govern their workload*. They described, as a positive development, that the new IS notifies them when their own clients' recordings were incomplete, and that the IS enabled easy access to a holistic image of their workload, those work tasks that need attention as well as data and information of each client.

On the other hand, *the new IS was seen too complicated*. The street-level workers' impression was that the IS had complicated their work practices and they hoped that it could operate on a more simplistic logic, meaning mainly that the IS entailed too many optional ways of completing the same functions. To reduce the complexity of the IS, the street-level workers hoped for example that they could modify the so-called "smart text" options and reduce the choices available in the structured recording function. An overall agreement among the street-level workers was that the *terminology* used both in the smart text and structured recording functions *of the IS should derive from social services* instead of healthcare services to reduce the complicatedness and confusion.

Making the multi-actor collaboration difficult both between the units of the social service organization and especially in multi-organizational settings, the operational logic of the IS, and thus *the street-level workers' access to information is dependent on the organizational structure and work role*. That is, the rights of using the IS depends on the street-level worker's work unit and their role in it instead of the client or even the individual worker using the IS. This became especially problematic when a street-level worker had multiple roles within the organization(s) and depending on the role at hand,

the IS' view, functions and access to client information varied. Technically, changing the role in the IS was seen complicated, frustrating and time-consuming: "Yes, because that just takes time. Like if this was a Formula 1 car, its speed would drop […] It would be in pit stop." (H6). Although the operational logic of the IS such as access to clients' information depends on organizational structure and the street-level worker's role within the social services, neither the practices of the work nor the needs of their clients were limited to these. Together, the operational logic of the IS as built on the organizational structures and restrictions deriving from law were affecting the access of information and caused delays in everyday work:

> It doubles the amount of work, like, there [Child Protection unit] already is the information but you don't get to use it [in Family Services unit]. I think that the biggest issue for us is, that the Child Protection unit, that we cannot see their recordings […] And yes, this is based on the law but of course it disturbs our work a lot. And especially now, it feels like... There is a new limit of 35 clients [for a one social worker] in Child Protection unit, and it means that many of their current clients will change over to us at the Family Services, and their whole background [data] is there and we do not have any prior information, we do not see any of it, and we still have to continue their work, like, start from the middle. (H9)

Along with the technical and organizational aspects, the *Data Protection Act limits the use of IS* in everyday work practices. Indeed, the Finnish law about the data protection, especially in social and healthcare services strongly guides the street-level workers' access to data. The IS' functions allow containing various data about the clients, yet the law restricts its use. Thus, the street-level workers needed to be well aware of which data they have access to, as well as what they can register and who else can access the registered data. Confusion about the rights to access data sometimes led to fear of mistakes. From the perspective of fluent everyday work, overcoming the organizational and role-related boundaries to access client's data can sometimes be well justified, but the law restricts the access. Quite naturally, the street-level workers did not want to risk breaking the law even if they needed the data.

Conclusions

As our findings and Cabrera et al. (2001, 245) accurately illustrate: "[a]nyone who has lived through the implementation of a large-scale technological innovation in an

organization has run at some point or another into the crude reality of major organizational and human, rather than purely technological problems.". Indeed, discussions about the technology-driven development of public services often revolve around the aspects, problems and costs of technology as such. Instead, it seems that in the examined context of social services the new IS functions quite well, whereas the hindering and enabling elements of the implementation process are related to other issues than the technology. Next, Table 3 provides a summary of the aspects affecting the implementation of new technology from the street-level bureaucrats' perspective through the analytical framework of public service ecosystems.

Public Service Ecosystem	**Street-level bureaucrats as policymakers**	**Results**
Institutional context	Siloed social and healthcare services Law and regulations Institutionalized values of social care	Technical, organizational and institutional aspects
Organizational context	Inter-organizational structures Division of work Ensuring interaction and engaging with clients Managerial support and guidelines	Implementation happened individually Ensuring the interaction and engaging with the clients Technical, organizational and institutional aspects
Individual context	Practices of everyday work Individualized ways of using the IS Capabilities, previous experiences, expectations, attitudes and beliefs Importance of peer-support Learning and unlearning	Attitudes, beliefs and lack of support Lack of knowledge and practical relevance Unlearning old practices and operational logic

Table 3. Aspects influencing the IS' implementation from a street-level perspective.

Change in PSE happens through *institutionalization* as actors disrupt, maintain, and create institutional arrangements (Rossi & Tuurnas, 2021); different institutional arrangements the different components of the PSE hold are brought together and affecting each other. The findings suggest that one of the crucial aspects guiding the implementation process – and technology-driven development – was the experience of individual SLBs working alone both in practices of their everyday work and, consequently, when implementing the new IS.

The individual context represents the micro-level of a PSE. Here, the institutional arrangement as values, beliefs, aims, attitudes and practices of the street-level bureaucrats guided the implementation process of the new IS. For example, the SLBs' individual history and experiences with previous IS' – as well as technology in general – affected their attitudes and beliefs and, ultimately, the implementation of the new IS. Also, their capabilities to learn new as well as unlearn old practices was seen crucial to the successful

implementation process. As the findings reveal, in social services – related not only to individual context but cutting across the organizational and institutional contexts – the street-level bureaucrats' daily work was often done alone. This, along with the individual beliefs and capabilities to learn, attitudes towards technology and implementation process led to individualized ways of using the IS. As Isett et al. (2006) note, frontline acceptance plays a key role for the success of implementation of new procedures, or as in her, new technologies.

Although the empirical exploration focuses on the experiences of the SLBs, the findings are not limited to the individual level. On the contrary, the street-level bureaucrats' experiences about the implementation process reveal aspects related to the organizational (meso) and institutional (macro) levels of the PSE. This finding is in line with Carson et al. (2015) who underlined the systemic context for SLB´s space for discretion.

For example, the SLB felt that they did not receive sufficient support and guidance from their managers about how to utilize the features of the new IS, strengthening the role of the SLBs when making decisions about the implementation. This can be considered problematic from organizational and societal aims – choosing not to use for example the structured reporting features of the IS hindered the possibilities to gather data for organizational purposes and, instead, enabled the individualized practices. Consequently, as Torfing et al. (2019; see also Taylor 2014) have argued, we must rethink SLBs' practices, as well as leadership and managerial models in the public sector. Relatedly, the nature and values of social services placing the care and needs of the clients at the core of the practices, thus guiding the SLBs' decisions about the implementation process, can be considered as an overarching aspect that cuts across the levels of PSE.

The organizational structures and division of social services' work was one of the crucial hindering elements the SLBs experiences foregrounded. These can be considered as aspects associated with the organizational context (meso level of PSE). Eriksson and Andersson (2023) argue that although the research on public services is building on a service logic, the street-level bureaucrats, in practice, are required to address the service logic ideals about active citizens, interorganizational collaboration and collaborative forms of value creation with NPM logic. Here, the social service organizations' organizational structures and division of work provided what Eriksson and Andersson (2023) describe as 'institutionalized NPM' guidelines for the SLB on how to make decisions about the implementation and practices with the new IS.

SLBs' possibilities to foster multi-actor, interorganizational or even intra-organizational collaboration for the benefit of their clients was heavily reliant on the Finnish law. Thus, the institutional context of the PSE guided the implementation process and the practices of the SLBs implementing the IS.

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