



# Using a Service Lens to Better Understand Practices –and Vice Versa

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**Abstract.** Many studies of practices involve service exchange, and many service researchers have discovered the central role that sociotechnical practices play in service –in particular, within the service-dominant logic school of thought. In this paper, we propose an analytical lens that builds on this mutual interest to understand complex practices involving service exchange. Practice researchers can gain new insights regarding practices embedded in service ecosystems. At the same time, service researchers can better explain actor behavior by looking deeper at sociotechnical practices. We develop a concept toolbox based on practice and service-dominant logic research literature. We illustrate the usefulness of the toolbox through an interpretative case study of public service to include children with disabilities in leisure activities. Seeing practices as parts of larger multi-stakeholder service ecosystems 1) can help us better explain behavior in those practices and understand how they are affected by other overlapping practices, 2) brings forward the importance of value and how multiple actors need to interact in order to create value for each other, and 3) enriches service-dominant logic with a focus on sociotechnical aspects that are central to many practice studies.

**Keywords:** Practice, Service, Value, Service ecosystem, Boundary resource, Practice-centered computing, Service-dominant logic, S-D logic, Value co-creation, Resource integration, Ecosystem, Social inclusion, Disability, Children

## 1 Introduction

Consider this fragment from the case we analyze in this paper:

Anne is a 14-year-old girl with a disability. She loves swimming. However, she struggles to find swimming courses and activities that suit her needs. Finding information about swimming activities, in general, is not difficult (“I can just google it”), but finding activities that are accessible and tailored to her needs is often impossible. Activity descriptions online omit information about how tailored the activity is for her type of disability. The only way to find out

is for Anne to show up. She has done that a couple of times but has given up after having ended up in awkward situations.

Anne is not alone. Being left out of leisure activities is a global problem for children and adolescents with disabilities. It is one of the primary reasons for social isolation in this user group (Shields et al., 2012). Although authorities in many countries demand that leisure activities support disabled children, the tailoring is done to varying degrees, and information needed for the children and their parents is difficult to obtain (Palisano et al., 2010). The result is often that these children stay at home.

When approaching Anne's problem, many CSCW (Computer-Supported Cooperative Work) researchers would start by looking into the *practices* involved. Detailed observations and analyses of practices have played a central role in CSCW research (Bjørn et al., 2016), as well as in neighboring fields such as HCI (Human-Computer Interaction) and IS (Information Systems) (Nicolini, 2009; Kuutti and Bannon, 2014). Practice can be understood as "a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (Reckwitz, 2002 p. 249). A practice lens on Anne's case would have provided us with valuable insight into Anne's life, her interactions with family and friends, the technologies she uses to interact with swimming activity organizers, how she uses them, her needs, her emotions, and her frustrations. Such detailed, thick descriptions of everyday sociotechnical practices are the hallmark of CSCW research (Schmidt and Bannon, 2013).

The practice lens is powerful and has provided us with vast insight. However, by focusing on the local and the here-and-now, practice studies risk ignoring the backdrop of interconnected technologies, organizational aspects, conflicting goals, and temporal aspects of complex sociotechnical systems (Fitzpatrick and Ellingsen, 2013; Monteiro et al., 2013). Ignoring this backdrop may impact the explanatory power of practice studies. Consider, as we will discuss in our case study, how Anne's challenge of finding high-quality information about swimming activities is connected to other practices enacted by other actors, their motivations, and the perceived value they see in helping Anne out. We argue that ignoring the bigger picture can leave practice studies merely addressing the symptoms of problems that exist elsewhere in the more extensive sociotechnical system.

The main goal of our work here is to provide CSCW practice researchers with practical conceptual tools to explore and tie in with the backdrop. We aim to contribute by exploring the notion of *service* from service-dominant logic (Vargo and Lusch, 2004) and create and test a toolbox which can be of use for CSCW practice researchers. To substantiate this contribution, we show why practice

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studies need to extend and the potential utility of mobilizing a service lens before outlining our contribution.

We seek to extend the practice lens by drawing inspiration from existing, similar initiatives. One is information infrastructures (Monteiro et al., 2013) and infrastructuring (Karasti, 2014; Bødker et al., 2017), which investigate the long-term and historical development of large technological infrastructures. Another one is social and cultural activity theory which has been applied to “zooming out” of practices and connecting to organizational aspects (Nicolini, 2009). We also build on CSCW studies of practices involving service, often without the authors explicitly using a service framing. For instance, several recent studies have looked at how service providers enact healthcare, and how it affects patients and their informal caregivers and family members (Procter et al., 2014; Gui et al., 2018; Ismail et al., 2018). Other studies examine how platform service ecosystems affect platform workers (Kittur et al., 2013; Martin et al., 2014). These studies often demonstrate a portion of a complex service ecosystem through their thick descriptions, in this way providing essential insights into practice and why it is formed the way it is.

Our first reason for invoking the service concept is recent relevant developments in service research. Service research has transitioned from focusing on service as a unit of exchange of goods between a service provider and a customer to a network-oriented view of service where social and cooperative *practices* play a more significant role (Baron et al., 2014). Our interest in service as a concept is largely influenced by one such development, i.e., the work on service-dominant logic (S-D Logic or SDL) (Vargo and Lusch, 2004). SDL regards service and service ecosystems as social systems where value for each actor is co-created through social construction practices (Vargo and Lusch, 2008a; Edvardsson et al., 2011). In SDL, service refers to the collaborative *practice* of applying one’s skills and competencies for the benefit of others, often in exchange for some value. A characteristic of service is that it involves several actors –including service provider (e.g., a municipality as in our case study presented later), employees (e.g., municipal employees), recipients (e.g., citizens), and third parties (e.g., volunteer organizations) –with each their own practices, motivations, and desired values. Moreover, a service often happens in a *service ecosystem* (Vargo and Akaka, 2012), i.e., a larger collection of coordinated practices involving many actors.

A second reason is the increasing prevalence and relevance of service. Service, both private and public/governmental, is the underlying mechanism of value creation in our societies. According to OECD (Organization for Economic Co-operation and Development), the service sector counts for more than 70% of total employment and value-added in OECD countries (OECD, 2005). In modern society, we spend most of our daily lives in service exchange activities. We are constantly affected –often unconsciously (Thaler and Sunstein 2021) –by service providers who demand our attention, want us to do

things, and try to change our practices. With the increase in smart service systems (Beverungen et al., 2019), physical objects surrounding us are turned into ubiquitous “service front-ends” that use their sensors and algorithms to watch and influence us –as well as impact our well-being (Anderson et al., 2013). This “servitization of everything” can sometimes take arguably absurd turns, such as turning car seat heating into a service (Vincent, 2022).

A third reason is a necessity to understand more of the background of the socio-technical systems we study. It has been argued, for example, that the recent flurry of e-government in the public sector is the result of New Public Management (NPM) (Lapsley, 2009). In e-government initiatives, governments use nudge-based services (Thaler and Sunstein, 2021) and AI (Viscusi et al., 2020) both to interact with citizens and to automate decision-making (Ranerup and Henriksen, 2019). In this way, public services not only introduce new practices but also seek to shape existing practices of citizens based on a particular NPM logic. In so doing, public authorities increasingly use vocabulary inspired by service research, such as service “beneficiaries,” “service-level agreements,” and “co-creation.” Against this backdrop, practice studies could benefit from considering the service ecosystem surrounding e-government services. Public service contains some particular complexities as it aims to provide various benefits to different actors, creating a complex backdrop of values and motivations (Moore, 1995).

In this work, we aim to contribute the following. First, our main contribution includes the development of a concept toolbox suited for CSCW studies, which we call SIPA (Service-Inspired Practice Analysis) toolbox. As we describe in depth in our method section, the SIPA toolbox emerged through a case study that stems from an innovation project with one of the largest municipalities in Norway. This collaboration aimed to improve a sub-optimal digital information service targeting children with disabilities provided by the municipality. The SIPA toolbox emerged through engaging carefully with case, data, and the literature on practice and SDL. The individual concepts in the toolbox are not new and are theoretically well-grounded in both practice and SDL research. However, our study indicates how they together form a useful analytical tool. To explore the usefulness of SIPA toolbox and how it can benefit studies of practice, we apply it to a case study of public service for the social inclusion of children with disabilities. Our analysis demonstrates how this service exists in a world of intersecting practices, each with its guiding motivations, values, and goals. Applying the toolbox to the case, we discuss how it *i*) supports discovery of a service ecosystem involving actors both inside and outside the municipality, often hidden even for those who are involved in it, *ii*) supports detecting a wide range of often conflicting values within that service ecosystem, *iii*) allows us to better understanding how value is created –or destroyed –in the focal and other overlapping practices., and *iv*) shows the role of boundary resources in reconciling value co-creation. We further discuss the implications of this application for CSCW research.

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Second, at a method level, practice researchers regularly cooperate with service designers or use tools developed by service designers in their research. In particular, practice researchers use service design tools and methods to increase participation and emancipation in preliminary design processes (Saad-Sulonen et al., 2020). We seek to expand the research on the intersection of practice and service by focusing on a set of core concepts from each field that have the potential to strengthen and enrich our understanding of both practices and services. By drawing on concepts from SDL (Vargo and Lusch, 2004), the shared vocabulary we build can strengthen an engaged and multidisciplinary research agenda.

Third, we also discuss how focusing on sociotechnical practices can enhance SDL research, which often lacks an empirical focus (Mele et al., 2018; Mustak and Plé, 2020). We show how such a combined approach can provide an additional tool for service researchers to critically examine why practices within service ecosystems happen in certain ways. A sociotechnical practice approach to services can also be helpful to study complex and innovative service ecosystems at a “meso layer,” which is often recognized as important to SDL but lacks empirical research (Oertzen et al., 2018; Vink et al., 2020; Akaka et al., 2021).

The rest of this paper is organized as follows. In the Background section, we carefully review relevant literature from practice and SDL research that defines the concepts in the SIPA toolbox. The section concludes with a summary of the core concepts and their status in practice and SDL research. In the Case Background section, we lay out the case in some detail to illustrate the complex background of the involved practices and to show the service exchanges that are indeed involved. In the Method section, we describe how this is an interpretative case study and provide insight into how we worked with both the data from the case and the literature to create and apply the SIPA toolbox. In the Discussion section, we apply the toolbox to our case study findings and discuss the implications and the new insight that this brings. We also reflect on what implication a service lens can have for CSCW research in general.

## 2 Background

The concepts in the SIPA toolbox are shown in Figure 1 and summarized in Table 2 at the end of this background section. Our intention is not to provide an exhaustive summary of existing literature for each concept, a task that is well beyond the scope of this paper. We, therefore, provide enough background to justify the concept as part of the toolbox.<sup>1</sup>

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<sup>1</sup> We have deliberately called our contribution a concept toolbox to differentiate it from a conceptual model or a theory. This is partly because we are in an early stage of synthesis in our work but also because we wish to emphasize the practical aspects of these concepts as they are intended to be used as a toolbox for cooperation between researchers and practitioners.

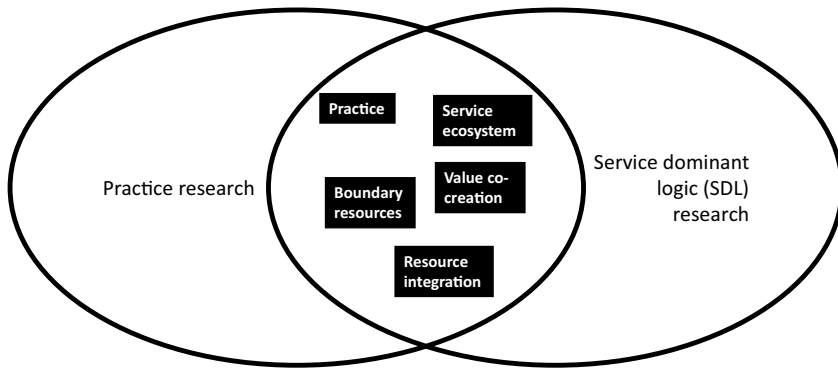


Figure 1. The concepts in the SIPA toolbox.

## 2.1 Practice

Schmidt and Bannon, (2013), in their reflections on the first 25 years of this journal, stress aptly that any computer system for supporting cooperation “not only has to support the execution of ‘the theory’ built into the model, but also ‘the practice’” (p.349), and CSCW researchers have followed this advice through “an approach to technology development in which ethnographic and other forms of in-depth workplace studies play an essential and proactive role” (p.350). To this end, the notion of practice and our understanding of its emergence, unfolding, and transformation has become a central concept not only in CSCW (Bjørn et al., 2016) but also in our neighboring research fields such as HCI (Kuutti and Bannon, 2014), organizational and information systems (Nicolini, 2009; Feldman and Orlikowski, 2011), and SDL (Korkman et al., 2010; Vargo and Akaka, 2012).

Despite this recent “turn to practice,” the concept of practice itself has been debated among philosophers for millennia (see Nicolini, 2012 for an overview). Practice relates closely to such fundamental concepts as agency and structure in social sciences. The concept of practice has, in fact, come to encompass all social activity. Therefore, the practice field has come to include numerous –sometimes opposing –theoretical frameworks, often leading to disagreements about the scope of a “practice theory” (Schmidt, 2018).

Maybe because of this long history –and the involvement of diverse scholars –it is challenging to find operational definitions of practice, which is often what designers of technology need. To illustrate this all-encompassing nature of practice, consider the definition of practice provided by Schatzki, (2012 p. 13) as “an organised constellation of different people’s activities”. At first glance, this might mean all social activity. However, according to Schatzki, not every activity is part of a practice. It is the “organization” of seemingly unrelated activities into a whole that creates a practice. This organization is essentially what the various theories of practice seek to explain.

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An understanding of practices as cultural phenomena is provided by Reckwitz: “A ‘practice’ (Praktik) is a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge” (Reckwitz, 2002 p. 249). Practice as mainly a cultural phenomenon is opposed to purpose-oriented or norm-oriented perspectives. Cultural theories of practice therefore “highlight the significance of shared or collective symbolic structures of knowledge in order to grasp both action and social order” (Reckwitz, 2002 p. 246). This cultural nature of practice is also one reason why Kuutti and Bannon, (2014) argue to complement the “momentary and ahistorical” interaction paradigm in HCI –with its focus on short-term human–machine dyadic relationships –with the long-term perspective of a cultural practice paradigm.

Shove et al., (2012) build on Reckwitz’s definition and provide a simplified tripartite model of a practice consisting of *material* (such as tools and technology), *competence* (skills and know-how), and *meaning* (the social and symbolic significance of participating to the practice).<sup>2</sup> This definition of *practice-as-entity* is then augmented by a view of *practice-as-performance* where repeated performances by human actors alter the parts and the links among the parts of a practice, creating trajectories encompassing (emerging) *proto-practices*, (current) *practices*, and (outdated) *ex-practices*.

The model by Shove et al., focusing on change and innovation through the idea of prototyping new practices (proto-practices), has been used by several researchers to study emerging practices and develop concepts for innovative practices and products. For instance, Shove and Pantzar, (2005) study the emergence of the practice of Nordic walking as a “reproduction” or re-purposing –mainly through marketing –of competencies such as walking and skiing, materials such as walking sticks, and meanings such as frailty and enjoyment. Kuijer et al., (2013) narrate a design project where the focus is moved from designing interactions to prototyping practices. In their case, the practice is that of bathing. The goal is to design new practices for sustainable bathing through “experiments in practice,” i.e. experimental performances of new practices in natural surroundings –in this case, improvised splashing in a lab-based bath. Similarly, Higginson et al., (2015) –in their study of laundry practices –break down each of the three elements of a practice-as-entity and create a detailed network of how laundry practices are performed. In their view, practices consist of multiple materials, competencies, and meanings shared among practices. By zooming

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<sup>2</sup> A similar model is proposed by Entwistle et al., (2015) called the contextual wheel of practices, where they divide material into *near materiality* and *infrastructure*.

into practices, they extend the triangle of Shove et al., (2012) into a network of interconnected parts.

These and similar studies demonstrate how focusing on practices is fundamental to our understanding of change. At the same time, a focus on practices tends to emphasize local phenomena, limiting the usefulness of such studies in understanding broader phenomena such as digital infrastructures. As pointed out in a thoughtful review of literature by Monteiro et al.: “What each of these scholars point to, albeit in different ways, is how, when we focus on one specific locale or time period, important influences from other levels and moments of technological design and evolution may be ignored” (Monteiro et al., 2013 p. 576). Fitzpatrick and Ellingsen, in their review of 25 years of healthcare research in CSCW, found that most studies focused on design prototypes to support small-scale interactions: “While this emphasises a sound commitment to understanding the users’ perspectives, this also shows a lesser engagement in larger-scale projects.” (Fitzpatrick and Ellingsen, 2013 p. 601).

The question is then: How can we extend the strength of a practice lens to study innovation in larger contexts? This is not trivial because the larger the phenomenon, the more difficult it gets to see the individual practices: “Practices therefore always need to be drawn to the fore, made visible and turned into an epistemic object in order to enter discourse” (Nicolini, 2009 p. 1392). At the same time, some inherent properties of practices as situated actions (Suchman, 1987) make them challenging to study at scale. These properties mean: “(1) that situated actions are consequential in the production of social life, (2) that dualisms are rejected as a way of theorizing, and (3) that relations are mutually constitutive” (Feldman and Orlikowski, 2011 p. 1241). In other words, from a practice-theoretical perspective, nothing is predictable, everything is interconnected, and phenomena do not exist in isolation. Because of such complexities, studies of scaled-up practices often become about scaling the study –using, e.g., surveys and simulations –and not about the practices themselves: “While valuable, this is not sufficient. It is not sufficient because examining phenomena at scale does not help us understand phenomena with scale” (Barrett and Orlikowski, 2021).

Earlier research has proposed several ways of scaling practice-based approaches to study and design larger infrastructures. Fitzpatrick and Ellingsen, (2013) point to multi-site studies, increased attention to policies, and technology procurement as approaches often mentioned in the literature. Similarly, Hyysalo et al., (2019) propose “a move from ‘snap shot’ studies to the linking together of ‘a string of investigations’” when studying sociotechnical practices. From a design perspective, Bødker et al., (2017) propose the concept of participatory infrastructuring as “a useful frame for understanding and addressing projects in which technology is developed over time, arenas, and communities of users and practices” (p.246), while Simone et al., (2021) talk about ways to “future-proof” technologies by taking the broader context into account. Monteiro et al., (2013)



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use the concept of information infrastructure “as an ‘extended design’ perspective to capture how workplace technologies can be shaped across multiple contexts and over extended periods of time” (p.576). Nicolini, (2009) has proposed various ways of “zooming out/in” to practices –using, e.g., activity theory as a higher-level framework –to observe and understand practices in their broader organizational context.

We contribute to this line of research by proposing a service lens as an additional useful concept to study sociotechnical practices that often cross organizational boundaries. Service-dominant logic’s definition of service, its framing of service ecosystems as collections of interconnected practices, and its focus on value co-creation provide a helpful framework to study practices in service-intensive organizations such as healthcare, social care, and education.

### 2.2 Service and service ecosystems

Like practice, service as a phenomenon has a long history (Vargo and Lusch, 2008b). However, service marketing as an area within marketing research developed mainly during the 70 s (Fisk et al., 1993; Lovelock and Gummesson, 2004). As a growing research field, service marketing initially struggled to separate itself from the then-dominant goods/products marketing. However, it quickly became a significant force within marketing during the 90 s and beyond (Fisk et al., 1993).

Service research seems to have had a development similar to that of HCI (Kuutti and Bannon, 2014), having gone through its own “interaction paradigm” towards a (social) “practice paradigm.” Baron et al., (2014) demonstrate how the definition of service –and the emergence of relevant research topics –evolved through phases (see also Möller et al., 2009). Initially, service was perceived as units of output in dyadic business-customer interactions. Most research was about making this output more effective through, e.g., service quality, service design, service encounter, and measuring customer satisfaction (Fisk et al., 1993). Gradually research efforts moved to strategic service management, including business-to-customer channel strategies and their impact on organizational performance and profitability. In later phases, the focus has moved from “services” to “service” as practice and network-oriented models of marketing (Vargo and Lusch, 2004).

A breakthrough in service research was the introduction of the service-dominant logic (S-D logic or SDL) by Stephen L. Vargo and Robert F. Lusch (Vargo and Lusch, 2004). SDL was mainly a culmination of the past decades of service research to “break free” from product marketing: “Briefly, marketing has moved from a goods-dominant view, in which tangible output and discrete transactions were central, to a service-dominant view, in which intangibility, exchange processes, and relationships are central” (Vargo and Lusch, 2004 p. 2). In SDL, service became the dominant phenomenon, and goods were pushed to the background: “Service, then, represents the general case, the common denominator, of the

**Table 1.** The axioms of service-dominant logic.

Axiom	Description
Axiom 1	Service is the fundamental basis of exchange
Axiom 2	Value is cocreated by multiple actors, always including the beneficiary
Axiom 3	All social and economic actors are resource integrators
Axiom 4	Value is always uniquely and phenomenologically determined by the beneficiary
Axiom 5	Value cocreation is coordinated through actor-generated institutions and institutional arrangements

exchange process; service is what is always exchanged. Goods, when employed, are aids to the service-provision process” (Vargo and Lusch, 2008b p. 26).

Vargo and Lusch defined a service to be “the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself” (Vargo and Lusch, 2004 p. 2). Service became “the ‘basis,’ rather than the ‘unit’ of exchange” (Vargo and Lusch, 2016 p. 6). This shift also implied a move away from “services” as units of output to “service” as the *practice* of applying knowledge and skills (Vargo and Lusch, 2008b), which led to a turn to –in SDL researchers’ attention –practices of resource integration and value co-creation. SDL is defined in terms of five axioms as shown in Table 1 (Vargo and Lusch, 2016).<sup>3</sup> Central concepts in these axioms include value co-creation and resource integration, which we will return to in the following sections.

A concept that has gained increasing importance in SDL is the *service ecosystem*. Service ecosystems are related to the “institutions” and multi-actor “institutional arrangements” mentioned in SDL’s Axiom 5. A service ecosystem in SDL is defined as “a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange” (Vargo and Lusch, 2016 p. 10). The lack of a shared institution, and the resulting imbalance in the corresponding service ecosystem, is one reason why it is difficult for Anne to co-create value with the other ecosystem actors, as we discuss in the opening of this paper and later in our discussion.

Because of this social constellation within a service ecosystem, practices take on a central role as analytical concepts in SDL. Practices are “resource-integration activities that lead to value creation” (Helkkula et al., 2012). Practices are seen as the way markets “work” and are “formed as the resources of customers and providers interlink with different contextual elements” (Korkman et al., 2010

<sup>3</sup> These axioms are an updated version of the initial eight (and later 11) foundational premises (Vargo and Lusch, 2004).

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p. 236). Field and ethnographic studies are increasingly used to study practices from a service perspective.

However, the concept of a service ecosystem also grapples with grasping the richness of practice. In a recent literature review, Mustak and Plé, (2020) criticize extant research on service ecosystems for being mainly conceptual and lacking empirical grounding. They challenge the optimistic view that SDL often has of service ecosystems. They demonstrate that actors in a service ecosystem often have diverging and conflicting views of the most fundamental aspects of a service ecosystem, such as value, resource, and shared institutional arrangements: “actors, irrespective of the level of the ecosystem to which they belong, could have divergent, conflicting goals or tend to maximize their self-interest, even at the cost of other actors” (Mustak and Plé, 2020 p. 407). Therefore, *ecosystem well-being*, i.e., “a holistic, dynamic, positive state that is contextually determined” (Frow et al., 2019 p. 2667), has emerged as a central concept in service ecosystem research.

### 2.3 Value co-creation

For actors involved in an interaction, creating value is what technology and service are fundamentally about. Technologies that do not demonstrate any value –at any level –for their intended users will not be used. Despite its centrality, the concept of value seems difficult to define and is often avoided in the CSCW literature. Value is researched more rigorously in neighboring research fields –e.g., in HCI and SDL –where it is assigned two different but interrelated meanings.

First, value is often used in a plural way, i.e., *values*, referring to a set of universal human values defining good design. This notion of value underlies much of value-sensitive design in HCI (VSD, see Friedman, 1996). For instance, Iso-mursu et al., (2011) use a human values inventory consisting of values such as achievement, hedonism, power, and tradition to uncover how children in a school perceive technology, and Miller et al., (2007) use human values such as privacy, trust, and reputation to design a groupware system.

The universal and predefined nature of such values and inventories has been criticized to privilege “a discursive definition of values over values that may be discovered or encountered through investigation” (Le Dantec et al., 2009 p. 1141). This critic is related to a second definition of *value* –as a singular noun –as the immediate and emerging value that a user perceives in an interaction, i.e., the *worth* of the interaction: “‘worth’ deserves, or brings compensation for, whatever is invested in it, whether this is money (repay), or time, energy or commitment (justify)” (Cockton, 2006 p. 168). Recent HCI studies have tried to avoid using predefined value inventories and instead employ exploratory and practice-centered approaches towards discovering value for each stakeholder in the interaction (see, e.g., Dahl et al., 2016).

Similarly to the above HCI-inspired views on value, the SDL school of service research distinguishes between *value-in-exchange* and *value-in-use* (Vargo et al., 2008). Value-in-exchange exists in the traditional goods-dominant logic of markets, where value is created and packaged *a priori* –e.g., in the form of goods –and is then offered to the customer for a price. On the other hand, value-in-use is based on the idea that value does not exist *a priori* but is created as part of the practices in a service ecosystem. This distinction is inherent in axiom 4 of S-D logic (see Table 1). In this way, value-in-use focuses on an emerging view of value –i.e., in its singular form, the worth –which is directly connected to an individual’s experience while participating in the service ecosystem (Helkkula et al., 2012). It is important here to also point to the distinction between value co-creation and what Vargo and Lusch, (2016) call co-production. Co-production is referred to “the creation of value proposition” (p.8, *ibid*) through, e.g., the design and specification of a system. In contrast, value co-creation refers to the actions of multiple actors that contribute to each other’s well-being (*ibid*). Such actions are not limited to the design and specification phase, nor participating in the design and specification of an IT system will guarantee value-in-use for the system’s future users.

The links between value and practice are further elaborated by Edvardsson et al., (2011), who extend the value-in-use view into *value-in-social-context* where value is not only something that a service provider and a beneficiary decide to co-create in a dyadic relationship but is created in a social construction process that involves multiple actors –including the service provider and beneficiary –in the broader service ecosystem. A consequence of this view is that practices become the center stage for value creation (Korkman et al., 2010) and that “identical interactions between a customer and a provider might imply different social and personal meanings, depending on how such meanings are defined and understood in different social systems” (Edvardsson et al., 2011 p. 333).

Value is central to any discussion of practices. Practices often “embody different interests and are hence internally fragmented, subject to multiple interpretations, and open to contradictions and tensions” (Nicolini, 2009 p. 1393) because of different perceived values by those involved. However, the value-creating aspects of practices are rarely discussed in the CSCW literature. The few published studies with a value focus limit their discussion to the design phase –i.e., co-production –which makes it challenging to study value-in-use. Kinnula et al., (2018) analyze several co-design projects in schools using a value co-creation lens combined with theories from psychology (such as intrinsic motivation). Their study shows what the stakeholders in the co-design processes consider valuable. For instance, the teachers valued learning novel teaching methods, the children valued variation in their school day, and the researchers valued collecting empirical data from the process. As another example of value as worth or “gain,” studies done by Claus Bossen et al. on participatory design of museum

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technologies have shown value conflicts between researchers –who wanted to develop innovative technology concepts –and museum staff who wanted “well-functioning, finished exhibition artefacts” (Bossen et al., 2012 p. 38). Using a different angle, but still focusing on design, Poretski and Arazy, (2017) report on the value of end-user innovation in a gaming platform ecosystem. They show how the ecosystem’s perceived value is increased by an increase in “modding” practices, i.e., end users creating modifications to the platform. Modding activities seem enjoyable by those who create and/or use the modifications, and by the platform owners who increase their revenues.

All these studies focus on what is perceived as valuable –i.e., worth –for different user groups and how they need to cooperate with other groups to materialize their own value. A focus on mainly the technology design and specification phase can limit such studies to consider value as value-in-exchange –i.e., what we think can create value –instead of value-in-use, which often involves complex value networks, interests, and motivations that emerge through what in SDL is called resource integration practices.

### 2.4 Resource integration

The concepts of value-in-use and value-in-social-context imply that value creation is a social process mainly enacted during service use. In SDL, this process is called *resource integration*. Value-in-use is created “when resources are used and combined in different ways...Thus, in service ecosystems, value cocreation is influenced by actors’ ability to access, adapt, and integrate resources, which is deeply shaped by the social context” (Beirão et al., 2017 p. 229). The concept of resources is central as different actors will have access to different resources, impacting their perceived or realized value. For instance, a child with a specific disability can access different resources than a child without that disability. This difference will affect how valuable each of them will find a specific leisure activity.

Vargo and Lusch, (2004) differentiate between *operand* and *operant* resources. Operand resources are typically products and goods, while operant resources are knowledge and skills we use –individually or collectively –to act upon operand resources to achieve a goal. For a child in a wheelchair, the wheelchair is an operand resource, while the skills of guiding the wheelchair to engage in a range of daily activities is an operant resource. Similarly, an organizer of a leisure activity who uses her knowledge of child disability to adapt the activity to wheelchair users is deploying operant resources to create value for herself and children on wheelchair.

Therefore, one specific type of practice often studied by SDL researchers –in addition to other practices such as exchange –is *resource integrating practices* (Korkman et al., 2010; Vargo and Akaka, 2012). Such practices create value for oneself or others in a service ecosystem. The process of integration is central here. Resources –operand or operant –are useless for their possessor if they cannot be integrated into the service ecosystem in a valuable way. All the knowledge and

skills of steering a wheelchair will not help a child integrate into his school environment if the school environment does not accommodate children on wheelchair.

Marketing scholars have traditionally favored a goods-dominant view where operand resources are central. Resource integration –and the importance of operand resources –is, therefore, an emerging concept originating from SDL. For instance, in their application of constructionist theories to services, Edvardsson et al. state that: “The actors’ perceptions of value and behavior in utilizing resources are determined by the boundaries of the social systems in which they are operating and their positions and roles within those boundaries” (Edvardsson et al., 2011 p. 329). Lindqvist and Westrup demonstrate how, in their case of Afghan refugee children learning Swedish, cultural differences hampered resource integration among the children: “These children therefore struggle to understand and try to learn what municipal aid actually consists of, as their knowledge and experience from Sweden is still very limited” (Lindqvist and Westrup, 2020 p. 1789). Eriksson and Hellstrom, (2021) demonstrate how knowledge of public services –i.e., operand resources –is created and used within and across different social networks –e.g., private networks of peers, professional networks of caregivers, and using resources such as mobile devices.

Although practice researchers seldom use resource integration as a label, several studies of practices in, e.g., CSCW literature demonstrate the concept’s centrality. For instance, Procter et al. describe a form of resource integration where elderly living at home and their social networks of service providers, family members, and friends work together to realize the value provided by assisted living technologies and services: “Indeed, we find that many of the problems care recipients encounter with [assisted living technologies] and services lie not in there being insufficient intelligence designed into devices or for the want of a ‘smart home’, but from the problems care providers experience in mobilising the intelligence and skills in the social network (family, friends and neighbours) in which the older person is typically embedded” (Procter et al., 2014 p. 246).

There are also critical CSCW studies of breakdowns in resource integration. For instance, Gui et al., (2018), in demonstrating “the heavy workload of managing the healthcare system as a patient,” show how lack of resources –here knowledge and information about healthcare services, i.e., “navigational competence” –makes it difficult for parents of young children to gain value from the services without going beyond the “official procedures and recommendations”: “As breakdowns became frequent as even mundane to our participants who navigated the healthcare service system, growing micro healthcare service system and cultivating navigational competence in a bottom-up fashion became urgent and essential” (Gui et al., 2018 p. 61:18). Their findings also demonstrate the vast differences in available resources that each family possesses, and how these differences affect their encounters with the provided services.

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As noticed by both Procter et al. and Gui et al., such resource integrating practices are often invisible and are left out from the official service descriptions. A similar reductionist approach to service is also acknowledged by service researchers (Oertzen et al., 2018; Vink et al., 2020), and is a fertile point of overlapping interest for the two research communities. One essential goal of practice scholars is to make practices visible (Schmidt and Bannon, 2013). Viewing practices as resource-integrating and value-creating activities can provide new insights for CSCW researchers. At the same time, a strengthened practice focus in SDL can help shed light on what resource integration means in the sociotechnical world of modern service exchange.

### 2.5 Boundary resources

A core strength of the practice lens is its emphasis on material objects since “the stability of human social orders beyond particular contexts of action can only be explained when one allows for the work performed by objects—symbols alone do not resolve this puzzle” (Nicolini et al., 2011 p. 613). The role of objects as intermediaries across practices is, therefore, well-known in practice-centered studies. These *boundary objects* are “both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites” and they are “weakly structured in common use, and become strongly structured in individual site use” (Star and Griesemer, 1989 p. 393). Such boundary objects in use shape our socio-material practices (Doolin and McLeod, 2012). They help practitioners to transfer, translate and transform knowledge across practices (Carlile, 2004). They can play an infrastructural role –i.e., staying invisible in the background –or move to the foreground and act as the mere motivation and reason for cross-disciplinary collaboration (Nicolini et al., 2011).

In contrast to practice-centered studies, in fields such as management and service marketing, the role of objects in collaboration is often taken for granted or “black-boxed” (Doolin and McLeod, 2012). For instance, there is a general lack of focus on sociotechnicality in service literature. With its strong focus on operant resources, SDL considers material objects and products –i.e., operand resources –almost as second-order concepts. Koskela-Huotari and Vargo, (2016) define resources “not as a substance or thing, but as an abstraction that describes the function that a substance or an idea can contribute to the achievement a desired end” but at the same time also acknowledging that the “process of potential resources gaining their ‘resourceness’ requires further attention in service, and more generally market, theory” (p. 164).

This lack of focus on sociotechnicality in service has resulted in difficulties in defining what resource integration –a central tenet of SDL –is (Kleinaltenkamp et al., 2012). This is, in our view, a shortcoming of SDL, considering that services increasingly undergo digital transformations that not only restructure the service logic but also bring fundamental changes to how people

interact with services through digital artifacts and infrastructures. Recent studies in service research acknowledge to some degree the centrality of materiality –of digital technologies –for service interaction and innovation (Akaka and Vargo, 2014; Lusch and Nambisan, 2015). For instance, the generative and programmable nature of digital platforms allows them to be malleable, rendering them as both operand resources –in use –and operant resources when innovating (Lusch and Nambisan, 2015). Recent studies show that resource integration is highly influenced by information technologies, leading to both value co-creation and co-destruction (Mengcheng and Tuure, 2022).

The boundary object concept can help us bring a sociotechnical perspective into SDL and create a better understanding of resource-integrating practices in service ecosystems. The property of a boundary object as “a sort of arrangement that allow different groups to work together without consensus” (Star, 2010 p. 602) is beneficial to strengthen the connection between sociotechnical practices and value co-creation. Within and across service ecosystems, stakeholders with different motivations need to cooperate to create value for themselves and others. This cooperation does not always guarantee consensus about whose value is the most important (Mele et al., 2018; Mustak and Plé, 2020). Nevertheless, in services, value for each stakeholder needs to be created through cooperation.

While service researchers are only recently embracing the concept (see e.g. Sajtos et al., 2018; Go Jefferies et al., 2019), examples of CSCW studies focusing on boundary objects are numerous and span several decades. Here we will review only a few of them, focusing on two aspects of boundary objects raised by CSCW researchers: 1) Boundary objects can help us understand invisible work, and 2) Boundary objects are evolving objects.

Bossen et al., (2014) studied the boundary work of medical secretaries during the introduction of an electronic health record (EHR) system. Their study shows how the EHR takes a central role for these secretaries –who take care of “tidying” and quality-assuring the record data –while for the doctors it acts as a secondary work object. In the same way, Stisen et al., (2016) describe the work practices of hospital orderlies as a typical case of invisible work compared to more clinical practices of doctors and nurses. Their work suggests that orderlies –and their digital tools –function as coordinating boundary resources and that making this practice more visible in order to support it using digital tools also requires a re-balancing of the involved roles –e.g., doctors adding more status information to the digital tool. These and similar studies demonstrate how boundary objects can help bring to the foreground the type of “invisible work” that reductionist approaches in service research often neglect.

Another relevant line of research in CSCW focuses on how boundary objects emerge through co-creation and, in this way, contain value for the stakeholders who created them. Lee, (2007) criticizes the original study by Star and



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Griesemer, (1989) because of its bias towards managerial and established standards of cooperation. She argues that the “dependence of boundary objects on the premise of established standards is inherently problematic for theorizing incipient, non-routine, and novel collaborations” (Lee, 2007 p. 314). She then describes how designers in her study of museum exhibitions create self-explanation artifacts (such as privately used sketches) and how these artifacts gradually cross boundaries by becoming increasingly explicit and accepted by multiple communities. She calls these artifacts *boundary negotiating artifacts*. Pennington, (2011) discusses the role of boundary objects –such as charts, diagrams, and text –in newly established e-science teams. Here the focus is on the knowledge management aspects of boundary objects, and that “[boundary] artifact construction entails learning and creative thinking by both the creator and the recipient, and enables not just the flow of information but also the dynamic creation of new mental models that contain linkages between participants” (ibid, p. 189). The role of boundary objects in learning and cross-organizational knowledge management has also been studied by others (Carlile, 2004; Levina and Vaast, 2005; Akkerman and Bakker, 2011). Roth and Jornet, (2018) take the evolving nature of boundary objects a step further by considering objects as “fluid things” inseparable from the dialogical nature of collaboration. These studies show that boundary objects constitute the material basis for practices and that these objects, often co-created, contain values for all those involved in the practices.

### 2.6 Summarizing the concepts

The concepts we have discussed (see Table 2 and Figure 1 earlier) constitute the SIPA (Service-Inspired Practice Analysis) toolbox, developed to help us discuss practice and service together in a new light. Looking at practices as part of service ecosystems can help us explain agent behavior, and the role that technology plays in service ecosystems through an emphasis on technological boundary resources. The concept of a service ecosystem encourages us to see local practices in a broader context, which can help us see systemic explanations for local routines. At the same time, SDL researchers can draw essential lessons from seeing service ecosystems as sociotechnical practices where detailed observations of actors and technological objects can help understand better some central concepts such as resource integration.

SIPA toolbox is particularly handy for the analysis of public service. By public service, we mean service provided by governments using a shared pool of resources, with the goal of providing not only personal or commercial value but public value (Moore, 1995). Public service in many European countries includes education, healthcare, social care, city maintenance, and more. Many CSCW studies are about public service. In the following sections, we will describe such a public service and use this service to demonstrate the utility of the SIPA toolbox.

**Table 2.** A summary of the concepts in the SIPA toolbox and their status in practice and SDL research.

Core concept	In practice research	In SDL research
Practice	Central concept operating as the unit of analysis in numerous studies focusing on deep understanding of how work is done	An emerging concept in service-dominant logic for the study of value co-creation in services. Often neglected in conventional service research in favor of reductionist approaches focusing on dyads of service providers and recipients
Service ecosystem	Not an explicit concept in practice-centered computing. However, numerous CSCW studies study service ecosystems in various forms	Service ecosystem is a central concept in service-dominant logic, where actors coordinate their efforts to create value for themselves and others
Value co-creation	Value-sensitive design is an established paradigm in HCI investigating values during the design phase. Value –in terms of worth or gain for users –is not much studied	A central concept in service-dominant logic, where social, institutional, and cultural conditions for creating value are increasingly in focus
Resource integration	Not used as an explicit concept. However, practice-centered computing has a rich tradition of studying emerging social practices where resource integration unfolds	Although a central concept in SDL, it is often described as an analytical concept with only a few empirical studies demonstrating its complexity
Boundary resources	Sociotechnical objects and resources, and the role they play in collaboration, are studied in-depth in practice-centered computing	SDL lacks the sociotechnicality of practice research as exercised in CSCW. A few studies in SDL are emerging where technological boundary resources are shown to be essential for value co-creation

### 3 Case description

In this section, we will first describe the context for our case, which is about including children and adolescents in leisure activities. We will give a short introduction to the phenomenon and related challenges. We will then describe how services are set up in Norway to meet the inclusion challenges and how these are practiced in the studied municipality.

#### 3.1 Participation in leisure activities for children with disabilities

Participation in leisure activities is a central topic for disability researchers because this participation constitutes “the context in which people with disabilities, like all people, develop skills and competencies, form friendships and relationships, achieve mental and physical health, express creativity, develop a self-identity, and determine meaning and purpose in life” (King et al., 2003 p. 64). Children who do not participate in leisure activities have a higher risk of social isolation when they grow up (King et al., 2003; McConkey et al., 2013). *Leisure activity* is defined as social activities related to culture, sports, hobbies, and the like (Barne- ungdoms- og

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familiedirektoratet, 2013; United Nations, 2016). *Participation* is defined as “involvement in the formal and informal everyday activities of childhood in all types of non-school environments, including environments for play, sport, entertainment, learning, and religious expression” (King et al., 2003 p. 65). Article 30 of the UN Convention on the Rights of Persons with Disabilities (CRPD) asserts the rights to full participation in leisure and recreational activities (United Nations, 2016).

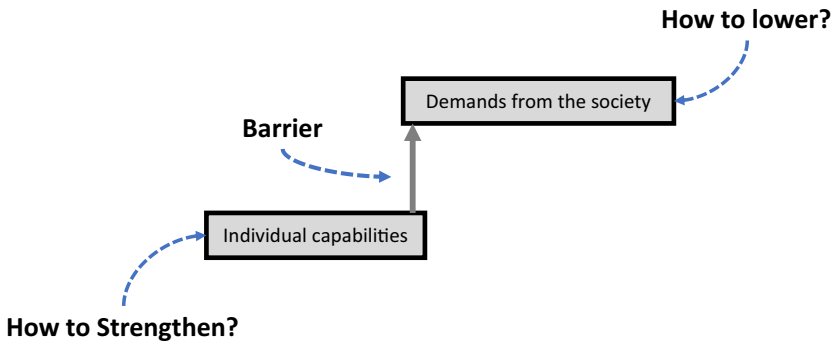
Despite many countries (including Norway) having ratified CRPD, and strengthened it with local laws and regulations, research shows that children and adolescents with disabilities still have a low level of participation in leisure activities (Solish et al., 2010; Shields et al., 2012; Dang et al., 2015; Barne- og likestillingsdepartementet, 2016). A systematic literature review by Shields et al. on barriers to physical activity discovered accessibility-related factors –such as lack of access to tailored facilities, distance and transportation challenges –but also factors related to lack of information about activities, lack of knowledge about how to tailor activities, and lack of access to assistants with the right competence (Shields et al., 2012). Our case was initiated because of the perceived lack of –and low quality of–the available information about leisure activities.

The parents of children with disabilities can also feel isolated (Woodgate et al., 2008) and are forced to spend excessive resources to get access to services and ensure participation for their children (Wang et al., 2004). Parents and their disabled children need tailored information (Palisano et al., 2010; Demiri and Gundersen, 2016). Regarding the quality of the information, Norwegian parents say that information about services is inadequate, random, and not tailored for them, and that it is up to them to find, coordinate and get the service they need (Demiri and Gundersen, 2016).

### 3.2 Participation in leisure activities in Norway

Estimates show that 15–18% of Norway’s population (between ages 15–66) have some form of disability that limits their participation in society, and approximately 10% of the population are users of assistive technology (Bufdir, 2022a). Of the 6000 people receiving assistive technology to participate in leisure activities, almost half were children 0–17. More than 11% of Norwegians report having difficulties establishing social relationships due to health-related issues. 10% report having experienced social isolation, as opposed to 5% among the general public (Bufdir, 2022b). The numbers are similar for participation in outdoor activities, sports, and cultural events. Moreover, 75% of Norwegian municipalities report not having tailored transportation means for children with disabilities (Bufdir, 2022b).

Historically, disability was regarded as a pathological deviation related to the disabled person. The disabled individual had defects that had to be discovered, diagnosed, and fixed (Barne- og likestillingsdepartementet, 2016). One result of



**Figure 2.** The social and relational model of disability.

the pathological model of disability was the development of specialized institutions for people with disabilities. Recent developments in Norway –and many other counties –have led to a system of social care based on a social or relational model of disability, moving away from what Michael Oliver labeled as the “personal tragedy” theory of disability towards a “social oppression” theory (Oliver, 1990). In this new theory, part of the reason for the social isolation of people with disability is assigned to society. According to the relational model, society has the fittest individual as its “role model,” creating barriers for individuals who might have some form of mild or severe disability (see Figure 2).

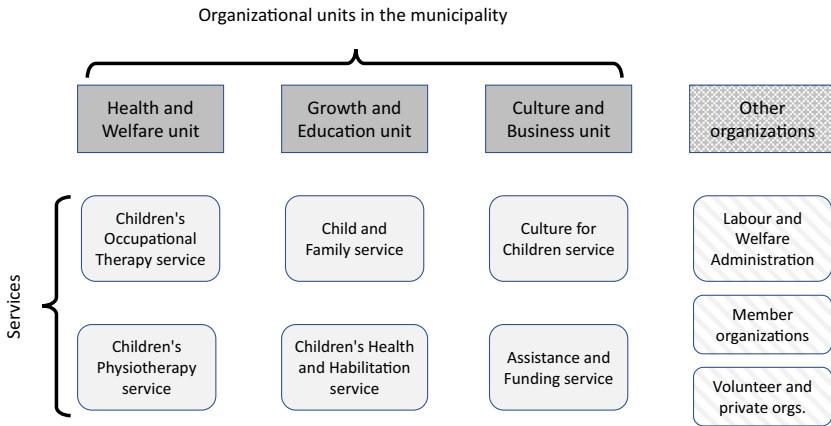
A goal for a care system based on the relational model is to create a balance between what society has to offer and what individuals can cope with. A consequence has been the elimination of institutions for people with disabilities. This changes fundamentally the way social inclusion of children and adolescents is achieved. One consequence is the demand for universal access to all organized leisure activities. As we will see in our case, universal access is still an ideal that, in most cases, does not exist. More specifically, universal access to relevant information is often missing or is of inadequate quality for children with disabilities and their families.

### 3.3 Services for participation in the case municipality

The number of actors and services supporting children’s participation in our case municipality is large. Several units and service providers in the municipality are involved, in addition to national public services and voluntary organizations.<sup>4</sup>

<sup>4</sup> The term services (plural) is often used in the so-called goods-dominant logic that the service-dominant logic tries to replace. In goods-dominant logic, services are seen as units of value transferred from service provider to recipient. In service-dominant logic, service (singular) is the act or practice of co-creating value. As will be shown in our findings, our case is influenced by New Public Management, that in our view promotes a goods-dominant logic. Therefore, in this paper, we sometimes use the term services (plural) when rendering aspects of our empirical case.

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**Figure 3.** Organizations and services involved in our case.

Our case municipality is divided into organizational *units*, where each unit is responsible for several *services* (see Figure 3). Three of the units play central roles and have been part of our case study: Health and Welfare, Growth and Education, and Culture and Business. While the units for Growth and Education and Culture and Business also deal with children’s participation in general (with or without disabilities), Health and Welfare is the unit closest to, and specializes in, disabilities and coping in everyday life.

Child and Family service under the Growth and Education unit is a set of coordination services for local families. These services help families and schools to coordinate specialized teaching, family therapy, child protection, occupational and physiotherapy. The services involve other units in the municipality as part of their coordination effort. A critical service for the families of disabled children is the respite service, normally provided through hired assistants. These assistants play an important role in facilitating children’s participation in leisure and school activities.

Culture for Children service under the Culture and Business unit aims to develop a “diverse and inclusive culture program in [the municipality] for children of all ages...[the service] strives especially to include in cultural activities those children who are seldom included..” Culture for Children service can assign assistants to follow children to cultural activities when needed. Assistants are assigned both to individual children and to activities that target children with disabilities. Culture for Children service is responsible to distribute funds to volunteers or others who wish to organize leisure activities. Culture for Children service also encompasses primary informational services, offline –e.g., information brochures –and online. The unit has been responsible for developing two online platforms (discussed later) for collecting and maintaining information about leisure activities.

In addition to these three municipal units and their services, many other relevant services are provided by other organizations. The Norwegian Labor and Welfare Administration –called NAV in Norwegian –is responsible for providing assistive technologies. Some assistive technologies, such as wheelchairs and tailored transportation means, are crucial to enabling participation for children with disabilities. NAV’s assistive technology unit works closely with occupational therapy and physiotherapy services in the Health and Welfare Unit of the municipality. Besides NAV, several member organizations and voluntary organizations within sports and culture offer organized leisure activities for children. These organizations –and, in many cases, groups of parents –play an essential role in offering accessible leisure activities.<sup>5</sup> They provide sports teams, theater groups, farm visits, hiking groups, etc. Voluntary organizations are obliged to tailor their activities for children with disabilities. They can apply to the municipality for financial and other resources to support such tailoring.

### 3.4 Informational services and platforms

Only a portion of leisure activities for children is organized by the municipality, while volunteer and private organizations organize the rest. One central role taken by the municipality is to provide information about leisure activities –and maintain resources such as lists and indices. This information is provided in both paper-based material and digitally. For instance, Culture for Children service has a paper-based –and online printable –catalog of leisure activities updated yearly. Digital resources include web pages that contain lists and tables of activities with short descriptions and contact information of the organizers. The municipality uses this type of information in its advisory services to families.

The municipality is one of many providers of such lists and indices. The national union for sports clubs has an email list where they distribute an index of tailored sports activities. This list proved to be quite popular among the families we interviewed. In addition, various voluntarism centers had online calendars and event catalogs on their web pages.

The goal of the research project that initiated our case study was to develop the municipality’s digital informational services into a modern self-organizing information platform. The municipality acknowledged that targeting the children and their families online was essential. Children use various digital channels to access information. This also applies to children with disabilities. The municipality was also aware that maintaining information about leisure activities was a resource-consuming task because this information is continuously changing and

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<sup>5</sup> According to official numbers, half of Norway’s population is involved in some form of voluntary activity.

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is distributed across numerous actors and organizations. Therefore, the goal was to develop a self-organizing digital platform.

The idea of a self-organizing platform was familiar to the municipality. Already in 2004 they had launched an online platform for organizers of leisure activities to register information about themselves to be used by families. The platform –called MyLeisureTime<sup>6</sup> –was not a big success and was closed down after a while because of the lack of involvement by organizers. We will discuss MyLeisureTime and other platforms in the Findings section.

### 4 Method

This study provides findings and insight from a research project that started in 2017 (initiated and conducted by the authors). The aim was to gather requirements for an information-sharing platform for children’s leisure activities in a large Norwegian municipality. A key aspect of this platform was that it aimed at providing information that would support the inclusion of children with disabilities. The study is an interpretative case study (Walsham, 1995) as we sought to capture the requirements and perceptions on the information-sharing platform from the stakeholders involved in providing and using information. Our unit of analysis is, therefore, these stakeholders, including people at the municipality tasked with providing information, children and their families, and voluntary organizers of leisure activities.

The case study is also explanatory (Yin, 2014). It seeks to explain how information-sharing platforms for disabled children come into being and why we observe some of the challenges reported in the literature concerning such platforms.

#### 4.1 Data generation

Table 3 shows the data sources for our case study.

All data were collected and analyzed by the authors within approximately six months. All interviews were partially transcribed and coded in NVivo. All documents were imported and coded in NVivo as well.

#### 4.2 Data analysis

Our data analysis process was interpretative (Walsham, 1995) as we sought to capture the perceptions from a variety of stakeholders with interest in information-sharing platforms for leisure activities. Our data analysis was iterative. Data

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<sup>6</sup> Fictive name, a free-form translation from the Norwegian name of the portal.

**Table 3.** Overview of generated data.

Data source	Description
Interviews with 5 children with disabilities	We interviewed five children between 14 and 17 years old, two boys and three girls. Three were interviewed alone (approx. 1 h), and two were interviewed together with their parents (approx. 1.5 h)
Interviews with parents of 4 of the children	We have interviewed all the parents of 4 of the children alone (approx. 1 h) or together with their children (approx. 1.5 h)
One co-design workshop with parents	All the interviewed parents participated in a co-design and idea-generation workshop of 2 h
One design workshop with children	Four of the interviewed children (two boys and two girls) participated in a co-design and idea-generation workshop of 2 h
Interviews with 3 municipality employees	We interviewed 3 employees. One of the employees from Culture for Children was the main informant and was interviewed twice. The two others were involved in the development of technical solutions and participated in a group interview. All interviews lasted approx. 1 h
One workshop with organizers of activities, excluding the municipality	We had a 4-h workshop with several activity organizers inside and outside the municipality. One participant was also interviewed because of his central role as mediator of sports-related tailored activities
Reference group for the project	The project had a reference group consisting of 7 people in various leadership positions in the municipality. Results from our study was frequently presented to this group
Documents	We studied available documentation about tailored activities. We also used documents extensively to understand the case, national regulations, other national studies of the target group, and various local and national strategies
IT-related artifacts	Past and present IT systems, the prototype and ideas generated during our co-design workshops, and online information portals and pages acted as input to our analysis

collection overlapped with data analysis. This granted us the flexibility to continuously consider our partial interpretations towards a gradually growing amount of data, and refine our interpretations with the actors in the case (Klein and Myers, 1999). It is important to note that we did not start our study with a clean slate (Suddaby, 2006), and our previous experiences influenced our data analysis. We had seen how both practice and service accounts had some limitations in explaining the phenomena emerging in our data. We were actively seeking possibly improved explanations for how they emerge.

Our data analysis process may be reconstructed into three main phases. The first phase followed a thematic analysis method (Braun and Clarke, 2006) to code the data. Our initial themes (14 in total) include searching for information, tailoring of activities, organizational actors, participation, boundary objects (with IT artifacts as the main code), and business models of the municipality. These themes stayed mostly the same in subsequent analysis. Our initial analysis was



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exploratory, grounded in the data, seeking to capture the perception of several relevant stakeholders.

Our second analysis phase involved exploring existing literature and theories that could help us make sense of our data and provide explanations. In the initial phases of this study, we were inspired by platform ecosystems (Tiwana, 2014) and innovation in online communities (Faraj et al., 2016). Although the project was initiated by the management in the studied municipality, we sought to identify a variety of stakeholders (e.g., children and their families) and include their views in our analysis. This led us to consider the rich and intricate practices involved in creating platforms. Our analysis also found that these practices alone did not sufficiently explain how such platforms emerge. Through discussions within the research team, we started investigating the SDL literature. We discovered concepts such as service ecosystem and resource integration that resonated with us and the patterns we saw in our data. The overlapping concepts of practice and value led us to investigate the idea of a joint concept toolbox, drawing on the strengths of the two research fields. We include here the invaluable input from the reviewers that led us to do a more extensive review of both the practice and SDL literature to clearly identify the concepts from both perspectives relevant to the analysis.

Our third analysis phase occurred as we aimed to apply the SIPA toolbox in our analysis. Through several iterations between data and literature (Klein and Myers, 1999), we tested the toolbox towards our data to see if we could provide explanations using the toolbox. The latest attempt constitutes the current discussion section of our paper.

### 4.3 Reflection

Both authors have an IT and information systems background. Working at an applied research institute at the time (SINTEF Digital), we were often approached by clients who wanted solutions to their problems. We always strive to create an as complete as possible understanding of the problem –within the limitations set by project resources. We believe such an understanding is crucial for clients. We followed this approach also in our initial study. We cooperated with a social worker from the municipality who specialized in services for disabled children and who knew some of the the families we recruited to our study. She was also present in all the interviews and workshops involving the children. She and some of the parents helped us recruit and involve new families. However, we acknowledge that having an expert researcher on disability and children could have improved the quality of our data, especially concerning the data from our interviews and workshops with the children.

Including all stakeholders in a study is challenging, and involving the children in this study was one of these challenges. We experienced that family dynamics were strongly influencing our data collection. Often children would wait for their

parents to talk or try to tell us what the parents would have expected them to tell. It was also difficult to communicate the goals of our study and create a dialog with the children about what they thought about the potential impact of the study (Morrow, 2008). Doing qualitative research with this user group requires a long-term engagement and trust-building activities. However, we also believe that including the families in our study was essential to our understanding of the challenges they faced and to our forming of both the initial and the current analysis of our data. We experienced that the children and their parents enjoyed participating in interviews and workshops (a form of reciprocity. See, e.g., Lewis and Porter, 2004). The parents had the opportunity to read about our findings and provide their feedback.

## 5 Findings

In this section, we present our findings from studying the practices of the families and the service providers in the inclusion landscape in the municipality. Our findings shed light on the various practices but also point to the underlying values of each involved actor. Our findings also show the dependencies among the practices and how boundary resources –paper-based and digital –are used as mediators across practices and services.

### 5.1 Family practices

The children we interviewed had all full weekly schedules, including participation in organized and ad hoc leisure activities. At the same time, our findings show that the children and their families continuously struggle towards social inclusion. Part of this struggle is related to the information needs of these families. Below, we discuss these everyday challenges and then look at specific information-related findings.

#### 5.1.1 *Everyday challenges*

The underlying philosophy of universal access in Norway is that children with disabilities should be included in society in the same way as other children. This means that all leisure activity organizers should tailor their activities to the needs of all children and avoid excluding children with disabilities. Very few organizers know how to appropriately tailor their activities to the vastly varying needs of the children. Tailoring ordinary organized leisure activities is often quite rudimentary. The most common tailoring is to accommodate wheelchairs. However, as one of the parents expressed, “It is no use to be able to go there with a wheelchair but then sit in a corner and watch other children play.” Organizing tailored activities has more to do with empathy than specialized competence, as another parent put it:

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**Father:** [Formal] competence does not play an important role if [the event organizers] are willing to pay attention to each child's needs. Some [of the children] might have language problems. Some need extra time to say something. Some are afraid to say what they need, so you have to walk to them and ask them. Some have epilepsy. It is about immersion in the situation there and then. You don't need to be a doctor to do it.

This form of “seeing the child” is even more important when the child suffers from a disability that others cannot see. One of the children we interviewed had a minor and normally invisible disability, but a disability that did not allow her to perform some of the core activities in a swimming class:

**Mother:** We registered her for this swimming class. It was not a positive experience. We talked to [the organizers] about her disability. She knew how to swim, and has been swimming since she was five. She was supposed to learn to swim better. Then she started saying that she did not want to swim anymore. And we were used to her saying all the time how much she loved swimming.

**Girl, 14:** But it is because we did not swim at all. We were told to just lie down as a star in the water. Then there was this test, and I failed because I could not lie down as a star because of my foot that I cannot hold straight.

**Mother:** Then I said, this is something we told you before she started the class. Now you tell her she has to take the class again because she can't lie down in a star position. She will never be able to do that. Then we quit.

Participation was easier for younger children and became more challenging with age. This had partly to do with the way organized leisure activities changed their nature from leisure to more serious, often competitive activities as children grow and want to compete more:

**Mother:** Initially, our [daughter] was very interested in handball. When it was at a play level, I thought it was good for her, and it worked fine. Then I know how it changes when they go up the levels [and start competing]. And then this feeling of mastery changes [for her]. I also know normal children who have started handball and then get squeezed out of the team. I have played it myself and know how tough it becomes higher up.

Because of the unpredictable nature of tailoring, parents often must play the role of personal assistants for their children. The assistance starts with finding information about activities and registration, and it continues with transportation and sometimes assistance during the activity. This continuous assistance role can take its toll on the parents, as expressed in the following quote by one father:

**Father:** These tailored activities are often on the opposite side of the city, or maybe I live on the wrong side. If it is tailored, then it needs tailored logistics and infrastructure, like the swimming pool in [a distant neighborhood]. It plays a role for us parents. You have to rush back home from the office through the traffic and then rush back in the opposite direction again. Because [the children] have to be there. Many [healthy] children play football where they live or have after-school clubs in their own schools. If you have to constantly drive back and forth, it is not very positive.

This assistant role becomes even more challenging when children grow up and have the need and the wish to be independent of their parents, especially as they enter their teens:

**Mother:** At the youth club, you have to have an [non-parent] assistant there. I don't really want to be that assistant. He is going to be there with other teenagers. And there you have Mommy sitting and hearing everything you say? It is wrong when they start getting so old. When there are girlfriends etc. So he goes there with an assistant [and not me].

In all the above practices involving the parents, having the children participate in society as closely to healthy children as possible is a strong underlying value and motivation. Despite the challenges, most of the children and families we interviewed were involved in numerous organized activities. This value is the same underlying the national agenda for social inclusion, i.e., equal participation.

However, when we heard the children speak, it seemed that their underlying values were different. Depending on the type and severity of their disabilities, children seem to participate in tailored activities because of a lack of better options. Being part of a regular organized activity as a child with a disability can create unpleasant situations for the children, as evident from this quote from a 14-year-old girl:

**Girl, 14:** When I am at school, I am not hundred percent myself because I am afraid of what others think about me. But when I am with [the others in our association for disabled children] there, I am hundred percent myself. Then there are people there who know how it is.

### *5.1.2 Finding information*

Universal access to organized leisure activities requires that information about these activities is available to everyone. For healthy children, it is often enough to receive some standard information, such as type of activity, intended age group, date, and location. Disabled children's need for information is highly

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personalized due to the vast differences among them physically, mentally, and concerning resources. Differences exist in types and levels of disability, family situations, social networks, access to other services such as paid assistants, etc. The value of an organized activity as a service provided by the municipality or others is therefore dependent on whether the child and the family have access to tailored information about the activity and, based on this information, believe that they can integrate the activity into their context.

Not all activities are sufficiently tailored for common types of disabilities. Even when they are, information about this tailoring is often absent or incomplete. There are no standards for reporting such information beyond some basic guidelines for reporting on available wheelchair access. It is not easy to know beforehand, based on published information, whether an activity is suitable for a child:

**Father:** It is difficult to know beforehand what [the activity] is. Whether it is going to fit [him] or not. To understand what [the tailoring] is, what it consists of if it is tailored, and whether will it work. We have tried many things. But you just give up after the first try because it was not what you thought it was. It is difficult to explain. I think maybe if you knew other [families], if you know about someone in the same situation, and if they say it works.

**Girl, 17:** In general, when there are no specialized lists like that one [from the sports club] for sports activities for the disabled, and when the activity is for everyone, then I think very few really say [whether it is tailored]. I have tried and read a lot [of activity descriptions]. No one says if it is tailored or if it is open for everyone.

The municipality tries to help by giving face-to-face personalized guidance about their own- and third-party services. The information provided by the municipality or others is often helpful as a starting point but falls short of being tailored to the needs of the families:

**Father:** We talked to [Culture for Children] in an interview once...She walked us through all the offerings, brochures, etc., and told us about the activities. So we got a personal description... But even then, you don't know before you have been there. Or have talked to someone who has been there and tried. Many of those offerings, I am sure, are excellent. But they did not fit him even if we thought they would. To get the opinion of someone in our situation, that would count a lot.

Service providers in the municipality and outside do not have enough knowledge about the children and their needs. There is no standard way of describing

and sharing such personal needs across service providers. For instance, employees in the Culture for Children often do not know the children well enough even when these children are long-term receivers of municipal services:

**Father:** The instructors at [Culture for Children] don't know what is wrong with the children. The information is not passed on [within the municipality]. It is not easy to tailor something to someone you don't know.

Children themselves are often dependent on their parents to sign up and participate. However, they also participate in social media. Above a certain age, they start to consult their social media friends with similar experiences who can help them get more information.

## 5.2 Other actors and practices

Social inclusion services overlap with services not specifically developed for children with disabilities. These overlaps are a part of the idea of inclusion itself, so to speak. As a result, the practices of disabled children and their families inevitably become intertwined with several other practices. This is also a core challenge because disabled children's practices can quickly become marginalized compared to those overlapping practices.<sup>7</sup> In this section, we discuss some of these other practices that overlap with the practice of social inclusion of children with disabilities.

### 5.2.1 *Organizing leisure activities*

We observed two types of organized leisure activities in our case study, those organized by the municipality and those organized by volunteers –such as sports clubs, cultural institutions, and volunteer parents. Culture for Children service has employees or hired assistants to organize activities on behalf of the municipality. Many of these activities are quite popular and are often fully booked. The most popular activities involve small participation fees.

Most of the activities organized by the Culture for Children service target all children –regardless of disabilities. For most activities, the municipality hires assistants to help include children with disabilities. Assistants are assigned individually to those children who need them. Specialized assistants can also be assigned an activity if that activity mainly targets children with disabilities.

While the municipality has a permanent organization with a dedicated budget to organize these activities, the situation is different for voluntary organizations

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<sup>7</sup> Leisure activities might also start as activities for disabled people but later become activities also enjoyed by people without disability. One example is wheelchair basketball. This is a special type of the popular basketball game that requires you to sit on a wheelchair even if you are able to walk. One of the organizers called this type of activity for “inverted integration.”.

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as they have unpredictable participation levels and low financial security. For voluntary organizers, it is important that parents are involved as volunteers. Therefore, several practices that the organizers are involved in are about including the parents in addition to including the children:

**Voluntary activity organizer:** We know that we have challenges regarding the parents. Norwegian grassroots sports are organized in a way that requires parents' participation. Without them, we cannot organize activities. That is rule number one.

Consequently, information-sharing activities initiated by voluntary organizers often target the parents and not the children.

Some other practices involve financial security. The municipality and other bodies provide funds to voluntary organizers, which the organizers must apply for. In the application, organizers need to specify how they will tailor the activity for universal accessibility. Universal accessibility is mainly trust-based, as expressed by this employee at Culture for Children service:

**Employee 1:** You just write [in the application] that you have done it, and this is how much it cost. We don't check [that the activity was universally accessible]. We have, of course, discovered cheating. Even ended up in the newspaper. Afterwards, we have put a new sentence [in the application] that if you cheat you can be excluded.

Trust or punishment might enforce universal accessibility, but they seem to fail to guarantee that information about tailoring is added to the activity descriptions. This information, as we have seen, is difficult to document.

### 5.2.2 *Information sharing*

Information about activities seems to be highly distributed. Several actors are engaged in information mediation. The municipality has dedicated resources for this, but others such as sports and culture organizations maintain their own information pages and portals. This makes it challenging to have a complete overview of all the information. Even within the municipality, we observed numerous web pages and index pages with activity overviews. This distribution of information creates problems not only for the families but also for those who cooperate with the municipality, as indicated by one voluntary organizer:

**Voluntary activity organizer:** In the municipality, there is a jungle of persons who work with the target group in different areas. It can be anything from vocational ergotherapy to school-related stuff. They are scattered around. Often the municipality employees themselves don't know about their own offerings.

In addition, privacy issues prevent municipalities from allowing direct access to families and children with disabilities. In other words, the municipality acts as a gatekeeper between organizers and families and can quickly become an information bottleneck.

The families we interviewed often used word-of-mouth and personal network to learn about different activities. It was essential to know people, which made it difficult for families without a network –such as immigrant families –to know about activities. This was also confirmed by some of the organizers we interviewed:

**Voluntary activity organizer:** We often hear [from parents] that they did not know about this [activity], that they heard about it accidentally from someone, not an employee in the municipality. A friend or something. This is how parents often get to know about us.

The municipality uses flyers, web pages, and Facebook pages to distribute information about organized activities. Keeping the information updated is perceived as a resource-consuming task, as stated by this employee of the Culture for Children:

**Employee at the municipality:** It is difficult to keep the information [about leisure activities] updated. There are links that stop working, activities that don't exist anymore, a lot of work to be done. We try to have regular reviews [of our information pages]. It is, in some way, a classical problem. It is extremely difficult. Sports clubs where the coordinator is changed, telephone numbers where you don't get any answer. Finding a solution can be interesting.

Using Facebook seems to be on the rise. According to one employee this has to do with the speed of publishing and the fact that parents can further share the information. This can also be related to the fact that the employees can confirm that the information is accessed –e.g., through likes and views –while on the municipality web page, they cannot easily see who is seeing the information.

### *5.2.3 Administrative practices and resources*

The municipality owns and is responsible for coordinating access to a host of resources necessary for organizing children's activities. This includes rooms, facilities, and small funds that organizers can apply for. There is a considerable amount of overhead connected to administering these resources. Traditionally, all work was done by the municipality and on paper. The introduction of digital online solutions gradually allowed the municipality to digitalize some of this work. In some digitalization cases, the municipality has attempted to implement self-service solutions where organizers can do some of the work.



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One of the first digital solutions, the MyLeisureTime portal, was introduced in 2004. This portal was envisioned as a self-managed portal, mainly targeting activity organizers (although the idea was that families would also use it, more on this later). It included functionality for registering activities and booking rooms. An employee at the Culture for Children service recalls:

**Employee at the municipality:** It was really a good solution. An online portal that was easy to log in and find stuff, compared to what we had until then, which was mainly paper-based lists, a lot of work to keep them updated. I remember that was the main reason [for developing MyLeisureTime].

Although the municipality needed the solution –to reduce administrative overhead –and it was quite user-friendly according to its users, it was not a success. The information in the system was quickly outdated. According to some of the people who were involved in the portal’s design there were no incentives for activity organizers to use the portal:

**Employee at the municipality:** We did not have the resources to have people sitting there and reminding [the activity organizers] that they had to log in and update their information. So after a while, the information about the different organizers, was outdated. The activity pages became disorganized. I remember some organizers kept on adding and updating. But a lot of others did not. It was a good idea. You could sort [the leisure activities] based on neighborhood, accessibility, location, everything. But this idea of self-organization did not work.

The portal was closed shortly after it was introduced. However, the problem of effectively managing a large number of facilities and grant applications did not disappear. Gradually, the continuous digitalization at national and local levels resulted in some of the functionality becoming relevant again in the following years. For instance, a national voluntarism registry was established, and registration was made mandatory. The administrative overhead for the municipalities forced a new project to appear, with the specific goal of reducing costs:

**Employee at the municipality:** [The new project] is quite large. It was initiated by us at the [Culture and Business] unit. There were many [activity organizers] asking for facilities. We needed an overview. Regarding the funds, there were different ways to apply. Different tools were used. And for the users, it was difficult to find information. Find out what you can apply for, both facilities and funds.

The municipality seems to be happy with the new solution, and it seems to work. It consists of three parts that address all administrative and logistic aspects of organizing leisure activities:

- Voluntarism registry (integrated nationally): A database where voluntary organizers of activities must register themselves to be allowed to use other municipal resources.
- Booking database: After having registered in the voluntarism registry, organizers can use this database to book publicly available rooms and associated resources for their activities.
- Grants database: Applications for funds are filed and process in the Grant database. It requires prior registration to voluntarism registry.

Technical integration implies that organizers do not need to register the same information twice. Locally, the solution is used by municipality employees to process funds applications and rent facilities. This means that the new solution has created several “carrots” for everyone to use it, as these employees told us during an interview:

**Employee 1:** In MyLeisureTime we did not have any carrots. Here we have at least two. You can apply for funds and for facilities [through the system].

**Employee 2:** We can rather call it a stick. Here you cannot apply for funds without being registered. You cannot apply for facilities without being registered.

### 5.3 The YouKnowWhat prototype

The earlier MyLeisureTime portal was built for both activity organizers and families. The new three-part solution was, on the other hand, built primarily for administrative purposes. It was not intended to support families or children even though the information in its database –i.e., overview of existing activities and organizers –was potentially valuable for families. The databases had a web-based search interface, but none of the families we interviewed knew about it. The information in the system was not presented in a form intended for families.

However, during our study –both through interviews with the municipality employees and in design workshops with families –the new solution surfaced as the building block for a concept for a new self-organizing platform for families. This was because the information needed for such a platform was already being maintained in the system. What was missing was an interface for the families.

We called the concept for the new family portal YouKnowWhat (translated from the Norwegian name) with “You” referring to the families (see Figure 4). The concept was based on crowdsourcing and social networking. From our

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interviews with the families, we knew that some knowledge about how well leisure activities were tailored resided with the families who had used those activities. In YouKnowWhat, families could share this information among themselves. The concept worked as follows:

- YouKnowWhat communicated with the municipality’s three-part database to extract information about which voluntary organizers operated in the town and what activities they were organizing.
- This information was presented in an attractive and searchable form to families. Families could search and sort the activities as they would when using a familiar search engine.
- Families could create lists of favorite activities, follow their favorite organizers, register for activities, comment on activities, and recommend activities to other families.

The technology and the interface metaphor behind YouKnowWhat were not new (for similar examples, see Ammari and Schoenebeck, 2015; McLoughlin et al., 2019), and it was not our intention to create a novel design concept. However, we aimed to involve the various stakeholders and not only the parents. The solution was discussed with the employees, who initially had the idea of building on existing databases because of their negative experience with MyLeisureTime. For families, it was important to have an “app” that was easy to use. The concept needs further evaluation with the children and the families, which was outside the scope of our project.

## 6 Discussion

In this section, we first show how we applied the SIPA toolbox to our findings from the case study and discuss the implications and the new insight that this brings. We then reflect on what implication a service lens can have for CSCW research in general.

### 6.1 Using the concept toolbox to interpret our findings

Table 4 shows a summary of how the SIPA toolbox affected our analysis of the data from the case. It also summarizes of what applying a service lens can mean in practical terms. The SIPA toolbox does not offer a specific method of analysis (see the Methods section for the method we used). It is merely a tool to guide the researcher’s attention towards the concepts we have found important. In the following sections we show how we applied the toolbox to our findings. We acknowledge that others will use the toolbox in other ways. What is important is

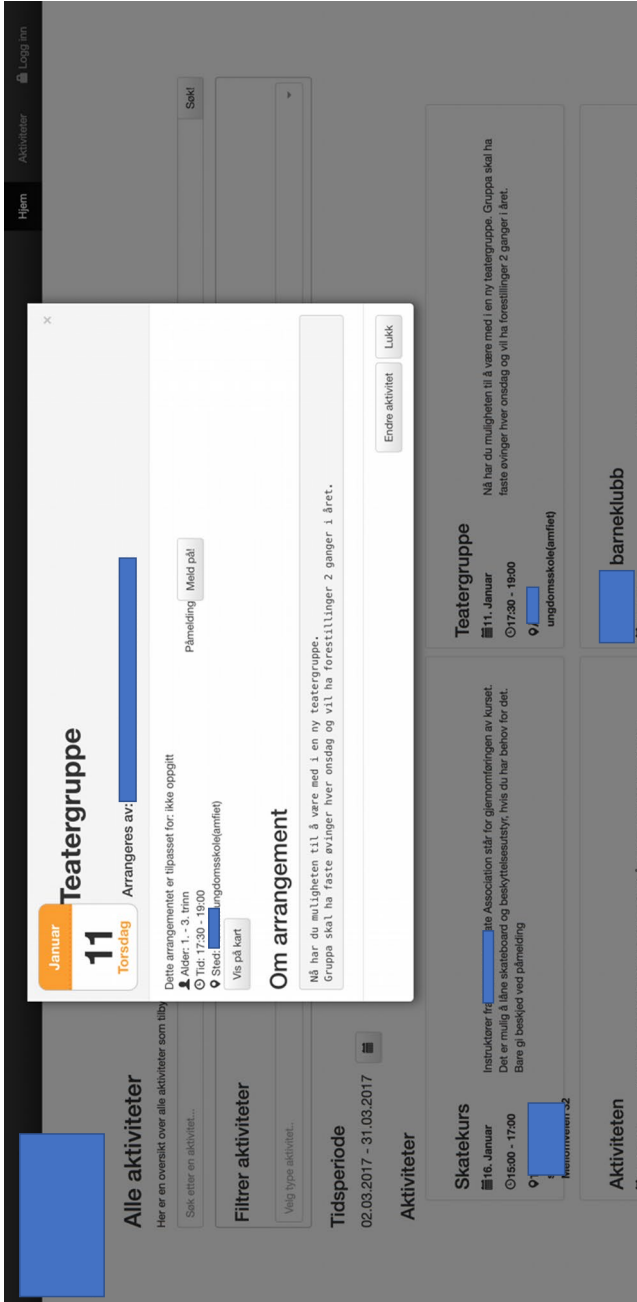


Figure 4. The YouKnowWhat prototype with its family-friendly interface to ongoing leisure activities.

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**Table 4.** A summary of how the SIPA toolbox helped us in our data analysis.

<b>Toolbox concepts</b>	<b>How they helped us in our analysis</b>
Service and service ecosystem	Thinking of our focal practice as part of a larger ecosystem helped us investigate other overlapping practices besides the focal practice (e.g. Assistance and Funding). This process also helped us detect and consider underlying institutions such as New Public Management and how they affect the ecosystem and thereby the practices within it. The process helped us to discover imbalances in the ecosystem (such as the need for a dedicated service for information sharing) that caused problems in the focal practice
Values and value co-creation	Increased attention to value helped us understand what each actor regarded as valuable (see Table 5) and how the various actors engaged in interactions to co-create their values. In some areas, we discovered synergies and overlaps across practices. In other areas, we discovered differences and sometimes apparent conflicts (e.g., self-regard for a person versus abstract inclusion ideals)
Value co-creation and resource integration	Increased attention to value co-creation processes helped us to interpret problems in the focal practice as breakdowns in resource integration (e.g., resources needed for inclusion versus resources for managing logistics) or as conflicts among the values held by the different actors (e.g., the political value of universal access versus the individual needs of the families with disabled children)
Boundary resources	By connecting design to the service ecosystem, considering IT artifacts as resources at the boundaries of overlapping practices helped us to understand how IT can contribute to or hinder value co-creation. In particular, it helped us pay increased attention to overlaps among practices and how IT artifacts can belong to different practices simultaneously in the form of composite boundary objects

that the SIPA toolbox can help us balance our attention between the focal practice and its surroundings.

### *6.1.1 Studying the service ecosystem*

The transition to the social relational model of disability (Oliver, 1990, see also Figure 2) has led to a move away from a dyadic relationship –between the disabled person and institutional service –towards a complex ecosystem of public and private service providers with the disabled person as merely one of many actors involved. This type of complexity is common in the public sector, particularly within healthcare and social services related to people with co-morbidity and chronic conditions (Hughes et al., 2021).

Initially, in our study, we set out to learn how families of disabled children searched for and found information about leisure activities. Going beyond these practices, we gradually discovered that multiple overlapping practices with different actors, goals, and motivations affected these family practices and their successful outcomes. This expansion of focus started from the direct service providers to the family and

expanded further as we discovered new interconnections. This “inclusion ecosystem” is shown in Figure 3. While some of these service providers –e.g., those under the Health and Welfare unit –are concerned specifically with people with special needs, others are providers of a generic service, not immediately considered relevant to the focal practice. However, as we dug deeper, we found that the practices of managing municipal resources related to cultural activities –such as Assistance and Funding service –affected what information was collected and eventually made available to the families. These interconnections were initially hidden even for those involved in the service ecosystem and became explicit during our research.

While working on our case, we became increasingly aware of the concept of NPM (New Public Management) as a form of underlying institution. NPM promotes a strong –and, in our view, goods-dominant –service view that turns citizens into customers of the state (Lapsley, 2009). Prioritization and strategic resource planning have always been central elements of public service (Moore, 1995; Meyer and Norman, 2019). However, NPM has compartmentalized this prioritization because it divides the government into multiple service providers that compete for resources. Moreover, political prioritization presumes long-term planning, where each service provider needs to define and defend its contribution to public value –which leads to a set of values-in-exchange. The combined result can be that service provision practices fail to prioritize outliers and minority groups. The service providers we studied had all their documented service-level agreements, and the resources were pre-allocated in municipal budgets. Using an analogy from telecommunications,<sup>8</sup> in such a divided landscape, things do not get done if they don’t have their “home service” in the service ecosystem.

Therefore, studying the service ecosystem can reveal whether the problem we are studying is caused by a more severe imbalance in the ecosystem rather than a problem in the focal practice itself. For instance, a key finding from our study was that a formal and dedicated “information service provider” was absent in the ecosystem. There were informal practices, for sure, but these practices did not have a “home service” and were therefore under-budgeted and done as a side job by the employees, mainly as a reaction to requests from parents. Information about leisure activities was generated by multiple actors, was often redundant and outdated, was distributed through informal channels, and was not available for families who were not part of such informal channels. As our focal practice of information sharing did not have its own “home service,” it had to rely on several “roaming services” for its implementation. Because information sharing was not a prioritized part of any service provider’s practices, high-quality information was unavailable to the families in our study.

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<sup>8</sup> In telecommunication, one distinguishes between a “home network” and a “roaming network”. The home network is often optimized for the service provider’s own customers, while the roaming network (which you visit as a guest when you are traveling) can have lower quality and lack some of the services the customers find in their home network.

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This imbalance in the service ecosystem not only shifted the burden of finding this information to the families and volunteers but also made it difficult to create a future-proof digital solution. The solution, in our case, did not solely lie in a new digital system. Instead, the service ecosystem needed to change –which is often a longer-term and more challenging task. Therefore, the main conclusion of our project with the municipality ended up not being the deployment of a new self-organizing digital platform, which was the project’s initial goal. Our main conclusion was instead that information services related to social inclusion did not have their own “home service” and that such information generation practices were not prioritized by any of the existing actors within the ecosystem. In our project, we concluded that these concerns needed to be addressed, a long-term budget allocated, and a “home service” established before a digital platform was designed and built.

### *6.1.2 Discovering the values within the ecosystem*

Our data show that the inclusion service ecosystem contains a complex value network. Table 5 shows some of the values that our informants talk about or that we have discovered by studying documents and other sources.

An illustrative example is how “inclusion” as a value manifests differently for the different actors. For the children who participate in leisure activities, inclusion is strongly related to the level of personal mastery they experience compared to their peers. For the parents, inclusion seems to be also socially defined, i.e., keeping a level of activity like other families with children. Voluntary activity organizers regard social inclusion as a broader concept also involving the parents. For the municipality and political discourses, inclusion has a stronger focus on universality and “inclusion for all and in everything.” Inclusion then can be considered along a scale, varying between something personal for the children and a more abstract societal value for the politicians.

Our data also show that inclusion is not the only value in play. For instance, self-regard is an even stronger value for the children we talked to. The parents valued assistance and respite for themselves in addition to social inclusion for their children. A strong driver for voluntary activity organizers was the ability to sustain the activities they were responsible for by engaging in recruiting parents and getting funds. Therefore, having access to a continuous stream of parents to help run leisure activities was a core value for them. Municipality activity organizers must balance the value of including each child with providing fair and universal access for all. Although we did not interview any politicians, one can argue, based on existing political documents, that politicians must cater for a myriad of societal values where social inclusion for disabled children is only one. Being accountable to larger groups of citizens, fairness and access for the majority become even stronger values for politicians.

**Table 5.** A summary of the values observed in our data for each actor.

Main actors	Involved practices	What is valued?
Children	Search for information. Judge the settings for leisure activities. Participate in leisure activities. Maintain a social network of peers	Self-regard, social inclusion as equal and fair treatment, participation to fun activities where they experience mastery
Parents	Search for information. Learn about leisure activities. Assist their children in all the steps of participation. Get involved as volunteers. Participate in parents networks	Social inclusion of their children at the same level as other children. Equal rights for their children. Assistance and respite
Municipality activity organizers	Organize leisure activities. Handle administrative overhead related to resource allocation. Create activity descriptions	Activate children in leisure activities according to the national guidelines. Provide fair and universal access to leisure activities
Other activity organizers	Organize leisure activities. Recruit volunteers. Handle administrative overhead related to resources and marketing	Include disabled children. Sustain voluntary activities by recruiting parents. Make activities financially future-proof
IT experts	Develop or acquire IT solutions. Integrate with national IT infrastructures	Provide elegant and efficient (IT) solutions with the lowest cost
Politicians	Legislation. Budgeting. Negotiating	Find the best socio-economical tradeoffs for the inclusion of children with disabilities

A third important observation is the value connected to IT. In our case, IT infrastructures seem to be developed primarily to alleviate administrative duties for the public sector employees –i.e., facilitating the administration of resources such as sports facilities and funds. In our experience, this focus of IT on administrative tasks is quite common in the public sector. Research also shows that IT is often primarily developed for organizational efficiency and secondarily to support societal and democratic values (see, e.g., Twizeyimana and Andersson, 2019). In our case, the databases used to register activity organizers and provide access to resources were not directly related to, e.g., self-regard or mastery that the children held as values. Nevertheless, the idea of connecting the organizational efficiency needs and the needs of the families was raised by the actors themselves, which resulted in the concept and the prototype of YouKnowWhat as discussed earlier.

### 6.1.3 Mapping the value co-creation practices

Value co-creation implies that value for a family is not created by only one actor but through the efforts of multiple actors in the ecosystem. First, activity organizers need to cater to accessibility in their leisure activities. Then, they need to describe their activities in a way that makes some sense to families with disabled



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children. From a universal access perspective, these practices are required for all leisure activities intended for children. Then someone must make the information readily available –e.g., in a digital portal or through other channels. Families are also a central part of each other’s value co-creation process. Our data show that despite the effort a service provider puts in describing a leisure activity, the activity’s full value is only realized when families augment the information with their tacit knowledge. Moreover, many leisure activities are organized by the parents.

An important observation from our data is that value co-creation practices often overlap. In some cases, such overlaps provide opportunities for improvement. For instance, the practice of creating and maintaining a national volunteerism registry can be used to develop a potentially more future-proof information-sharing practice for families –supported by a digital portal such as YouKnowWhat. In other cases, overlaps can create misalignment and work against the goal of a practice. For example, a volunteer organizer of a swimming class will have a perfectly reasonable tendency to focus his/her practices on turning children into good swimmers. Given resource constraints –such as time –this practice can easily conflict with the goal of including children with various types of disabilities, which might take away time and resources from creating a good swimming class for most participants.

Because of the differences among the families and the children we studied, our case study demonstrates the importance of resource integration. Disability manifests itself in different forms and degrees, and no two families possess the same resources. Therefore, from a family perspective, value-in-context created through emerging resource integration efforts is central. Each family goes through a unique set of practices for finding information, combined with a unique set of challenges related to the logistics of participating –driving or finding transportation, dealing with access and inclusion breakdowns, assistance, etc. These differences will probably increase if we expand our study sample to include families that are already marginalized for other reasons –e.g., income, language, and race.

At the same time, the values inscribed in service performance indicators often –and deliberately –ignore the specifics and focus on generic conceptions of family, disabled child, inclusion, etc. Abstract formulations such as those in the service description of Culture for Children (“..to include in cultural activities those children who are seldom included”) are common. Crucially, service performance indicators play a central role in shaping the practices of employees. Often, a more personalized service –e.g., a personal assistant and/or respite service –is beyond service performance (and budget) and hence difficult to offer. Such inscribed service values and budget allocations are the result of elaborate political and administrative processes, which not only makes them generic but also turns them into *de facto* values-in-exchange as opposed to values-in-context,

making the ideal of value co-creation processes—i.e., involving multiple actors including the beneficiary—challenging to achieve.

In our case study, such incompatibilities are most visible in the practices of the front-line employees who are often exposed to conflicting values—e.g., the political value of universal access versus the individual needs of families with disabled children. For instance, our data show that employees are assigned to formal roles that do not easily accommodate personal and informal contact with the children and that formal documentation and handovers are prioritized above continuity of care. At the same time, employees try to create informal practices such as creating *ad hoc* information handouts and web pages, using Facebook for communication with parents, and collaborating with voluntary organizers.

#### *6.1.4 Reconciling value co-creation through composite boundary resources*

We can observe several interesting patterns regarding digital boundary resources in our data that point towards a closer connection between technology design and service ecosystem. The first observation is that component technologies (in our case, voluntarism registry, booking database, grant database, and the YouKnow-What prototype) can be seen as parts of a composite boundary object originating from and grounded in multiple practices. This composite object is fundamentally different from the earlier MyLeisureTime, which can be seen as a more conventional boundary object (“weakly structured in common use, and become strongly structured in individual site use,” Star and Griesemer, 1989 p. 393). In drawing on multiple existing components and creating compositions in our design, we had an approach that was more like building on an infrastructure (“decentralized technologies used across wide geographical distance,” Star and Ruhleder, 1996 p. 112). MyLeisureTime was developed for one focal practice (that of resources administration) and had to be used in multiple other overlapping practices (e.g., registering and using activity information). The new composite object is different because its parts are developed specifically for different focal practices. These parts then exchange information when necessary (Monteiro et al., 2013).

One advantage of such a composite design is that it can facilitate the co-creation of value-in-context. Instead of having to agree on one shared value (often imposed by the developer of the only boundary object, as was the case in MyLeisureTime) different values can be independently designed into the parts of a composite boundary object. This means that, e.g., the grant database will be more aligned with the values inherent in the grant management practices, while YouKnowWhat can be aligned with the values inherent in social inclusion and sharing of experiences among families. This is, of course, easier said than done. One challenge is to be able to agree on a “core” set of information to be exchanged in a meaningful way. Another challenge is to be aware of directly conflicting values in different practices. As put nicely by Star and Ruhleder, (1996): “one person’s standard is in fact another’s chaos” (p.112).

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Another related observation from our data is that macro-level changes in ecosystems can have specific micro-level impacts on the design and use of technology, and vice versa. The emergence of a national ecosystem for voluntarism –and the corresponding digital infrastructure that was then developed –led to greater access to data about activity organizers and activities that could then be used to create a micro-level technology such as YouKnowWhat. This means that designers should be aware of the ecosystem surrounding a focal practice, and the types of technologies used elsewhere in this ecosystem. The experience of using YouKnowWhat might not be much different from that of MyLeisureTime developed more than a decade earlier. However, the fact that YouKnowWhat is closely connected to the digital infrastructure used by the broader ecosystem makes it, in our view, more future-proof.

The above points should not lead to a down-prioritization of the needs of the focal practice. Objects have a strong formative effect on practices. For instance, assistive technologies shape the resource integrating practices of the studied families –i.e., how they search for leisure activities, evaluate these activities, plan their participation, and how they participate or fail to do so. They also shape the tailoring practices of the organizers –e.g., through the limitations imposed by the available equipment and rooms. Several breakdowns in the practices we studied related directly to the unsuitability of such objects, where guidelines from inclusive and universal design can make important contributions.

### *6.1.5 Implications for CSCW and S-D logic*

Although our study at the outset did not seem to be a particularly complex case, it nonetheless illustrates some of the complexities that practice research faces in today's digital transformation projects. A service lens is one way to understand some of the forces that shape our practices. In this section, we shortly discuss how a service lens and the SIPA toolbox we have put together can be helpful beyond our case study and for CSCW researchers in general.

Our starting point was a limitation in how we use the concept of practice in our studies, i.e., focusing mainly on the details of here and now in a “focal practice,” potentially ignoring underlying causes of existing problems (Fitzpatrick and Ellingsen, 2013; Monteiro et al., 2013). Our study demonstrates that a focal practice is often affected by multiple background practices with each their priorities and available resources. It is not enough for researchers to be merely aware of such a backdrop. The focal practice is, in fact, severely affected by the details of some of these background practices. A lack of attention to such “remote” details can result in naïve solutions no matter how much attention we pay to local details. Interconnections among practices are amplified by the increasing level of digitalization and the emergence of digital infrastructures.

A service lens can help CSCW researchers to systematically look for this “bigger picture.” From our point of view, a service lens does not compete with similar approaches such as information infrastructures (Monteiro et al., 2013),

knotworking (Bødker et al., 2017), infrastructuring (Karasti, 2014) and cultural and historical activity theory (Nicolini, 2009), and should instead be used in combination with such approaches. The strength of a service lens in our experience is that it builds on a practitioner-centered vocabulary as opposed to a vocabulary developed mainly by researchers. It was relatively easy for us to communicate with the users and practitioners in the studied case because existing service descriptions were already familiar to them. This is important for “front-line” practices, i.e., inter-organizational practices involving different types of actors. It is also at these inter-organizational practices that value conflicts often surface. Focusing on values –particularly value-in-use and value-in-context –is another helpful feature of a service lens based on SDL. As we also discussed earlier, a service lens is not entirely new, and a growing number of CSCW publications are already investigating related concepts such as care ecosystems, conflicting values, service design, and service platforms (Procter et al., 2014; Poretski and Arazy, 2017; Gui et al., 2018; Kinnula et al., 2018; Kaziunas et al., 2019; Renyi et al., 2022).

A service lens amplifies our attention to values. Practices are always more than neutral patterns of activities and should be considered more often as goal-oriented and value-creating activities. Whether specific values are created depends on multiple practices enacted by different actors, making value co-creation a challenging task. Early identification of values –i.e., gains –for actors in the practices we study can help CSCW researchers better understand why practices are shaped in particular ways. A service lens can help practice researchers –who observe suboptimal social patterns –to uncover root causes, become more substantial in our analyses, and suggest future-proof designs.

This also brings us to the value that in-depth studies of practices provide. The practices we have seen in our case are developed mainly as stand-alone “services” –in a goods-dominant manner –focusing on the service provider and recipient dyad. This is in part due to a reductionist “customer” focus in NPM. It is also in line with what extant literature in service research, in general, focuses on (Oertzen et al., 2018). Only through studying practices in detail can we see how these stand-alone services interact and how these interactions impact the users. Practice studies uncover hidden resource integration efforts –i.e., the invisible work (Star and Strauss, 1999) –and show potential roadblocks to value creation.

Our data shows that tensions among service provision practices in an ecosystem are pragmatically handled by incentives and punishments implemented as digital boundary resources. Such boundary resources then act as resources in resource integrating activities. An example is the voluntarism registry: it facilitates some administrative tasks for the municipality but is also a potential building block for an information portal for families. Therefore, a lesson learned is that designers of a new digital artifact must pay

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close attention to the boundaries between practices in the service ecosystem. A design artifact that focuses on an isolated practice without paying attention to other parts of the service ecosystem can risk not being used. Paying attention to the needs of multiple practices does not mean that the final solutions will be a compromise. A boundary resource, in these cases, can be regarded as a composite object whose parts are interconnected and share data. For instance, in our case, the boundary resource consisted of several parts optimized for both logistics and administrative practices and information-seeking practices of the families. The crucial point is that the parts constitute a whole that satisfies several practices.

Maybe most importantly, a service lens combined with practice studies can shed critical light on service ecosystems by focusing on service ecosystem well-being. Service ecosystem research shows that well-being is neglected when services focus on dyadic provider-recipient relations and ignore the social aspects of value co-creation (Mele et al., 2018). Actors in a service ecosystem are often motivated by their individual well-being instead of ecosystem well-being (Mele et al., 2018; Frow et al., 2019). This has been long demonstrated by CSCW-inspired studies of, e.g., labor platform ecosystems (Martin et al., 2014). Within the public sector, CSCW studies have demonstrated how a lack of well-being can severely impact on users of, e.g., healthcare services (Gui et al., 2018). A practice-inspired service lens can help us explain why well-being gets neglected and potentially how it can be restored using, e.g., boundary resources.

At the same time, focusing on social practices alone will not guarantee ecosystem well-being either. For instance, studies of healthcare practices can illustrate how patients and their informal networks try to make up for the lack of proper healthcare service by doing voluntary care work (see, e.g., Jacobs et al., 2019; Kaziunas et al., 2019). A service ecosystem approach can encourage us as researchers to pay closer attention to critical questions such as: Whose job is this really? In many cases, such voluntary work is genuinely needed (e.g., family members being the only ones with the needed tacit knowledge of tailored activities). In other cases, a closer investigation might uncover political issues –such as the lack of public funding –where voluntarism is used as a “cheap” method to provide public service (Fyfe and Milligan, 2003). Although practice studies are valuable in shedding light on the “invisible work” of such voluntary actors, we need to avoid that they contribute to a problematic “glorification” of voluntarism –e.g., the informal healthcare provider as the hero<sup>9</sup> –at the cost of failing to put the responsibility for the work where it belongs within the ecosystem. Table 6 provides a summary of the implications discussed above.

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<sup>9</sup> Similar concerns were raised during the pandemic in Norway regarding the role of nurses as low-waged “heroes” who did their jobs because of ideological reasons and who did not really need a salary raise.

When using the SIPA toolkit we need to pay attention to some of its limitations and potentially negative implications. First, it is always difficult to see where the boundaries of the relevant service ecosystem lie. In our view identifying the relevant service ecosystem is as much a matter of available resources –in, e.g., the research project –as it is of discovering all the relevant interconnections. Available resources will often decide when to stop searching.

Second, because it originates from the business world, SDL has a positivistic approach towards value co-creation and often underestimates the effort needed to participate in a service ecosystem. It is naive to assume that individuals –e.g., patients –have equal opportunities as hospitals to reinforce their values in a complex ecosystem. Moreover, as discussed above, SDL, with its value co-creation concept, can contribute to blurring the boundaries between service provision and consumption, in many cases leading to more self-service for individuals.

Third, SDL literature often underestimates the role of existing IT infrastructure. This can lead to unrealistic assumptions about how easy digital innovation can be. The “installed base” of technologies (Monteiro et al., 2013) involves significant investments and provides strong limitations but also possibilities. In this sense, the SIPA toolkit can be extended with insights from infrastructure literature that many CSCW researchers are engaged with.

**Table 6.** Summary of the implications of applying the SIPA toolbox concepts.

<b>Toolbox concept</b>	<b>Implications for research</b>
Practice	Studying a focal practice alone will not provide a full understanding of the bigger picture. We need to pay close attention to the overlapping practices of other actors. A service lens focusing on service ecosystem can help us see the bigger picture
Service and service ecosystem	In-depth studies of practices can shed light on service ecosystem well-being and uncover invisible work that can be used to balance service ecosystems and increase their well-being
Value co-creation	All practices are value-laden. SDL’s focus on value-in-use and value-in-context can help practice researchers and designers to understand better the motivations behind actor behavior and the interconnections among practices in the form of value co-creation practices
Resource integration	Resource integration practices are often not part of the service descriptions because service designers often employ top-down reductionist approaches. Studying relevant service ecosystems in detail uncovers such invisible practices. Information about these invisible practices is important to understand how sub-optimal practices emerge and why intended value is not created
Boundary resources	When designing solutions, it is essential to pay attention to the needs of the focal practice and the boundaries towards other practices residing in the service ecosystem. Due to the importance of value co-creation, such boundaries sometimes play central roles in creating future-proof digital solutions. Digital solutions should always be considered as boundary resources

## 7 Conclusions

Our initial scenario of Anne looking for swimming courses is an example of a challenge that Jonathan Grudin, in his seminal study, called the “disparity between who does the work and who gets the benefit” (Grudin, 1994). Grudin used the example of a group calendar: people are not motivated to keep their online calendar updated, only for others to have an easy time booking meetings. In the same way, organizers of swimming events do not spend time tailoring and documenting leisure activities for Anne, who might be the only disabled participant in their course. This happens not because IT systems are difficult to use. It happens because of a mismatch between the involved parties’ underlying motivations, practices, and, consequently, what each of them perceives as the value they receive from the interaction.

With the rapid digitalization of our societies, we rarely use isolated software applications such as Grudin’s group calendar anymore. Such applications became interconnected a long time ago, creating infrastructures of functionalities for diverse uses. Studies of practices, therefore, need to adapt. In this paper, we propose to build on the strengths of practice research and augment these strengths with a service lens mainly inspired by service-dominant logic. Such a combination can create fertile soil for interesting future research in service-intensive scenarios. Existing and future studies of service and practice can be enhanced, and innovative technological solutions can be made more future-proof and sustainable.

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## Declarations

Both authors worked at SINTEF Digital at the time of the initial study.

**Conflict of interest** The authors declare that they have no conflict of interest.

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