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Co-creating dementia care:

Manoeuvring fractured reflexivity in service design

Abstract

Purpose – This study aims to theorise and empirically investigate how vulnerable users suffering from cognitive impairments can be involved in service design.

Design/methodology/approach – The data were collected through an ongoing field study following the processes of designing new forms of dementia care. The data consist of document studies, observations and interviews with actors involved in the service design process.

Findings – The findings demonstrate how the involvement of vulnerable users with cognitive impairment in service design requires the ability to manoeuvre users' 'fractured reflexivity'. The design process was found to be constrained and enabled by three interrelated features: cognitive aspects, social aspects and representativeness.

Practical implications – This paper provides insight into concrete ways of involving vulnerable user groups in service design. The introduced concept – fractured reflexivity – may create awareness of how the involvement of users with cognitive impairment can be difficult but is also valuable, providing a means to rethink what may enable involvement and how to manage the constraints.

Originality/value – Although design processes rely on reflexivity, there is limited research addressing how reflexivity capacity differs among actors. We contribute by exploring how fractured reflexivity may aid the analysis and understandings of intertwined issues related to the involvement of users with cognitive impairment. Therefore, this study initiates research on how service design entails enactments of different modes of reflexivity. The paper concludes with directions for future research avenues on service design and reflexivity modes.

Keywords: Transformative service research, service design, reflexivity, vulnerability, co-creation

Paper type: Research paper

1. Introduction

Demographic changes with ageing populations create challenges and pressure on public healthcare services in several Western welfare states. People live longer lives due to healthier lifestyles and advances in medical treatment. However, heightened life expectancies imply an increased number of people suffering from cognitive impairments and dementia (WHO and Alzheimer's Disease International, 2012). As a response, there are emerging interests and awareness around new forms of treatments and care services that are better suited to meet both the rising numbers of people affected by dementia and the complexities of dementia-related diseases (Moser, 2011).

This article deals with efforts to develop new solutions that can transform and improve dementia care. More precisely, we follow the lengthy process of developing new dementia care services based on the model often referred to as 'dementia villages'. These villages seek to maximise well-being and enable residents to take an active role in their daily lives (Jenkins and Smythe, 2013). Several countries draw inspiration from this model in efforts to reinvent and redesign municipal care services. Our research draws on empirical studies of one of these initiatives and is set in a Norwegian municipality.

The study is set in transformative service research (TSR) – outlined as a topical and emerging research agenda addressing the potential for transformations and enhanced well-being in complex service systems, such as health and elderly care (Anderson *et al.*, 2013, Rosenbaum *et al.*, 2011). Studies focusing on the challenges of designing services for vulnerable consumers have been highlighted as a top research priority, and service design has been emphasised as an applicable and promising way forward (Anderson *et al.*, 2018, Patrício *et al.*, 2018). Service design focuses on bringing in users' perspectives, voices or direct contributions through participation in design and innovation processes (Holmlid, 2009, Sanders and Stappers, 2008).

The user-centrism underpinning service design resonates with broader shifts in healthcare, where principles of person-centred care increasingly gain ground. Person-centred care implies that patients, family and family carers are no longer seen as passive recipients of health services and are granted more active roles as co-creators of value (Anderson *et al.*, 2018, Danaher and Gallan, 2016, McColl-Kennedy *et al.*, 2012). This changing role of patients, as well as their families/communities, implies that they become more in control of decisions concerning their well-being (Anderson *et al.*, 2016, Danaher and Gallan, 2016) and that they may be more involved in the development and innovation of new health services (Anderson *et al.*, 2018, Dietrich *et al.*, 2017, Morrison and Dearden, 2013). Allowing the participation of actors with diverse prerequisites for involvement has also been highlighted to ensure service inclusion (Fisk *et al.*, 2018, Rosenbaum *et al.*, 2020).

However, there are a few studies on *how* to involve vulnerable user groups – in particular, studies focusing on the challenges involved and ways to work around them (Dietrich *et al.*, 2017). Research on service design in complex service areas, such as mental healthcare and/or cognitive impairments, is particularly scarce (Luján Escalante *et al.*, 2017, Sangiorgi *et al.*, 2019). Our paper contributes in this regard by studying service design processes in dementia care. More specifically, our study is guided by the following overarching research question:

> How can vulnerable users suffering from cognitive impairment be involved in service design?

We depart from the premise that 'designing with and not for' users with cognitive impairment implies a range of constraints of practical and ethical character, which needs to be better understood and addressed. Understanding constraints provides keys to unlock the opportunities and potential for designing with these groups of users. Since involvement in innovation and design processes relies on participants' reflexivity (Fuglsang and Sundbo, 2005, Vink, 2019, Wetter-Edman *et al.*, 2018), we specifically examine how enabling and constraining aspects of involvement rely on analysis and understandings of different forms of reflexivity. With this focus, the study has important implications for the literature on TSR and service design. First, the study introduces a lens through which to understand and analyse vulnerability as linked to different modes of reflexivity (Archer, 2003, 2007). We argue that discussing users' ability to participate in service design processes based on their reflexivity modi nuances and sharpens existing understandings of vulnerability and inclusion in service design. Existing theories link vulnerability to states of powerlessness in the marketplace (Baker *et al.*, 2005, Dietrich *et al.*, 2017, Rosenbaum *et al.*, 2020), but what this powerlessness comprises in different service settings and its implication of co-creation in planning and design requires more careful empirical attention and theorisation.

The paper starts with an outline of TSR and service design before introducing vulnerability and the work of Margaret Archer (2003, 2007) on reflexivity modes. Next, the methodology is explained, followed by the presentation of findings. The paper ends with a discussion of how the study contributes to service theory and practice through new empirical and theoretical insights on how to include vulnerable users in service design.

2. Literature review

2.1 TSR and service design

Anderson *et al.* (2013, p.1204) define TSR as 'the integration of consumer and service research that centres on creating uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem'. With this definition, TSR seeks to highlight the role of services and service systems concerning the personal and collective well-being of consumers, citizens and the entire global ecosystem (Alkire *et al.*, 2019, Anderson *et al.*, 2013, Anderson and Ostrom, 2015, Rosenbaum *et al.*, 2011).

TSR encourages researchers to focus on vulnerability related to consumers who may 'find themselves in a position of lesser knowledge and expertise during a service interaction' (Alkire *et al.*, 2019, p.3), or, for instance, among individuals from socioeconomically disadvantaged groups (Anderson *et al.*, 2013). Proponents of TSR highlight service's transformational potential and emphasise healthcare as an area for discovery (Anderson *et al.*, 2013, Rosenbaum *et al.*, 2011). However, TSR's work was at first largely conceptual and agenda setting. Recently, several empirical studies have followed (e.g. Dietrich *et al.*, 2017, Hurley *et al.*, 2018), including the health context (e.g. Davey and Grönroos, 2019, Virlée *et al.*, 2020). However, there is still little knowledge on how to relate the conceptual work to practical approaches (Finsterwalder *et al.*, 2020, Fisk *et al.*, 2018, Patrício *et al.*, 2018). As a response, service design is regarded as well suited for enabling TSR because of the methods' action-oriented design (Anderson *et al.*, 2018, Patrício *et al.*, 2018).

Service design supports the ideals of TSR because it facilitates interactions and dialogue between an organisation and its users (Anderson *et al.*, 2018). More specifically, service design is defined as 'a creative, human-centred, and iterative approach to service innovation' (Wetter-Edman *et al.*, 2014, p.109) and is often said to be about 'slipping into the shoes' of service users to holistically assess the service experiences from this viewpoint (Schneider *et al.*, 2010). Thus, service design accentuates co-creation as a key element and highlights the importance of co-creation with customers, users and citizens (Patrício *et al.*, 2018, Sanders and Stappers, 2008).

Fisk *et al.* (2018) have urged service scholars to increasingly engage in the design of services for service inclusion. The authors link service inclusion to 'egalitarianism' and 'fairness' in a consumer context and highlight how design for service inclusion may pertain to the design of the service concept, the service system and the service encounter. The issue of how to allow service users to participate in the planning and design of their own service solutions is linked to the 'offering of choice' as one of the four pillars of the service inclusion concept. Our research addresses this point, focusing particularly on how participation among certain user groups can prove challenging because they lack the ability to clearly voice their needs and preferences due to cognitive impairments.

Ensuring the participation of users with constrained capacity to directly voice their needs and provide inputs requires the exploration of diverse methods for involvement. The term co-design refers to processes where service users have an active and direct role in the design of services or products (Dietrich *et al.*, 2017, Donetto *et al.*, 2015). When designing services for and with users with cognitive impairment, co-design may not always be possible or purposeful. A combination of methods for involvement may be needed – herein, the use of representatives or representations instead of direct involvement. This is also addressed in TSR literature through research on the crucial role of 'transformative service mediators' when co-creating services with vulnerable users (Johns and Davey, 2019). This involves questions of how mediators act as representatives for vulnerable user groups (Eriksson, 2019).

Co-creation in these service settings also raises a range of other issues requiring particular precautions and sensitivity (Dietrich *et al.*, 2017, Mulvale *et al.*, 2019, Sangiorgi *et al.*, 2019). Mulvale *et al.* (2019), in a synthesis of findings from eight case studies of co-design with vulnerable users, identify central challenges to involvement, such as power differentials, health conditions, economic and social circumstances and funding challenges. A multiple-case study of service design and co-creation in mental healthcare has further identified five interconnected, contentious issues at stake in the co-creation of mental healthcare: organisational constraints, meaningful participation, cultural clashes, power dynamics and systems approaches (Sangiorgi *et al.*, 2019).

Other scholars have further considered the issue of power structures as a major topic to be addressed for understanding conditions for co-creation and co-designing with vulnerable users (Donetto *et al.*, 2015, Morrison and Dearden, 2013). Dietrich *et al.* (2017) highlight the need for including sensitising stages when engaging with vulnerable users compared to other users in co-design. Vulnerable users' engagement may involve the exposure of issues that are sensitive, embarrassing or controversial. Building trust and moving forward carefully may therefore be an essential precaution. Others focus on concrete ways of communicating and eliciting voices and inputs from vulnerable users, such as the use of visualisation and material objects (Crabtree *et al.*, 2003, Morrison and Dearden, 2013, Rodgers, 2018).

However, despite these studies and various elaborations on conditions for involving vulnerable users in service design, it is not clear from TSR or the service design literature what is meant by 'vulnerable users' in service design settings. Moreover, there is a dearth of research exploring different forms of vulnerability, how these forms can be conceptualised and, specifically, how diverse forms of vulnerability affect efforts to design services with rather than for users (Schaminée, 2018). We find that advancing research in the field of TSR, particularly in studies of service inclusion through service design, relies on a better understanding of 'vulnerability' in a design setting, which is discussed in the following two sections.

2.2 Vulnerability

The term 'vulnerability' appears in different kinds of literature and across disciplines and research fields. The service marketing literature focuses on 'vulnerable consumers', for which vulnerability is defined as a state of powerlessness that arises from an imbalance in marketplace interactions or from the consumption of marketing messages and products (Baker *et al.*, 2005, p.134). As the definition focuses on situations where users are vulnerable, it includes potentially everyone and is not considered a stable state across situations and lifespans (Baker *et al.*, 2005, Enang *et al.*, 2019, Rosenbaum *et al.*, 2020). This understanding of vulnerability indicates that vulnerability is not a permanent feature of individuals or groups; rather, it occurs as aspects of people's lives that become relevant in certain situations, under certain conditions and in different walks of life. Thus, vulnerability is seen as situational and relational; individuals may be vulnerable in certain situations, and their vulnerability needs to be understood in relation to the circumstances and the role and status of other individuals and groups.

The term becomes more specific in dementia care – in which vulnerability is linked to a diagnosis, or a set of diagnoses, that affects the ability to express feelings or experiences (e.g. Chow and MacLean, 2001, Shekelle *et al.*, 2001). Dementia is defined as 'acquired, progressive impairment in two or more cognitive areas (for example, frontal executive function, mood or memory) that is severe enough to render a person dependent on others' (Chow and MacLean, 2001, p.668). While dementia encompasses multiple diagnoses that influence individuals differently, it generally implies deteriorating health conditions without prospects of recovering. Dementia becomes, in this way, a particular kind of vulnerability, as it entails a relative permanent state or condition. People suffering from dementia are still more or less vulnerable, depending on the situation and the circumstances, and a certain vulnerability will be permanent due to cognitive and behavioural impairments. At the same time, they can be at different stages of dementia and be healthy when it comes to their physical abilities, and their mental state may differ during the day and be affected by medication, the surroundings, activities and socialisation.

Dementia care provides an interesting and complex service setting for exploring constraints and possibilities for co-creating services with vulnerable users. As highlighted in this section, discussing vulnerability and vulnerable groups in relation to service design requires, on the one hand, the use of vocabularies and concepts that allow parallels to be drawn and generalised across empirical studies set in different service sectors. On the other hand, we need nuanced understandings of the concept that differentiate between various forms of vulnerability. We argue that the concept of reflexivity provides an entrance to explore this predicament.

2.3 Reflexivity, vulnerability and service design

Reflexivity is a broad concept used across the social sciences. With origins in sociology (e.g. Archer, 2007, Beck, 1992, Bourdieu, 1990, Giddens, 1994), it has been further adopted and developed in analyses of organisational change (Alvesson and Spicer, 2012, Suddaby *et al.*, 2016), innovation (Fuglsang and Sundbo, 2005) and service design (Vink, 2019, Wetter-Edman *et al.*, 2018). Consequently, the term is used for various purposes. Suddaby *et al.* (2016) define reflexivity based on organisational theory as 'individuals' general awareness of the constraints and opportunities created by the norms, values, beliefs and expectations of the social structures that surround them' (p.229). Reflexivity is also described as critical reflections (Alvesson and Spicer, 2012) or the ability to engage in 'reflective conversations' (Archer, 2007). While reflexivity is often perceived as individual, microlevel processes, it is also seen as a collective phenomenon. Giddens (1991, p.20) for instance, deliberates on 'institutional reflexivity', understood as the 'routine incorporation of new knowledge or information into environments of action that are thereby reconstituted or reorganised'. Finally, reflexivity is linked to time. In a service design context, reflexivity is connected to an envisioned future; reflections about the present are used as a basis for developing alternative future scenarios (Schneider *et al.*, 2010, Vink, 2019).

Hence, reflexivity is widely thematised in interrelated fields to service design, and reflexivity can be seen as underpinning service design methods and practices (Akama and Prendiville, 2013, p.30). Still, the literature on service design has scarcely addressed reflexivity explicitly and in depth, and it is highlighted as a blind spot in research exploring design approaches in organisational contexts (Van Marrewijk *et al.*, 2010). However, Vink (2019) addresses reflexivity from a service design perspective, and she perceives reflexivity as actors' awareness of the multiplicity of social structures internalised by themselves and others and as a key process to transform the existing and break away from reproduction. Service design offers methods and tools to explore how to transform the existing and is, for instance, presented as an effective and convenient method for unlocking tacit knowledge (Akama and Prendiville, 2013). However, when engaging with users with cognitive impairment caused by dementia, the problem is not mainly to unleash 'tacit knowledge' (i.e. embodied or implicit knowledge that can be difficult to articulate) but to be able to engage in any meaningful and reflective conversation at all since users may lack the ability to communicate verbally and/or resonate rationally. Thus, we raise the need to better understand how prerequisites for reflexivity are unequally shared among people (Archer, 2003, Suddaby *et al.*, 2016) and suggest that the writings of Archer (2003) on different modes of reflexivity can be a way to look into this.

Archer (2003) discusses reflexivity as a process mediating the internal and external worlds, as an individual's inner dialogue to understand his or her social context. More precisely, it is 'the regular exercise of the mental ability shared by normal people to consider themselves in relation to their (social) contexts and vice versa' (Archer, 2007, p.4). Archer (2003) finds that there are four modi of reflexivity: communicative, autonomous, meta and fractured. The modi are not mutually exclusive or exhaustive, but Archer's (2007) empirical studies point to how individuals possess one distinctive, dominant mode.

First, the *communicative mode* implies that an individual's inner dialogue requires communication and confirmation from others before he or she can make decisions and act. This mode is highly relational. Second, the *autonomous mode* is more introverted and indicates more self-contained inner dialogues that can lead to action without communication and validation from others. Third, *meta reflexivity* refers to a more critical form of internal conversation, in which individuals reflexively critique their inner dialogues, which can cause stress and inaction. Fourth, *fractured reflexivity* indicates broken reflexivity; the inner dialogue is limited, and it merely creates emotional distress and heightens cognitive disorientation. The ability to constructively engage in inner dialogues can be temporarily displaced, suspended or impeded altogether – which leads to passivity, as the absence of inner dialogue hinders guiding action. If it appears that the person with fractured reflexivity develops other modes of reflexivity, it would only be on an immensely low level or with the help of the 'right' people. Thus, the ability to make plans and use logical thinking is still absent. Conversely, a form of reflexivity may appear through impulsive and spontaneous actions labelled as expressive responses, often because of distress and disorientation. However, most importantly, fractured reflexivity can be handled, given the appropriate relational conditions (Archer, 2007).

We propose that these four modes of reflexivity can be developed to guide analyses of conditions for involving diverse actors in service design. Given the context of our study – dementia care, in which service users suffer from cognitive impairment – it is mainly the fourth kind of reflexivity (*fractured reflexivity*) that informs our analysis. While Archer (2003, 2007) does not discuss fractured reflexivity in relation to dementia, we find that the concept provides a fruitful starting point for analysing how the involvement of users with cognitive impairments follows different rules compared to service design processes in which users have different capacities for reflexivity. Thus, our study illustrates one way to apply Archer's (2003, 2007) framework based on data from an empirical study in dementia care.

3. Methodology

We conducted a comprehensive field study of ongoing organisational processes to gain deepened insights on how vulnerable users can be involved in service design. This research design gives us unique access to analyse the detailed challenges at stake in efforts to involve particularly vulnerable users. The explorative nature of our research is appropriate in under-studied research areas, and the complexity of the research context, presented next, makes it particularly relevant for gaining new knowledge on service design and involvement.

3.1 Research context

Our research is set in an innovation project that seeks to contribute to the transformation of dementia care services through the establishment of a dementia village (Demvill) set in a Norwegian municipality. The village includes residential units, stores, restaurants, areas for activities and cultural meeting places. The central aim is to create a community that supports the residents to live their everyday lives with freedom while experiencing security and coping. The village in this study has a gross area of 17,000 square metres, with apartments for 136 residents and a unit for 22 residents who no longer benefit from living with others.

3.2 The field study

Our field study followed the processes of designing and developing the new services and the new care concept. The overall design process and the different methods applied during the development are illustrated in Figure 1.

PLEASE INSERT FIGURE 1 HERE

In the first phase of the process, interviews with users and observations in nursing homes (service safaris) were used to ensure that the design of the new services would be firmly anchored in insights derived from individuals with dementia. As part of this process, interviews were conducted with family caretakers, as well as employees in nursing homes. The purpose was to capture the main aspects of the users’ daily lives: what they like to do and what they value or find important.

As shown in Figure 1, the materials from these interviews and observations constituted a foundation for the subsequent design activities. The project team condensed and summarised the data in seven user insights conveying what was important to potential service users:

1) To have a nice home to live in
2) To be part of a community but not with too many people, with the option of peacefulness
3) To be met with respect and dignity, feeling well kept and to decide myself
4) To get good food in a safe and nice environment
5) To have activities for the body and the soul through the whole year, outdoors and inside, for everyone
6) To be safe, especially at night
7) To be useful in everyday life and keep the old life as much as possible

As a next step, the project team invited various stakeholders (36) to an ideation workshop, which resulted in 255 ideas. Subsequently, these ideas were processed by the project team and sorted into four priority areas:

1) ‘Welcome’ – the transition from living at home or in a nursing home to the dementia village for potential residents and next of kin.
2) ‘An army marches on its stomach’ – food and dining experiences.
3) ‘Volunteers’ – volunteers as a stable resource for the Demvill.
4) ‘Activities for body and soul, all year, in and out, for everyone’ – organising activities.

To develop these areas further, the project team decided on a design sprint as a next step. The design sprint resulted in a set of new and more concrete ideas that the project team pursued further through refinements, concretising and the exploration of their practical feasibility. Among other things, this involved further examination of what kind of activities future residents would be able to take part in and how. For example, the project team staged an event related to grocery shopping, in which potential residents were accompanied to a typical local grocery store to learn from and make sense of how they experienced grocery shopping.

Drawn together, the service design process revolved around four major events (activities), as illustrated in Figure 1[1].

3.3 Data collection

In this study, the researchers had a direct and participatory observational role in real-time events of ongoing organisational processes (Langley, 1999). The study follows organisational processes from the spring of 2018 until the beginning of March 2020. This includes data collection related to different activities of the design process, such as user research, meetings and workshops (for an illustration and overview, see Figure 1). An overview of the different kinds of data in the study and their relation to the events is provided in Table I.

PLEASE INSERT TABLE I HERE

As shown in Table I, the data consist of 1) document studies, 2) interviews and 3) observations. The documents collected include a broad set of political and administrative steering documents, minutes from political and administrative meetings and data/records from early design processes. The documents provide insights into the background and organisational and political contexts of the project. Since the development process of the Demvill started before the research project, the data from the initial insight phase were also sorted as document studies and not as observations, including interviews with people with dementia and reflection notes from the project team.

The observations primarily centred on the design processes (workshops) and related follow-up work of these events. Overall, three main workshops were conducted. The first, an ideation workshop (see Figure 1), aimed at harvesting ideas from multiple actors and perspectives and lasted three hours. The second workshop, a concept development workshop (lifestyles workshop), was organised to outline the first design of the shared houses in the Demvill. As shown in Figure 1, this was a recurring event. The third workshop, the design sprint, was inspired by the Google Sprint approach and ran for five days, involving four teams that worked on different themes related to the design for activities and daily life in the village. The participants represented various interests (e.g. family caretakers and healthcare employees) and included a person with dementia in the prototype phase. In addition, we attended meetings and workshops in which members of the project team collaborated to further develop meaning and content for life in the village based on the insights derived from the workshops. Apart from a few meetings, there were always at least two observing researchers. Finally, we made observations of people with dementia conducting daily activities such as shopping in a grocery store. Field notes were taken during all observations and meetings.

Interviews with involved actors were semi-structured and lasted between one and one and a half hours. The objectives for the interviews varied. The first group of interviews (10) focused on the informants' understandings of co-creation, the involvement of vulnerable users in service design and the processes for developing the new services. The interviewees were members of the project team, municipal managers and employees with roles in the Demvill project and politicians. The second group of interviews (3) was conducted with employees who were responsible for interviewing users with dementia in the initial phase. These retrospective interviews focused on understanding participants' experiences with the user interviews. The third group of interviews (8) was conducted with participants in the sprint workshop. The interviews focused on their experiences of partaking in the design processes. Finally, the fourth group of interviews (2) included follow-up dialogues with key members of the project team and focused on their views on the design process (thus far). All interviews were recorded and then transcribed.

3.4 Data analyses

Process data tend to be messy – as they consist of different kinds of data, which makes it hard to adhere to one coherent analytical strategy for the whole analytical process (Langley, 1999). Langley (1999) discusses options for combining diverse strategies when analysing process data, and we combined two of her seven suggested strategies.

First, a narrative strategy is seen as an element of all analyses of process data, but it may range from a strategy in which ‘thick descriptions’ of data in a narrative form are the main goal of the analysis versus the use of a narrative as a way of structuring events of the data chronologically as a part of the analysis (Langley, 1999). In our analysis, we use a narrative strategy in line with the latter goal to structure and convey our understanding of the overall event (the design process) and the interlinkages of various subevents (activities) in the broader process.

Second, we combine this narrative strategy with a qualitative thematic analysis (Braun and Clarke, 2006) of the data (interviews and observations) collected to gain more in-depth understandings of various aspects of the subevents. Our presentation of findings (the next section) is based on the thematic analysis. We followed the process suggested by Braun and Clarke (2006), which involves an analysis starting with a careful reading of transcripts, an initial coding of interesting and topical features across datasets, the collation of codes in potential themes and the refinement and review of themes. We followed the principles of inductive coding, allowing coding categories and themes to emerge from the data. Still, as noted by Braun and Clarke (2006), coding does not take place in an epistemological vacuum; it is inevitably informed by the researchers’ theoretical preconceptions. Moreover, analysing and making sense of the data involves moving back and forth between interpretations of the data and the reading of theory that can inform the analysis.

In our research, the initial analysis revealed that the design process involved elements that enabled and constrained involvement. Users’ contributions were, for example, coded in their ‘ability to share’, which was labelled as a cognitive capability and seen as an enabling aspect, whereas their ‘limited possibility to envision the future’ represented a constraining aspect (see Table II). During the analysis process, we found that fractured reflexivity helped to capture and make more sense of this duality. Thus, we used the concept as the overarching framing for the analysis, indicating not only that the users in this context had reflexive capabilities enabling involvement but also that these capabilities were ‘fractured’ in ways that set constraints and required manoeuvring.

This framing is reflected in the way we display our findings: We explore constraints and enablement as linked to the three main themes that emerged from our analyses: cognitive aspects, social aspects and representativeness. The main codes and themes, together with the focal data source applied for analysis and illustrative quotations, are shown in Table II. The data were analysed by all three researchers involved in the fieldwork. Although the data were coded independently, the analyses were primarily collective to ensure a common understanding of the emerging themes.

PLEASE INSERT TABLE II HERE

4. Findings: Manoeuvring fractured reflexivity

In this paper, we follow the argument in service design and innovation literature claiming that involvement in innovation and design processes relies on participants’ reflexivity (Fuglsang and Sundbo, 2005; Vink, 2019; Wetter-Edman *et al.*, 2018). We apply the concept of fractured reflexivity (Archer 2003, 2007) to analyse and understand how vulnerable users with cognitive impairment can be involved in service design processes. The analysis reveals a duality of reflexivity, which allows the analysis of how the enabling traits are linked to participants’ reflexivity to a certain point and the constraining traits are linked to the ways in which the reflexivity is fractured or broken, as explained in the theory section. The findings suggest that the design process involves manoeuvring this duality of fractured reflexivity, and we explicate next further details of what this manoeuvring entails within the three themes identified through the analysis.

4.1 Cognitive aspects

Cognition refers to mental action – the ability to think, reflect and acquire and process knowledge. As previously described, people with a dementia diagnosis suffer from different kinds of cognitive impairments affecting their mental actions. These impairments can be more or less severe and can affect the ability to reason and verbally express ideas and thoughts. Thus, cognitive impairments of different kinds obviously influence how and in which ways people with dementia can be reflexive and take part in design processes. Even so, our study highlights how cognition, in the context of dementia, can be related to cognitive capabilities, as well as cognitive impairment (see Table II). For instance, nurses who conducted user interviews with young people suffering from dementia found that the respondents had the capability to share what was important to them:

> I found that they were actually quite good at responding. I think they managed to tell me how they would prefer to live their life surprisingly well: what was important to them and these kinds of things.

This quotation shows how the respondent had cognitive and reflexive capabilities regarding the present state of mind, which enabled meaningful sharing of their thoughts and needs. Other parts of the data supported this, as they show how respondents in the user interviews were able to share their perceptions of what constitutes a good life and what they prefer to do in their daily lives and as recreational activities. All these provided valuable insights that were used to guide the process of developing new services within the novel surroundings of the Demvill. This exemplifies how the design team was able to involve the users on their terms and thereby make use of the users' degree of reflexive capabilities by including their voices through interviews.

The manoeuvring from the design team is further shown when testing prototypes in the design sprint. The design team, with help from a health leader, recruited a person with dementia to participate as the test person of the prototypes. The participating user shared how important it was to him that future employees in the Demvill knew him and that they had insights into what he enjoyed doing. He explained that he valued small trips outside and emphasised, ‘I like to go fishing’. He expressed that it was important for him to ‘feel safe’. The insights he presented became important information to the group working on how to develop systems and procedures for welcoming new residents, as well as the group working on how to develop systems for recruiting and organising volunteers in the village. While the participating user was not able to give detailed inputs on the prototypes themselves (for instance, web-based systems for registering and the organising and follow-up of volunteers), the two groups got new ideas and confirmation on what they were working on when listening to the user describing fragments of his life and what he liked to do in his own words. For example, the concrete inputs gave the volunteer group a user perspective and highlighted the need for developing the capacity to organise small trips or activities outside the village (for example, fishing). Finally, all four groups in the design sprint reflected after the prototype session that the direct participation of a person with dementia was valuable because it brought the vulnerability and realities of dementia into the limelight. They explained that it was an important reminder of the situation of the users that they were designing service for. This also shows how users’ reflexivity and cognitive capabilities were made use of by directly involving users, which had a valuable impact on the design process.

The two examples above show how reflexive and cognitive capabilities provide people with dementia with the ability to play a part in the design processes and illustrate how the design team addressed the obvious barriers and seized the opportunities. However, our data also point to how the cognitive impairments associated with dementia set certain constraints. While being able to reflect on and share thoughts on concrete experiences related to the present and everyday life, the data show how users’ reflexive capacities are hampered. Reflexivity on a different mode other than fractured presupposes capacity for abstract thinking to some extent, which can be difficult for people with dementia. One of the nurses who conducted a user interview explained,

> I mean, getting someone with dementia to imagine a context that is not there, that can be very hard. It is abstract, right, and not concrete because you are not there.

This hinders the users from taking part in visualisation scenarios of what an ideal kind of care service could be like, which tends to be a standard exercise in service design processes. This was a constraining aspect that was taken into consideration in the sense that the interviews mainly focused on conversations around the near and concrete activities of the users' present and everyday lives. This also exemplifies how the design team manoeuvred problems of the users' fractured reflexivity by ensuring that they engaged users in a kind of reflexivity that they could handle.

At the same time, the interviewees had to set the stage and inform the respondents about why they were interviewed. Interviewing the users about the present and their everyday lives as care recipients was not without problems because the users did not all comprehend that they received professional care. This made it difficult to answer questions such as 'How do you experience receiving help?' and these had to be rephrased and adjusted. The interviewers found, in general, that they had to move carefully when engaging in these conversations because many questions could trigger distress and sadness. One of the interviewing nurses explained:

> […] at least, because she is very scared and anxious. For her, it is important to be safe if she is to be able to open up and answer questions.

Hence, it was important that the interviewers selected respondents that they knew well and that trusted them. Moreover, the interviewers had to be able to adjust the thematic guides to the individuals and their emotional states throughout the interviews. Moving forward carefully in this way is yet another example of the manoeuvring of fractured reflexivity.

4.2. Social aspects

Social aspects concern the interaction between people and human processes of acquired knowledge, norms and values in society. The users who participated in the interviews and design sprint had cognitive and functional abilities that allowed them to socialise. However, their health constraints and impaired reflexivity also affect their ability to socialise and take part in certain interactive events. Regarding reflexivity, the users may not be able to adopt a mode of reflexivity in the given sociocultural context. For example, this sets constraints when it comes to engaging users in participatory events such as meetings and workshops. Consequently, end users were not invited to take a direct part in the ideation workshop of this design process, as this was not a suitable setting for the users to socialise. Nevertheless, as explained above, one person with dementia took part in the prototyping session of the design sprint. This involved engaging with four groups that had worked on prototyping different proposed solutions related to the new care services. While the user was able to participate and provide valuable inputs to the different groups, as just described, it was observed that the participation seemed to take a lot of effort, and he seemed tired after meeting lots of new people. In addition, he was feeling unwell, as observed by one of the participants:

> The user was probably a little tired from the prototyping process – that is understandable. He did not feel so well, he said when we presented the prototype.

The participant testing the prototypes was escorted by a health worker. The analyses show that the health worker provided the user with some form of safety that made the conversations easier for the user and hindered him from falling into his own thoughts. This enabled the user to participate based on relational conditions. However, rapidly changing moods that can be difficult to predict can also affect the planning of activities. For instance, when arranging for the observation of users' ability to do grocery shopping, the project team had to adjust the original plan. The healthcare professional involved explained,

> The resident that was initially planned to be the test person was in deep despair last night when thinking about the death of her mum and dad, so she had to have time to cry instead of going shopping for groceries.

Another user was recruited, and while her participation in the activity worked well, it was also observed that the trip to the store cost her energy and effort, as noted by the care worker accompanying the user to the store:

> She seemed tired when getting in the car, driving from the store to the nursing home.
> She wanted a cup of coffee. She chose a coconut cake and a pastry. We carried the groceries to the kitchen. She seems proud but tired. She says wants to rest.

The examples show the need for organising activities that take into account fragile sociopsychological health conditions, which tend to characterise people with dementia. This also entails a form of manoeuvring of fractured reflexivity since being involved in different design activities that require social interactions can be strenuous and demanding, implying that the design team needs to be sensitive regarding who they involve and how they organise activities in terms of range and duration of sessions for involvement.

Nevertheless, while constraining aspects related to social capacity influence how service design can be organised, the data also show how participants' socialising capabilities enable involvement. For instance, the healthcare professionals that conducted the interviews found that the respondents enjoyed being involved because this implied social interactions, which they tended to long for:

> They are very happy when someone visits them. So I did not experience that [that it was demanding to participate] at all. I also think they did not quite understand why we were there, but just by being engaged, you get a lot of information.

Hence, the capacity for and willingness to socialise enable involvement in this context, even though the activities need to be organised on the users' terms.

4.3 Representativeness

By representativeness, we refer to the ways in which the voices of users are included through representatives and/or representations. This means that we are talking about representativeness in a broad sense (see also Table II). It can be a planned strategy in which family carers/next of kin are invited to discuss what they consider important for users on issues that the users themselves are prevented from articulating and reflecting on (see the section on cognitive aspects above). This was part of the insight interviews conducted in the first part of the design process. The insight phase also involved workshops with frontline healthcare professionals, who can be seen as representatives of users' voices based on their close knowledge of how the daily lives of people with dementia unfold through their care practices.

Furthermore, the voices of users can be heard through representatives in a more ad hoc manner – for instance, when stakeholders enrolled in other roles in design activities are also the next of kin of spouses or parents with dementia. This happened in several of the groups in the ideation workshop and the group work of the design sprint.

Users recruited to take part in design activities as informants in interviews or as test persons are also somehow representatives of a broad and heterogeneous group of users that can be eligible residents of the Demvill. Moreover, as described above (section 3.2: "The field study"), insights from the user interviews were analysed and condensed into seven insights. These user insights were used as a reminder of the central 'messages' from the users and guided various activities throughout the design process. Consequently, these insights worked as representations of the users' voices and perspectives.

Both enabling and constraining aspects can be linked to the use of representatives and representations in co-creation. Enabling aspects are linked to how the use of representatives and representations were found to ensure the inclusion of the users' voices and perspectives and affect the overall design process. For instance, one of the participants in the design sprint was recruited due to her professional role in the municipality, but she was also the next of kin of parents with dementia. Another team member reflected on how this affected teamwork:

> Throughout the development process, she took her mother and father's situation, who were diagnosed, as a point of departure. The ideas were also based on her experience.

At the same time, getting the next of kin to represent the perspectives of those with dementia could also be problematic when it comes to actually capturing the end users' perspectives and needs. This was also reflected by one of the participants in the design sprint:

> Getting them [next of kin] to think not only about their own lives but also more generally about how to deal with the life of people with dementia and how we can do it best in a dementia village was difficult at times. It was sometimes difficult to get the relatives out of those thoughts when we sat in the groups.

Similarly, it was observed that the seven user insights were enabling in the process, as they were used as a constant reminder of the user perspectives. This was noted by one of the participants in the sprint:

> I think the insights had an indirect effect. (…) I really believe they gave some guidance, when I think about it. We talked about the insights in our discussions, so this is something we know is important.

Conversely, observations of the ideation workshop indicated that while the seven user insights were printed on posters and displayed, the participants were not too focused on these when working on developing ideas:

> To some extent, the participants looked at the posters with the seven pillars [user insights], but they were primarily focused on the ongoing discussions at the team tables.

Involving users through representatives and representations is a final example of how the design team found ways to manoeuvre fractured reflexivity. They acknowledged that the users have reflexive capabilities that constitute valuable contributions to the design process, but they also found that the users' social and mental health conditions set constraints when it comes to the range and intensity of involvement. Thus, it may be necessary to involve others (next of kin or frontline employees) as representatives, or their perceptions may be present in the design process through representations (the condensed ‘user insights’). However, as illustrated in the quotes above, involvement through representations may involve various pitfalls and dilemmas that require manoeuvring. As shown, involving users with cognitive impairments in service design is imbued with a range of practical challenges. Due to their diagnoses, users may not be able to express consent, the loss of language may hinder verbal dialogue, and anxiety, mental health conditions and physical limitations may prevent participation and interactions. Despite these obvious constraints, our findings show that there are ways to work around them and find ways of including the voices of users with cognitive impairments, which involves shifting back and forth between the direct involvement of users and co-creation through representatives.

5. Contributions, limitations and future research

5.1 Theoretical implications

One of the central aspects of TSR is to understand how to improve the well-being of consumers (e.g. Anderson *et al.*, 2013, Anderson and Ostrom, 2015) – particularly, vulnerable consumers (Anderson *et al.*, 2018, Rosenbaum, 2017). Service design has been further suggested to provide tools and mindsets to achieve TSR outcomes (Alkire *et al.*, 2019, Anderson *et al.*, 2018), and it is considered an important approach for service inclusion (Fisk *et al.*, 2018). This study contributes to service research and the TSR dialogue several ways by setting the stage for broader reflections and discussions on what constitutes constraints and enabling factors for involving vulnerable users in the design of services (Anderson *et al.*, 2018, Dietrich *et al.*, 2017, Rosenbaum, 2015).

First, the study contributes to the TSR literature by deepening and refining what vulnerability means, specifically in service design. TSR has mainly treated vulnerability as consumer vulnerability, understood as states of powerlessness in consumption and marketplace interactions (Baker *et al.*, 2005). Vulnerability is then linked to the various forms of obstacles or barriers consumers may encounter in the marketplace, discussed as ‘service exclusion’ in service research (Fisk *et al.*, 2018). Service exclusion is raised as a problem to be addressed by service scholars who may have a role in the design of more inclusive services, and the multidisciplinary field of service design is proposed as a way forward (Fisk *et al.*, 2018, Rosenbaum *et al.*, 2020). These initial research dialogues on service inclusion elaborate exclusion mechanisms in the marketplace but barely explore inclusion and exclusion mechanisms in service design processes. Our study contributes to this gap empirically, and we also provide a theoretical means for analysing how vulnerability affects mechanisms of inclusion and exclusion in design processes. This issue, we argue, requires a more refined understanding of vulnerability than what is covered in the consumer vulnerability concept (Baker *et al.*, 2005). We contribute to this refinement by linking vulnerability to theories on reflexivity modes (Archer, 2007) since reflexivity is seen as paramount to service design (Vink, 2019, Vink *et al.*, 2020, Wetter-Edman *et al.*, 2018).

Second, by linking vulnerability to theories on modes of reflexivity, we contribute new insights into how the design of services is shaped by reflexivity. Archer’s (2003, 2007) differentiation between modes of reflexivity provides a means to explore and analyse how the capacity for reflexivity is unequally distributed among diverse actors in service design. In our research context, dementia care users may be termed particularly vulnerable because their involvement can be hampered by loss of language and cognitive capacity to be engaged and to express ideas, thoughts and needs. While the loss of language can be dealt with by using alternative means of communication (Rodgers, 2018), impaired capacity for reflexivity may pose a more fundamental problem for inclusion in service design. Archer (2003, 2007) explores reflexivity as processes of inner dialogue – which, in turn, is seen as fundamental for how individuals make choices, spur change and engage with the world. As such, we have linked the vulnerability of dementia to what Archer (2003, 2007) refers to as fractured reflexivity, implying that the capacity for reflexivity is somewhat broken and the inner dialogue may lead to distress and despair. Persons enacting fractured reflexivity rely on relational support from others that can compensate for the fractured elements of their inner dialogues. Thus, service design processes involving users with fractured reflexivity rely on relational work and what we refer to as the manoeuvring of fractured reflexivity. A central aspect of this is the use of representatives, which is linked to previous TSR research highlighting the important role of transformative service mediators when co-creating services with vulnerable users (Eriksson, 2019, Johns and Davey, 2019).

Third, analysing the design process as manoeuvring fractured reflexivity enables discussions of vulnerability beyond health conditions or diagnoses, which brings attention to the resourcefulness that user groups termed as ‘vulnerable’ may possess. Exploring service design as enactments of different modes of reflexivity enables new perspectives on the role, capacity and contributions of diverse actors. In our study, we have shown how the design team found ways to tackle, work around or manoeuvre fractured reflexivity – which, in turn, enables the involvement of users with cognitive impairments. This entails a new take on the involvement of vulnerable users in the design of services. Generally, the term vulnerability has been used to highlight the need to take precautions and involve vulnerable users with care and sensitivity (Bate and Robert, 2006, Dietrich *et al.*, 2017, Donetto *et al.*, 2015, Morrison and Dearden, 2013). Exploring vulnerability as linked to reflexivity may give way to more active explorations of how vulnerable users possess valuable resources enabling involvement and the diverse kinds of manoeuvring required to utilise these resources.

5.2 Practical implications

According to the WHO and Alzheimer's Disease International (2012), 'people with dementia and their caregivers often have unique insights into their conditions and life. They should be involved in formulating the politics, plans, laws and services that relate to them' (p.4). Our study brings attention to how users can be involved in design processes by focusing on service design as a practical approach. Specifically, the study shows the importance of a design team that dares address obvious constraints and approach design tools in creative ways. The project team drew on established (service) design approaches but made their own adaptations by combining methods and exploratively developing the process based on gradually emerging insights. By recruiting health personnel (nurses) to conduct interviews with the users, the team supported a secure setting for people with dementia to participate and contribute valuable insights. The project team also accomplished directly involving users in the design processes (testing the prototypes and facilitating the shopping experiment). A key here was their close collaboration with health professionals to safeguard the users, ensuring that they had the reflexive capacity to participate and making it a positive experience.

Furthermore, our findings show how the use of representatives (frontline staff, next of kin and user representatives) can be a way to include users' voices in service design processes. When designing services for people with cognitive impairments, the use of representatives is probably more the rule of the game than the exception. More important, therefore, is our analysis highlighting the constraining aspects of representativeness, depending on who or what is used as a proxy. While using representatives and representations can be informative in certain situations, there is also a risk that representatives fail to represent end users adequately. Without being aware of it, representatives can be nested in their worldviews and agendas, which may tint their understanding of end users' needs. Hence, representative co-creation should be critically evaluated and discussed when used in service design processes.

Moreover, we propose that Archer's (2003, 2007) reflexivity modes can be a way for practitioners (e.g. designers or health managers) to make sense of the different rules guiding service design processes, depending on the service context and the vulnerability of users involved. Exploring users' differing capacities for reflexivity can be a way to operationalise vulnerability in a service design setting. When designing services with users with dementia, it can be challenging for organisations to see beyond the typically practical barriers related to the diagnoses, such as the loss of language and memory. Exploring capacities for reflexivity can be a way to acknowledge and utilise users' resources, and it provides a means for manoeuvring barriers or constraints.

5.3 Limitations and future research

While we believe this article makes a valuable contribution to research dialogues on how to include vulnerable users in the design of services, the study also suffers from several limitations. First, we propose that theory on reflexivity modes can advance new understandings of inclusion in service design, but we do not explore the enactments of diverse reflexivity modes in our analysis. We have merely zoomed in on one mode (fractured reflexivity) as a way of underscoring the specific conditions for involving users in the context of dementia care, and we do not actually explore how other modes of reflexivity come into play. However, we see this as a highly relevant approach for future research that could advance deepened understandings of the complexities at stake when involving diverse voices in service design. Studying the dynamics of service design through the lens of reflexivity modes will enable an analysis of how different modes may conflict, how different modes may complement one another and how fractured forms of reflexivity may be compensated through relational support from others.

Second, while fractured reflexivity informs our analysis, we did not analyse the ways in which users' fractured reflexivity is expressed through a close reading of the data. Rather, we used the notion of fractured reflexivity as a point of departure for the analysis of how the design process was conducted and organised. As such, we analysed the (service organisation's and) designers' manoeuvring of fractured reflexivity rather than the details of what fractured reflexivity may comprise. We found that this also provides a highly relevant path for future research: studying how diverse vulnerable user groups may enact fractured reflexivity, how this is expressed and how different forms may affect their capacity and constraints for being involved in design processes. This sets the stage for analyses on a far more detailed level than undertaken in this study.

Third, while we see significant potential for developing service research dialogues that integrate Archer's (2003, 2007) work on reflexivity modes with service design, this theoretical framework also has weaknesses and limitations (Caetano, 2015). Specifically, Archer (2003, 2007) tends to reduce the complexity of peoples' inner dialogues to mainly four analytical categories on reflexivity modes. While these four modes can be helpful as analytical tools, they may also entail a certain rigidity and oversimplification of complex social processes. Archer's (2003, 2007) research leaves the impression that individuals can be placed in relatively clearly defined modes of reflexivity while she pays limited attention to the occurrences of more hybrid modes or how individuals may shift between different modes, depending on the context and circumstances. When adapting and further developing this framework in the context of service research and service design, we would suggest that it is used in a more open and flexible manner that allows explorations of hybrid and shifting modes. We also believe that new modes could be identified through inductive research. Hence, we invite service scholars to engage in further theoretical and empirical research on how reflexivity modes affect the inclusion of diverse actors in the design of services, especially within service contexts involving vulnerable users.

Notes

1. Due to the outbreak of the COVID-19 pandemic, all design activities were stopped in March 2020; thus, our research of the processes ceased as well.

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Figure 1. An overview of the main events in the service design process

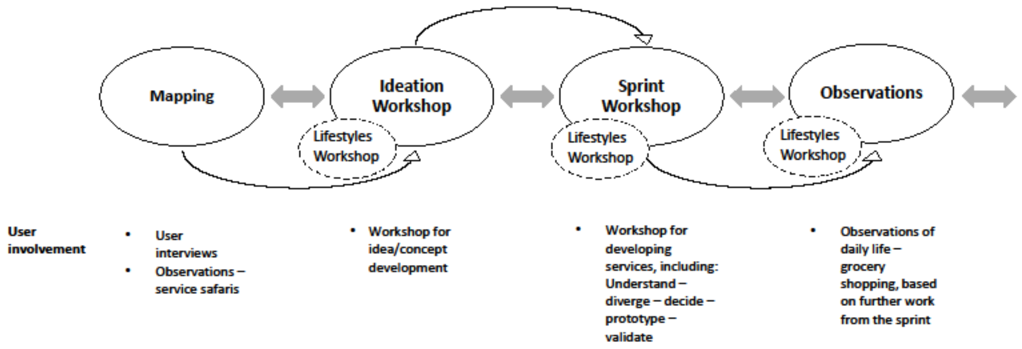

Table I. An overview of the events and data of the study

Events	Data (2018-2020)	Detailing/description	Used for
The overall design process	*Interviews* - Project team (n = 4) - Follow-up interviews (n = 2) - Political leaders (n = 2) - Administrative leaders (n = 4)	Twelve semi-structured interviews lasting one-to-two hours, conducted by one or two researchers. The interviews were recorded and transcribed.	Narrative analysis
	Observations - Weekly meetings (17 meetings) - Various meetings (12 meetings) - Evaluation and further planning related to design activities (9 meetings)	Participant observations of numerous meetings (38). At least one researcher was present, at times two or three researchers. Notes from meetings were afterwards rewritten as minutes and shared with the research team.	
	Documents - Political documents (4) - Administrative documents (12)	Sixteen documents in order to get insights into the background, organisational and political context of the project.	
Insight work	*Interviews* - Retrospective interviews with health care professionals participating in insight work (n = 3)	Three semi-structured interviews lasting one-to-two hours, conducted by one or two researchers. The interviews were recorded and transcribed.	Thematic analysis
	Documents - Reflection notes from the project team (8) - Insights process workshop (11 participants) - "Service safari" observations (7 nursing homes) - Interviews w/people with dementia (n = 24) - Interviews w/next of kin (n = 7) - Interviews w/health care professionals (n = 13)	Internal planning documents from the project team. Minutes and summary observations and interviews of the first phase of data collection from the project team.	
Workshops	*Observations* - Ideation workshop (36 participants) - Meeting for processing the material from the ideation workshop with café host / working group leaders (6 participants) - Development workshop about hominess/ lifestyles (22 participants)	Two researchers observed the two half-day workshops. Participant observation of group-work (pending between groups). Observations recorded through handwritten field notes.	Thematic analysis
	Documents - Preparatory documents and various notes from the ideation workshop and overview of ideas generated (6) - "Lifestyles" documents (4)	Studying these documents gave insights to the totality of ideas generated in the different groups, and to how they were systematized by the project team.	
Design sprint	*Interviews* - Retrospective interviews with group leaders from the design sprint (n = 5) - Retrospective interviews with participants in the design sprint (n = 3)	Eight semi-structured interviews lasting one-to-two hours, conducted by one or two researchers. The interviews were recorded and transcribed.	
	Observations - Design sprint workshop (20 participants) - Evaluation and further planning related to the design activities (3)	Four researchers observed four groups working with ideation, selection and refinement of ideas, prototyping and testing in four different service areas. The researchers also participated in evaluation and follow-up work of the results from the sprint.	
	Documents - Blueprint documents (2) - Process mapping (1) - Various documents from the after work of the sprint (12)	Studies of 15 documents provided understandings for the editing and further work for the design process.	

Table II. The main codes and themes of the thematic analysis

Illustrative data	Event/source	Code	Theme	Dimension
What we found [throughout the interviews] was that they hoped to be able to continue living the life they used to, to keep up with the same kind of hobbies—whether it was physical activities, being outdoors, or handicraft. That meant a lot to them.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Ability to share preferences and perceptions of what constitutes a good life	Cognitive capability	Enabling: Cognitive aspects
I found that they were actually quite good at responding. I think they managed to tell me how they would prefer to live their life surprisingly well: what was important to them, and these kinds of things.	Insight work: Retrospective interviews with health care professionals. (Interviewer 3)	Ability to share	Cognitive capability	
You had to try to get them to talk about the present. What are you doing, what is important to you […] one was very fond of shopping for groceries, to go to the local store […] that meant a lot to her	Insight work: Retrospective interviews with health care professionals. (Interviewer 2)	Ability to share what they value and appreciate in their everyday lives	Cognitive capability	
When we found a solution [prototype], it was nice to be able to adjust it afterwards. What we thought was simple was perhaps not so simple for those who saw it from the outside.	Design sprint: Retrospective interviews with participants (Informant 6)	Ability to provide feedback on prototypes	Cognitive capability	

She [the shopper/user] puts groceries in the shopping cart. She ignores the shopping lists. Seems to 'shop by impulse'. […] Enters the line to pay. Follows the line, calm, waiting for her turn. Needs to be reminded to place the items for the checkout. Greets the cashier. … .	Observation of grocery shopping: Excerpt from field notes	Ability to perform purposeful daily life activities	Cognitive capability	
I mean, getting someone with dementia to imagine a context that is not there, that can be very hard. It is abstract, right, and not concrete because you are not there.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Limited ability to imagine future scenarios	Cognitive impairment	Constraining: Cognitive aspects
Because it is not all that easy to know how you actually feel, how you would like things to be	Insight work: Retrospective interviews with health care professionals. (Interviewer 2)	Limited ability to convey feelings and imagine future scenarios	Cognitive impairment	
They are not able to abstract, to imagine how they might be when they get so ill that they are in need of care […] They are thinking about what is here and now, so what they said was related to the situation they found themselves in just then.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Limited ability to imagine future scenarios	Cognitive impairment	

So, we had to explain it [the prototype], and that was challenging. We chose to have a conversation to see if we were on to something. But we quickly realized that there was no point in explaining about the iPad idea or the app itself, and how it worked […] making a kind of demo would just not work.	Design sprint: Retrospective interviews with participants. (Informant 4)	Limited ability to imagine envisioned solutions	Cognitive impairment	
Regarding dementia [when involving test persons], it should not be persons who are very ill. Then they will not be able to express what they mean. I saw that one of the older people who was there had some difficulty expressing what he really meant. It was difficult to be precise and find the right words.	Design sprint: Retrospective interviews with participants. (Informant 10)	Lack of words/vocabulary	Cognitive impairment	
They are very happy when someone visits them. So, I did not experience that [that it was demanding to participate] at all. I also think they did not quite understand why we were there, but just by being engaged, you get a lot of information.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Capability and capacity to socialise	Social capability	Enabling: Physical and social aspects
What she enjoys the most is to be there with her shopping cart—having a chat with the people she knows in her local store	Observation of grocery shopping: Written report from health care professional	Physical and social capabilities to engage in activities	Physical and social capabilities	
[…] they want that community, they do not want to sit alone.	Insight work: Retrospective interviews	Capability to be social	Social capability	

	with health care professionals. (Interviewer 2)			
The resident that was initially planned to be the test person was in deep despair last night when thinking about the death of her mum and dad, so she had to have time to cry instead of going shopping for groceries	Observation of grocery shopping: Written report from health care professional	Could not participate due to emotional distress related to feelings of loss constraining involvement	Physical and social impairment	Constraining: Physical and social aspects
[…] working with dementia patients is very exciting, fulfilling, but also very tiring, because many of them also change from day to day. […] they have different moods, their outbursts of frustration and things like that, often come with behavioural changes, and you should try to meet that.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Sometimes difficult to be social due to behavioural changes	Social impairment	
To get both the observations and the answers perhaps in the best way, employees have interviewed. Users with dementia are probably a bit restless if they do not know those who are there.	Insight work: Retrospective interviews with health care professionals. (Informant 11)	Dependent on someone that is familiar	Social impairment	
I think the insights had an indirect effect. […] I really believe they gave some guidance, when I think about it. We talked about the insights in our discussions and how they gave an understanding of the users' needs—so this is something we know is important.	Design sprint: Retrospective interviews with participants. (Interviewer 3)	User insights as proxy: contributions	Enabling aspects of user insights as representations	Enabling: Representativeness

Throughout the development process, she took her mother and father's situation, who was diagnosed, as a point of departure. The ideas were based on her experiences.	Design sprint: Retrospective interviews with participants. (Informant 5)	Next of kin as proxy: contributions	Enabling aspects of next of kin as representatives	
She who worked as an activator was very good at describing pictures and telling how things were in everyday life. She had a very good vocabulary. […] We had one who came from a care home, so she had a different approach even though she does the same things. […] She also had lots of good input.	Design sprint: Retrospective interview with participants. (Informant 7)	Frontline employees as proxy: contributions	Enabling aspects of frontline employees as representatives	
Among those we interviewed, it was pretty much the same needs that was shared.	Insight work: Retrospective interviews with health care professionals. (Interviewer 1)	Generalisability of qualitative interviews with selected user representatives	Enabling aspects of selected users as representatives	
To some extent participants looked at the posters with the seven pillars, but they were primarily focussed on the ongoing discussions at the team tables.	Ideation workshop: Excerpt from field notes	User insights as proxy: challenges	Representativeness as constraining	Constraining: Representativeness
Getting them [next of kin] to think not only about their own lives, but also more generally about how to deal with the life of people with dementia and how we can do it best in a dementia village was difficult at times. It was	Design sprint:	Relatives as proxy: challenges	Representativeness as constraining	

sometimes difficult to get the relatives out of those thoughts when we sat in the groups.	Retrospective interviews with participants. (Informant 6)			
They [health care professionals] get a little narrow in their thinking. They are so used to working in a special way that they struggle a little to get out of the traditional.	Design sprint: Retrospective interviews with participants. (Informant 6)	Frontline employees as proxy: challenges	Representativeness as constraining	
I felt that the test persons—that was a bit of a mix. It is not easy to find eligible test persons, but that part could have been organised differently and involved some other test persons as well […] I think we could have received more feedback from other people that would have been more relevant.	Design sprint: Retrospective interviews with participants. (Informant 5)	Users as representatives in the role of test persons/prototyping	Representativeness as constraining	