

MASTER

Technology Appropriation within the Environmental Context of Innovative Dementia Care Facilities
A Qualitative Assessment

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Eindhoven, July 7th, 2022

**Technology Appropriation within the
Environmental Context of Innovative
Dementia Care Facilities**

A Qualitative Assessment

by Leonie A. Copraij

identity number: 1023204

in partial fulfilment of the requirements for the degree of

**Master of Science
in Human-Technology Interaction**

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Leonie Copraij

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Abstract

Recent trends and developments are changing how dementia care facilities are developed and organized. Several alternative dementia care facilities emerge and investigate ways of providing psychosocial care. It is well recognized that the environment plays an important role for the wellbeing of people with dementia. (Warm) Technology can also potentially contribute to wellbeing of people with dementia, however, how to correctly implement technologies within the environmental context of dementia care facilities is challenging. This study investigated: (1) what processes within the environmental context of innovative psychosocial dementia care facilities play an important role for technology appropriation; (2) how the physical environment and technology use of innovative dementia care facilities contributes to the provision of psychosocial care. Five innovative psychosocial dementia care facilities were qualitatively studied, by interviewing staff and residents, and performing structured observations. This study developed a preliminary extension to the OAZIS-Dementia tool which researchers can use for measuring how the technologies present in long-term care facilities can potentially fulfill certain needs of residents with dementia. The physical environment of innovative dementia care facilities showed to contribute to the provision of psychosocial care for residents in terms of privacy, autonomy, and domesticity. However, the technologies were most advanced for providing safety, which interferes with the philosophy of providing psychosocial care. Furthermore, the results indicate that the successful appropriation of technologies by residents, staff, and organizations of dementia care facilities depends on several physical, social, and organizational environmental aspects. The results of this study show the importance of assessing technological interventions as part of dynamic and interdisciplinary systems for resolving challenges of correctly implementing technologies and make recommendations to improve future technology appropriation.

Keywords: psychosocial care, dementia, technology, warm technology, appropriation, qualitative research, long-term care, non-adoption, physical environment, OAZIS-Dementia tool.

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Introduction

Context

Several initiatives are trying to increase the quality of life and support the emotional needs of people living with dementia, as well as their (in)formal caregivers. Dementia is a common disease, and in the upcoming years, the number of people with dementia will increase epidemically (Alzheimer Nederland, 2021). So far, no cure or treatment to slow or stop the progressive course of the disease has been found (World Health Organization (WHO), 2021). Most people with dementia today will therefore eventually require specialized care that cannot be provided in the home situation and end up in an institution (Alzheimer Nederland, 2021). This is why we should be concerned with how dementia care facilities are developed and organized, and investigate ways to improve the quality of life of its residents.

Several trends and developments that impact the way in which care facilities care for people living with dementia can be identified. First, reports on the living preferences of people with dementia (PWD) and their informal caregivers call for a softer transition between living independently and living in a care facility (den Buuse & A. de Boer, 2021). Softer transitions would fill the gap between living independently at home without specialized dementia care and giving up full independence while receiving specialized care in a dementia care facility. Reports also show a fear of care facilities, specifically a fear of violations of autonomy and freedom, unfamiliarity, and associations with death (den Buuse & A. de Boer, 2021). Besides, there is a shortage of care staff, due to increasing numbers of dementia cases and decreasing numbers of staff within this sector (Ministerie van Volksgezondheid, Welzijn en Sport, 2022). Another development affecting institutionalized dementia care is the new Dutch regulation regarding the coercion of care, effective from May 2020. The regulation strictly demands voluntary care for psychogeriatric or mentally disabled people, only when absolutely necessary care can have elements of coercion.

These developments are causing a shift in how we approach dementia care: from medical to psychosocial, from aiming at the disease to focusing on subjective experiences and how people cope with dementia (Finnema et al., 2000). The psychosocial model of care stresses the importance of the

individual with their strengths and needs and tries to explain behavior by looking at how either the environment or one's mood affects that person, rather than explaining behavior through the progression of the disease (Finnema et al., 2000; Taft et al., 1997). Most traditional nursing homes for PwD refer to the medical care model (Finnema et al., 2000), having institutional characteristics – shared (bath)rooms, kitchens separate from living areas, medical carts, nursing stations – aimed at providing care as efficiently and safely as possible (Verbeek et al., 2010b). Research showed that most residents within traditional nursing homes display inactivity (den Ouden et al., 2015; Stewart & Donovan, 2014), have less social contact with staff, and more physical restraints compared to special care facilities (Weyerer et al., 2010). In response, many alternative and innovative care facilities are being built and traditional ones are being renovated.

Innovative Care Facilities and Practices

How to define innovative care facilities remains unclear in the existing literature, however, most explanations seem to refer to psychosocial principles. Some refer to innovative as encouraging person-centered care (B. de Boer et al., 2015, 2017), others as increasing social engagement, participation, and perceived autonomy (Buist et al., 2018), or integrating health and social care services (de Bruin et al., 2017). Besides, the setting of the care facility (i.e. space and urbanization), creativity and flexibility of staff, management styles, and political policies also play an important role in realizing innovation in dementia care (Buist et al., 2018). So, the definition of innovative care facilities is related to the provision of psychosocial care through the physical, social, and organizational structures of an organization. Several alternative care facilities for PwD emerge, such as green care farms (GCFs) (B. de Boer et al., 2018), small-scale living facilities (van Zadelhoff et al., 2011; Verbeek et al., 2010a), and other concepts trying to offer an alternative to traditional care facilities (see Table 1 for some examples). These emerging concepts are investigating ways of providing psychosocial care. Examples of psychosocial practices are: offering choice, tailoring activities to specific needs, being responsive to the strengths and abilities of a person, offering personalized care, and reframing (Finnema et al., 2000; Taft et al., 1997). Researchers investigate the success of these new psychosocial concepts and try to

find ways to implement successful factors in traditional care settings (Buist et al., 2018). Factors that are identified as successful are domestic activities, homelike environments, and accessible outdoor areas (Buist et al., 2018).

Table 1

Types of care facilities, based on B. de Boer et al. (2018) and de Bruin et al. (2017)

Type of Care Facility	Short Description
Traditional Care Facilities	Daily life and activities are determined by the organizational rules and routines, and caregivers have differentiated tasks. Tempted to utilize care practices according to the medical model of care. The built environment has a hospital-like atmosphere.
Green Care Farms (GCF)	Agricultural activities are combined with care services. Residents are encouraged to participate in as many daily activities as possible. House on the area of a farm including gardens, animals and stables, which are freely accessible to residents.
Small-scale Care Facilities	Either stand-alone or located within larger-scale care facilities. The built environment has a homelike atmosphere and residents form a joint household with staff. The common living room is attached to the kitchen and tasks are integrated for staff. Generally have a maximum of 10 residents within one household.
Living and (mixed) Care Separated	Residents rent a fully-equipped apartment (kitchen, bathroom, living space) and can meet other residents in community rooms. Care is nearby, can be delivered upon request, and is separated from the rent of the apartment. In the community rooms, activities are organized and, in some cases, meals are offered. Independence and autonomy of residents is important. Not necessarily exclusive for residents with dementia.
Multifunctional Care Facilities	These try to establish a connection with the neighborhood through having facilities, such as a school, daycare, or community center located inside or nearby the care facility.

Note. This is not a mutually exclusive list of types of care facilities. Therefore it is advised to try and categorize facilities based on their main point of focus. For example, is the facility providing a natural environment with agricultural activities, or is the connection with the neighborhood more important?

Theoretical Considerations

There is a decrease in sensory acuity due to the process of aging (e.g. reduced hearing and vision), which limits the quality and quantity of the sensory information that is obtained from the environment (Helmuth, 2003). Dementia additionally reduces the ability to understand and process sensory input, to interpret and respond to the environment, and impairs memory (especially semantic memory) (Zwijssen et al., 2016). These effects of aging and dementia alter the sensitivity to

environmental conditions, the way that people with dementia respond to the environment, and can lead to feelings of estrangement that trigger agitated behaviors, confusion, and delusions (Sloane et al., 1998). Environmental design therefore plays an important role for supporting people living with dementia (Calkins, 2018). When done well, the physical environment can serve as a non-pharmacological intervention that improves mobility, pleasure, daily living, and orientation of people with dementia (Calkins, 2018; Woodbridge et al., 2016). The environment can enhance wellbeing (Chaudhury et al., 2018), support meaningful relationships (Calkins, 2018; Ferdous & Moore, 2015), influence autonomy (Boumans et al., 2019), mood, depressive symptoms, and engagement (Marquardt et al., 2014a). Examples of environmental characteristics of care facilities that have a positive effect on PwD are: bright (day)lighting conditions (van Hoof et al., 2010), homelike features (Verbeek et al., 2009), age-integrated communities, personal space, direct lines of sight and access to nature (Calkins, 2018). Three environmental components are interconnected with each other and influence the quality of life of people with dementia: the physical, social and organizational aspects of care facilities (Chaudhury et al., 2016; Davis et al., 2009; B. de Boer, Bozdemir, et al., 2021; B. de Boer, Buist, et al., 2021; Garcia et al., 2012). Based on the literature provided, the three environmental components can be defined as the following:

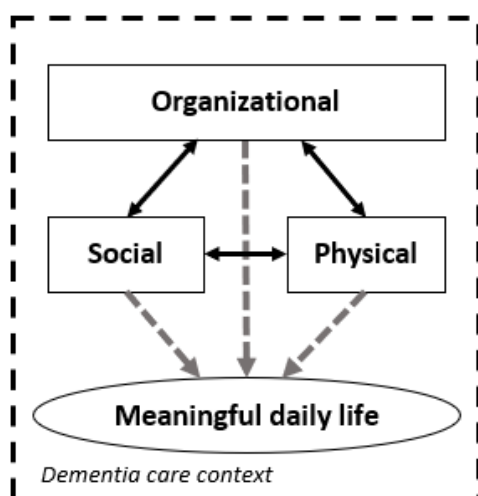
- The physical environment describes how the space is physically organized, such as architecture, interior design, layout, outdoor areas, and the built environment.
- The social environment includes the interactions that take place within the environment, as well as the social context and community surrounding an environment. Residents with dementia, family members, and nurses form triadic relationships that result in different types of interactions depending on the positionings of each actor (Koster & Nies, 2022).
- The organizational environment regards the attitudes, values, managing behaviors, and expectations that define how a care facility is organized and perceived.

These three environmental components are interconnected and can either enhance or diminish each other (Davis et al., 2009). How a space is physically designed is connected to the human

activity possibilities within that space, referred to as the spatial affordances of a space, e.g. sleeping in the bedroom and cooking in the kitchen (Gibson, 2000). Research on building-user interactions within dementia wards also found that the built environment actively shapes care interactions and staff should be made aware of this (Driessen, 2020). Staff and the care philosophy can facilitate optimal use of the physical environment, and social interactions are either supported or obstructed by physical aspects of a space (Chaudhury et al., 2016; Davis et al., 2009; B. de Boer, Buist, et al., 2021). Research for example showed that care staff should be able to incorporate activities into daily care practice, e.g. folding a resident's laundry together with that resident (B. de Boer, Buist et al., 2021). The interconnectedness of these three factors is illustrated in a conceptual framework for care facilities in the Netherlands, underlining their importance for achieving positive outcomes for people with dementia, see Figure 1 (B. de Boer, Bozdemir et al., 2021).

Figure 1

A theoretical framework for environmental importance, adapted from B. de Boer, Bozdemir et al. (2021)



Research among people with dementia in care facilities suggests that feelings of pleasure, connectedness, involvement, self-identity, and autonomy are important for experiencing activities as meaningful (Phinney et al., 2007; Vernooij-Dassen, 2007). Moreover, engaging people with dementia to improve their cognitive status, physical function, or emotional wellbeing can also be considered as meaningful (Morley et al., 2014). Technology can help stimulate a meaningful daily life for people with dementia since it can facilitate autonomy (Boumans et al., 2019), encourage social interactions,

improve cognition (Good et al., 2019), provide emotional support, social bonding (Abbott et al., 2019), and contribute to the sense of home (Hauge & Heggen, 2008). Furthermore, the concept of Warm Technology, as discussed by IJsselsteijn et al. (2020), is aimed at supporting and enhancing social connectedness, self-reliance, dignity, and human potential for people with dementia. However, one of the challenges for (warm) technology is how it is implemented beyond the research context (IJsselsteijn et al., 2020). Despite the mentioned positive effects that technology can have on people with dementia, technologies are rarely successfully adopted within the context of dementia care facilities, referred to as the implementation gap. Besides studying the technical designs, experimental trials, and patient experience of technologies, researchers argue to investigate a fourth paradigm: investigating technology as part of a dynamic and interdisciplinary system, i.e. the context of a dementia care facility (Greenhalgh et al., 2016).

A wide variety of technological interventions are developed for PwD, ranging from supporting autonomy (medicine dispenser, item locator), safety (sensor surveillance), leisure and social activities (music, exercise, social robots), communication (video calling, electronic cards), and supporting staff (smart glasses, ergonomic devices) (Vos et al., 2020). First of all, the physical location of these types of technologies should be considered since people tend to associate specific locations with specific activities (Buxton, 2001). Besides, the social environment seems to play a role, as research suggests that the physical and social context of game settings are important to consider for player experience and engagement (de Kort & IJsselsteijn, 2008). Staff and residents will be interacting with the technologies and the organizational values might play a role in the selection of types of technologies. These notions agree with the theoretical framework of Figure 1, regarding the importance of three environmental aspects for, in this case, technology to contribute to a meaningful daily life of PwD. In-depth research on how the physical location, the organizational culture of, and social interactions within dementia care facilities relate to the appropriation of (warm) technologies is limited. This study refers to term appropriation, inspired by Gaskin and Lyytinen (2012), as to how several stakeholders of care organizations try to make technology their own, how technologies are changed during adoption

and implementation, and how it becomes part of how they live or work (Gaskin & Lyytinen, 2012, pp. 29–30). Earlier research by Unbehau et al. (2020) explored the social appropriation of a specific ICT exercise game for PwD and their (in)formal caregivers. Their results highlighted several facilitating factors for the appropriation of technology, such as the interplay between stakeholders, adoption into care-related workflows, technical artefacts, and perceived benefits for PwD.

Rationale

The current trends and developments regarding long-term dementia care lead to a shift from providing care according to a medical model to a psychosocial model, from traditional care facilities to innovative care facilities. Besides, a shortage of care staff is expected, which calls for new approaches to providing care, specifically psychosocial and person-centered care. It is well recognized that the environment plays an important role for the well-being of people with dementia (Boumans et al., 2019; Calkins, 2018; Chaudhury et al., 2018; Ferdous & Moore, 2015; Marquardt et al., 2014b; Woodbridge et al., 2016). Three interconnected environmental aspects, in particular, are of importance for a meaningful daily life of PwD: the physical, social and organizational aspects (Chaudhury et al., 2016; Davis et al., 2009; de Boer, Bozdemir, et al., 2021; de Boer, Buist, et al., 2021; Garcia et al., 2012).

Technology, and especially Warm Technology, also has the potential to contribute to a meaningful daily life for PwD, but the challenge remains on how to correctly implement technologies within the environmental context of dementia care facilities and enhance the acceptance of these technologies. The appropriation of technological interventions within the context of dementia care facilities can influence the way these technologies are used and the impact that they have on the daily lives of PwD. The interconnectedness of the physical, social and organizational environmental factors can play a role in this. Research into how technology is appropriated within the physical, social, and organizational environmental aspects is lacking. Investigating this can bring us closer to an appropriate way of introducing technological interventions in the dementia care context, and therefore positively contribute to the wellbeing of PwD. This research will therefore try to answer the following research questions:

- 1. How do the physical environment and technology use of innovative dementia care facilities contribute to the provision of psychosocial and person-centered care?**
- 2. What processes within the environmental context of psychosocial dementia care facilities play an important role for the appropriation of technological interventions, what are the main reasons for (not) implementing technologies, and how do these processes relate to the wellbeing of residents with dementia?**

These questions have been investigated through an in-depth qualitative exploration of several psychosocial dementia care facilities. The appropriation and use practices of technological interventions within the physical, social and organizational environmental factors were investigated, together with the experiences and needs of the residents living there. Lastly, this study looked into the barriers and drivers for technology interventions that were present in the physical, social, and organizational environments.

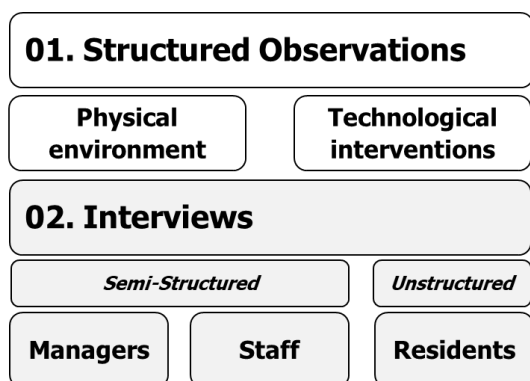
Method

1. Research Design

This study aimed to (a) investigate how the physical environment and technology use of innovative dementia care facilities contribute to the provision of psychosocial care and (b) gain a deeper understanding of important processes for technology appropriation within the environmental context of psychosocial dementia care facilities, especially focusing on increasing the wellbeing of PwD. Several qualitative techniques were used to investigate the appropriation of technological interventions within the physical, social and organizational environmental factors (see Figure 2). A cross-sectional research design was used, as data was obtained from a sample of five Dutch care facilities at a single point in time (within the period of April 11th to May 17th 2022). First, structured observations were performed to obtain sufficient background knowledge on the physical and technological context of each care facility. This background knowledge helped to prepare for the second and more in-depth phase, and enabled the researcher to compare the different care facilities with each other. This phase consisted of gathering more in-depth and rich information through semi- and un-structured interviews with staff and residents of each care facility. These interviews provided information about the role of technology within the physical, social and organizational environmental contexts and perceived barriers and drivers to the adoption of technology interventions. A qualitative approach was the most appropriate choice, since the aim was to investigate perspectives and experiences and generate new ideas for future research. Qualitative methods allow for inductive reasoning to ground a phenomenon using the perspectives, perceptions and meanings of participants within their specific social worlds, in this case, inside the care facilities (Bryman, 2016, p. 688). Ethical approval was granted by the Eindhoven University of Technology Research Ethics Committee (ID: 1560).

Figure 2

Research Design



2. Structured Observations

2.1. Study Locations

Five Dutch dementia care facilities were approached for this research, based on several criteria. First, each care facility was required to work according to psychosocial principles: focus on the person instead of the disease, emotion-oriented, offering choice, or tailor activities to the needs, and looking at behaviors from different angles. This criterium was chosen because more and more care homes are moving from a medical way of caring to a psychosocial way of caring (Finnema et al., 2000; Taft et al., 1997). The second criterium was that each care facility should have some experience with technological interventions or have a team focused on innovation. Technological interventions play a fundamental role in this research, so interviewees should be familiar with some forms of technology in order to share their experiences and views regarding technology. Lastly, the care facilities were selected to include a range of levels of use of technology – no use or minimal use, passive use, and active or innovative use – and type of facilities (see Table 1 for different typologies). Through a stratified sampling strategy, care facilities with different levels of use and typology were included to create a diverse set of data and investigate different types of drivers and barriers to the adoption of technology. Table 2 represents an overview of the demographic details of each care facility, and Appendix A contains pictures of each care facility. Care facilities were carefully selected and approached using the networks of the Expertise Center for Dementia Technology (ECDT), Maastricht University and HevoFame.

Table 2

Descriptions of the care facilities that were included in this study

Type of facility	Brief description	Staff-resident ratio	Psychosocial principles
(A) Living and Care Separated	Residents rent private fully-equipped apartments but the care is nearby. Residents can meet each other in community rooms, where meals are also served.	On a regular day there are 15 residents and 3 staff members <i>on each floor</i> . (3/15).	Privacy (doorbells and private, spacious rooms), offering choice, technology adjusted to wishes of resident and family.
(B) Green Care Farm (GCF)	Residents live in small groups in the houses located at the farm and participate in the agricultural activities of the farm. The rooms of residents are small and bathrooms are shared among neighbor.	It varies, <i>but per house</i> there are approximately 8 residents and 4 staff members present during the day (4/8).	Have residents participate in daily activities, stimulate to go outside and focus on capabilities of PwD.
(C) Living and Mixed Care Separated	Community home designed for a mixed group of elderly that like to live independently but close to others. There are community spaces that are run by residents, such as a kitchen, café and garden.	2 staff members for care and 24 residents that receive care (either somatic or mental care) (2/24).	Privacy (doorbells and private, spacious rooms), letting people live independently and offering community spaces to meet others.
(D) Small-scale Care Facility	Several houses in a big park where residents can walk and meet each other, they provide 24-hr care in a homelike environment with a limited group of residents.	One home with two divisions of 7 residents and 2 staff members each. <i>So per home</i> there are four staff members and 14 residents (4/14).	Tuning into the needs of residents, and have residents participate in daily activities.
(E) Small-scale Care Facility	Several houses situated around a garden where residents can walk and meet each other, they provide 24-hr care in a homelike environment with a limited group of residents. The residents sleep upstairs and living rooms are located on the ground floor.	One home with two divisions of 8 residents, so 16 residents in total. <i>Per home</i> there are four staff members (4/16).	Have residents participate in daily activities, focus on privacy and tuning into the needs of residents.

2.2. Measurements and Materials

The OAZIS-Dementia tool (v. 2022) initially developed by B. de Boer et al. (2015) was used to measure the physical environment of the care facilities and investigate whether it contained aspects that have a positive effect on people with dementia. This observation tool was chosen for this study since it has been discussed with several experts in long-term dementia care and is systematically

reviewed by the researchers from Maastricht University (department of Health Services Research) to improve its objectivity and validity (de Boer et al., 2018). There are 72 items that have to be rated on a Likert scale from 1 (not at all) to 5 (completely) regarding the categories: privacy and autonomy; sensory stimulation; view and nature; facilities; orientation and routing; domesticity; and safety (see Table 3). In the end, an average value for each category was calculated, having each item weighing the same. The final score is the average of all seven categories, which can be used to compare different types of care facilities. The greater the probability that the environment has a positive effect on the residents with dementia, the higher the score is. While observing using the OAZIS-Dementia tool, pictures of meaningful locations, objects and other environmental aspects were taken using a phone. Moreover, descriptive field notes on initial reflections of behavior, events and conversations were taken using a separate notebook.

Table 3

OAZIS-Dementia categories, reprinted from B. de Boer et al. (2018)

Category	Item No.	Examples
Privacy and Autonomy	Item 1-7	Residents have a single room Washrooms are discrete
Sensory Stimulation	Item 8-25	Daylight glare and harsh reflections are prevented or can be individually regulated with blinds Staff can regulate temperature
View and Nature	Item 26-36	Residents have views of nature and greenery There are animals present
Facilities	Item 37-45	The outdoor area is accessible for people using a wheelchair or walker There are several spatial facilities on the ward to meet other residents
Orientation and Routing	Item 46-52	The structure of the ward is open Use of clear icons/nameplates to denote toilet and bathroom
Domesticity/ Small Scale	Item 53-69	The ward has its own front door with a doorbell The staff does not wear uniforms
Safety	Item 70-72	There are devices dedicated to security present at the toilets Floors are not slippery

In order to measure the potential of the technological interventions present at the care facilities, the OAZIS-Dementia tool was extended, see Appendix B. The extension, referred to as OAZIS+T, was carefully created by the researchers of this study and consisted of 14 items divided into five categories that could also be rated on a 5-point Likert scale (see Table 4). The items and categories were based on a publication of Vos et al. (2020) defined as an inspirational guide for organizations that

want to implement technology interventions. Vos and colleagues (2020) made distinctions between several themes: communication, autonomy, meaningful day, support for caregivers, and safety. In order to establish face validity, a pilot test was performed and experts on the topic were consulted, such as people from innovation teams and researchers. Moreover, to account for certain scorings and be able to reflect on the tool in the end, room for explanations were added for each item. Higher scores indicate more technologies for the same purpose or more advanced technologies. All the scorings were performed by the same researcher. Questions 7 and 12 were left out of the scoring in the end since question 7 on ‘technologies that facilitate contact between residents’ was hard to answer and obtained similar results as question 9 on ‘interactive image and music technologies’. Question 12 on an ‘online visitor register’ was omitted since visitors of each facility could come as they pleased, making an online visitor register redundant. In the end, an average value for each category was calculated, having each item weighing the same. The final score is the average of all five categories, and this score can be used to compare different types of care facilities. Note that this extension is not complete, and several iterations need to be performed before potentially including it in the OAZIS-Dementia tool. At the end of this study, the tool was reviewed (see Appendix C for the updated version) and the creators of the OAZIS-Dementia tool were notified and consulted about the possibilities of extending their tool.

Table 4

OAZIS-Dementia Technology (OAZIS+T) Extension (version March 2022)

Category	Item No.	Examples
Communication	Item 1-2	Residents have devices to communicate with friends or family Residents have devices to communicate with care professionals
Autonomy	Item 3-5	Residents have devices to structure their day Residents have devices to enable them in their daily care
Meaningful day	Item 6-10	There are technological devices to motivate residents to exercise The care facility has social companion robots, such as a dog, cat, or seal
Support staff	Item 11-13	Care staff gets psychosocial support through applications or online trainings There are technologies to support care staff in their tasks, such as smart glasses
Safety	Item 14	There are technological devices dedicated to safety, such as sensors, hip airbag, smart incontinence material, or automatic lights

2.3. Procedure

Prior to obtaining the observations for this study, the researcher practiced performing the observations with an experienced researcher from Maastricht University. The structured observations were obtained while visiting the care facility, before conducting the interviews. The researcher consulted with the staff whenever things were unclear or they needed to see the rooms of the residents. Filling in the OAZIS-Dementia tool and the OAZIS+T took about 2 hours. In the end, the assigned scores for all facilities together were reviewed and for one facility the scores could be discussed with other researchers to clarify disagreements. The scores for the OAZIS+T were carefully compared between the different facilities, to investigate how scores could be more objectified for future research.

3. Semi-Structured Interviews – Care Staff

3.1. Participants

To obtain diverse insights about the social and organizational environmental aspects of the care facilities and about how the physical environment and technological interventions were, in fact, used, people from different layers of the organization were interviewed. Managers were selected, because they are involved in top-down decision making and the overall vision of care. Nursing staff or staff responsible for activities were interviewed, because they directly use technology in their work and are closely observing residents as they use technology. A theoretical sampling strategy was applied – in which emerging insights guide the selection of participants up until a point of theoretical saturation (Bryman, 2016, p. 697). Participants were approached through a point of contact within each care facility. The final number of staff participants was 13 and Table 5 shows their demographic characteristics. The participating staff members or the whole care unit were compensated for their participation with a small chocolate gift of approximately 8 euros per gift.

Table 5*Demographic characteristics of staff participants within this study*

Characteristic	n (%)
<i>Total</i>	<i>13</i>
Age (years)	
20-30	3 (23)
31-40	0 (0)
41-50	3 (23)
51-60	7 (54)
Gender	
Male	2 (15)
Female	11 (85)
Care Facility	
A) Living and Care Separated	3 (23)
B) Green Care Farm	3 (23)
C) Living and Mixed Care Separated	2 (15)
D) Small-scale Facility	3 (23)
E) Small-scale care facility	2 (15)
Job Position	
Managing functions	5 (38)
Personal healthcare assistant	5 (38)
Nurse	1 (8)
Responsible daytime activities	2 (15)
Education	
MBO	6 (46)
HBO	7 (54)
Total Working Experience with Dementia (years)	
0-10	5 (38)
11-20	4 (31)
21-30	3 (23)
> 30	1 (8)
Experience at specific location^a (years)	
< 1	7 (54)
1- 5	4 (31)
> 5	2 (15)

^a Facilities C, D and E recently moved to a new location less than a year ago.

3.2. Measurements and Materials

The semi-structured interviews with staff were conducted using an interview guide, see Appendix D. The interview guide consisted of about 30 questions (see Table 6 for some examples) on the role of technology for the physical, social and organizational environmental aspects; the personal attitude towards technology; the perceived barriers and drivers for the use of technology interventions, and was partially based on the interviews performed by Feijt et al. (2018). To gather rich data and gain insights into stakeholder perspectives, the researcher frequently asked the participants to illustrate their statements with specific examples. For care facility C and D, the interview guide was extended with questions for research on moving to innovative living concepts created by the University of Maastricht (see Appendix E). The participants of care facility C and D therefore also received the informed consent of Maastricht University (Appendix F). When permission of the interviewee was granted, the interviews were recorded using an H2N Handy Recorder. If no permission was granted, the interview was summarized instead of transcribed.

Table 6

Topic list and example questions of semi-structured interviews

Topic	Examples
Technology in the physical environment	Is there a dedicated room where technologies are used? Why? Is technology part of the interior, or is it stored somewhere? Why?
Technology in the social environment	Is technology used to support conversations with residents? How, or why not? Does technology facilitate contact between residents and their family, care professionals or other residents? How, or why not?
Technology in the organizational environment	What is the vision of the care facility? What are important topics for the upcoming years? How does the organization think about technology?
Attitude towards technology	How do you feel about using technology? For what is technology suitable and for what not?
Barriers and drivers	What are the most important reasons for using or not using technology? What would you need to be able to use technology more often?

3.3. Procedure

Before the start of the interviews, participants were provided with an informed consent form containing information on the aim and content of the study (Appendix F). When they signed the informed consent and agreed or disagreed upon audio-recording the interview, the interviewer

introduced themselves and collected some general information about the participant regarding age, function, working experience, and education. Conducting a semi-structured interview allowed for follow-up questions, changing the order and wording of questions, in order to obtain rich, detailed answers. It enabled the researcher to emphasize on significant issues emerging while interviewing. Following the semi-structured interview guide, the interviews lasted between 60 and 90 minutes. All interviews were held at the care facility at which the participant was working, in a quiet space and were conducted in Dutch. While interviewing, notes were made capturing any research thoughts arising during the interview. After the interview, participants were given the opportunity to ask questions about the research, thanked for their participation and given a small gift of gratitude. The audio recordings were transcribed and saved in a secured folder (SURFDrive).

4. Unstructured Interviews – Residents with Dementia

4.1. Participants

To define the needs and wishes of the people living within the care facilities, residents were also interviewed. For each care facility, the researcher discussed the abilities of residents to participate in an interview with a responsible member of the staff (see Figure 3). Residents with severe concentration or attention difficulties, communicative impairments, or frequent behavioral difficulties were not included, due to lack of experience with PwD of the researcher. The most appropriate way to approach consent with the resident and their authorized representative was determined by the regulations of the specific care facility. Whenever the staff indicated that residents themselves were able to give consent, an information document was shared with them (see Appendix G). In some cases, staff called the authorized representative of the person with dementia, in other cases an e-mail to opt-out was sent to them.

Together with the staff, the researchers asked the resident whether they wanted to be interviewed, and also during and after the interview residents were asked for permission. This way, a convenience small sample size of 4 residents with dementia was obtained, among which 1 was male and 3 female. The residents were between 70 and 89 years old, and they lived between 1 and 6 months

at the care facility. Either the participating residents or the whole facility were compensated for their participation with a small chocolate gift of approximately 8 euros per gift.

Figure 3

Recruitment, inclusion and consent procedure for residents



4.2. Measurements and Materials

The unstructured interviews were conducted using an interview guide containing a list of topics and issues regarding the current needs and wishes of the resident with dementia (see Table 7 for some examples and Appendix H for the whole list). For care facility C and D, the interview guide was extended with questions regarding research on moving to innovative living concepts, created by researchers of the University of Maastricht (see Appendix H). The questioning style of the guide is very informal and simple, focusing on perspectives and experiences, and questions regarding recalling events and facts were avoided. People with mild to moderate dementia were asked about their likes, dislikes and how they think about particular issues in their daily life, e.g. *what makes you happy?* Or *what are you grateful for?* (Nygård, 2006). People with more severe dementia were asked to draw, point to, or rank things, while they were shown what was meant with certain questions, e.g. *do you like this?* Or *what is this?* While pointing to things in the environment (Nygård, 2006). Since these were unstructured interviews, the order and phrasing of questions varied per interview. For residents with dementia, flexibility of the conversation is important, which is why an unstructured interview is recommended (Roelofs et al., 2017). Not all questions were open-ended, to provide some guidance on the kind of answers we were looking for. The interview style, techniques, and practices were pilot

tested with PwD several times, to get familiar with the target group. As preparation, the researcher tried to gain experience in communicating with PwD by volunteering work at a dementia care facility, consulting experts, and watching videos. When permission by the resident was granted, the interviews were also audio recorded using an H2N Handy Recorder. The audio recordings were transcribed and saved in a secured folder (SURFDrive). When audio recording the conversation seemed inappropriate, the researchers summarized the interview at the end. The appropriateness of recording the interview was assessed by the confidence level of the resident, if residents seemed insecure or proposing to record might put pressure on the resident, the researcher would choose to not record the interview. In the end, only one interview was recorded.

Table 7

Topic list and example questions of unstructured interviews

Topic	Examples
General impression of facility	Why did you choose to live here? How do you experience living here?
Needs and wishes	What makes you happy? How would you describe a happy moment? What is important to you?
Physical environment	Could you describe your dream house? Are you someone who enjoys going outside? Are you curious about new technologies? Why (not)?
Social environment	With whom do you like to stay in touch? Do you like to talk to others?
Autonomy	What chores do you enjoy/hate? With what would you like help?

4.3. Procedure

Before conducting the interview, the researchers gathered some personal information about the resident with dementia, such as their hearing and vision abilities, comfortable meeting time, profession or something someone is passionate about. After obtaining consent from either the resident or their care responsible, the interview started. Since interviews rely on cognitive and verbal functions, which are known to deteriorate for PwD, several techniques were employed to overcome this difficulty (Nygård, 2006). All interviews were conducted in a space quiet and familiar to the residents (i.e. their room or quiet public space at the facility), and the interviewer tried to warm-up

the conversation and facilitate a connection between them and the resident by having an informal conversation (Digby et al., 2016). In some cases, the context was used as a reminder for certain interview topics, by referring to objects present in their rooms, or technologies present at the care facilities (Nygård, 2006). Topics were repeated, after residents were given the freedom to drift away from the research topics (Digby et al., 2016; Nygård, 2006). While interviewing, the researcher paid attention to signs of distress in body language and whenever the resident seemed in distress several techniques were employed: either stopping the interview, changing to a neutral topic, having a break, or getting coffee together. Other strategies that were used while interviewing residents with dementia were: give additional time to respond, offer reassurance and help when PwD are experiencing difficulties in word finding, validate meaning, provide cues, and gently redirecting the conversation (Beuscher & Grando, 2009). Besides, field notes on important non-verbally expressed information conveyed by residents were made during the interview. At the end of the interview, residents were thanked for their support to the research, in some cases by means of a small gift, and any remaining questions were answered. There was no fixed time for the interviews, this depended on the preference of the resident themselves, but the interviews lasted between the 20 and 120 minutes.

5. Data Analysis

The structured observations of the physical environment and the technologies present were used to create a demographic overview of each care facility. This enabled a comparison of the facilities based on the potential of their physical environment to induce positive effects among people with dementia and get familiar with the technologies that were already in use. The demographic overviews of the care facilities were also combined with the themes arising from the interviews, to have a complete set of characteristics. Transcribed interviews and field notes were coded at the end of the data collection period. The transcribed interviews and field notes were analyzed according to the grounded theory approach, an inductive, iterative approach where codes are not fixed and constantly revised through several stages. The coding process of Charmaz and Belgrave (2002, pp. 358-365) was employed, consisting of three phases. In the first phase, initial coding, two researchers quickly and

independently created short and simple codes while moving line-by-line through the data (transcripts, field notes, images) with an open mind. Initial coding investigates what the data suggests and what seems to be of significance for the research question, and large numbers of codes were generated for this phase. For the second phase, focused coding, the most frequent and significant codes were emphasized upon and compared with each other in order to create categories. For this phase, several initial codes were dropped or combined with each other and the data was re-explored. The last phase, theoretical coding, entailed discussions among the two researchers for bringing codes and categories together and conceptualize how these are related. In this phase researchers move the analysis in a theoretical direction by forming themes and subthemes related to the research topics (Bryman, 2016, pp. 574–580; Charmaz & Belgrave, 2002, pp. 358–365). For the coding process, the program MAXQDA Analytics Pro (version 2022) was used.

Dependability of the data was supported by frequently discussing the thesis process with peers, (company) supervisors, and researchers of Maastricht University on various moments throughout the process and analysis. These discussions also contributed to the confirmability of the analysis, as well as having a second researcher code in parallel. Credibility was ensured by following the principles of good practice, e.g. interviewing multiple stakeholders and avoiding leading questions. Additionally, discussing the thesis process with experts on this topic provided a form of validating research practices. In order to provide information about the transferability of these findings to other care facilities, the care facilities were described in detail in terms of the technologies that they used, their care practices and the physical environment.

Results

This study explored how technological interventions are currently appropriated within the physical, social, and organizational contexts of five Dutch dementia care facilities. Additionally, the physical environment of each study location and the technologies already in use were structurally observed. The result section consists of a comparison of the characteristics of the five care facilities and a thematic overview of the conducted interviews.

Characteristics of the Study Locations

Table 8 presents the mean outcomes of the OAZIS-Dementia assessment for each care facility and in the last column all scores of the innovative facilities are combined. An extra column was added consisting of the scores of four traditional care facilities measured by B. de Boer et al. (2018) for their research on traditional nursing homes, small-scale living facilities, and green care farms (see Table 1 for a description of what is considered as traditional). The lowest scores are indicated by a 'b' and the highest scores are in bold. Compared to the traditional care facilities, all care facilities obtained a higher total score. Traditional care facilities score lowest on most categories (privacy and autonomy, view and nature, orientation and routing, and domesticity). The biggest differences between the traditional care facilities and all the facilities considered in this study taken together are found for the categories of privacy and autonomy, and domesticity, and the smallest differences for the categories safety and facilities. The privacy and autonomy category includes questions on the discreteness of places, availability of private space, and the accessibility of food and drinks from the kitchen. Domesticity includes items on the homelike appearance of a facility, but also items on organizational environmental aspects (e.g. whether residents are free to decide how late they get up and go to bed).

The green care farm (facility B) scored lowest on the facilities category, including questions on the accessibility of the outdoor environment and having a restaurant nearby, and highest on the view and nature category. The GCF specifically chose to have outdoor areas that are challenging for residents containing grass, stones, and gravel and does not have a restaurant nearby, resulting in a lower score for this category. The facility for living and mixed care separately (facility C) obtained the

lowest scores for the categories of sensory stimulation and safety. The category sensory stimulation includes items on the number of windows in the common spaces and the ventilation and temperature control. Care facility C has a limited number of windows in the shared spaces, influencing ventilation control and daylight entry, which is why this facility scores lowest in this category. Besides, care facility C does not have safety measures installed in the bathroom since they have a mixed group of residents, consisting of people with and without mental or physical disabilities and installing safety measures is the responsibility of the residents themselves. This drastically lowers the total score of this care facility.

Something that is less evident from the OAZIS scores, but seems to be distinguishing facilities A and C from facilities B, D, and E is how the personal rooms or apartments were equipped. For facilities A and C, residents live in a fully-equipped apartment consisting of a kitchen and space to welcome visitors. Residents from facilities A and C can meet each other in community spaces, but they are not obligated to. Whereas for facilities B, D, and E, residents' rooms were smaller, without a kitchen, and residents are encouraged to spend most of their time in the living room of the facility. For facilities B, D, and E, the public rooms are actually defined as living rooms, whereas for facilities A and C the public rooms are called community rooms or similar.

Table 8

Scores on the OAZIS-Dementia per care facility

OAZIS- Dementia Categories	Traditional Care Facility (n = 4) ^a	Care Facility A (Living and care separated)	Care Facility B (GCF)	Care Facility C (Living and mixed care separated)	Care Facility D (small-scale)	Care Facility E (small-scale)	Facilities A-E Combined (n = 5)
Privacy and autonomy	2.8 ^b	4.9	4.9	4.3	4.1	4.7	4.6
Sensory stimulation	3.5	4.2	3.9	3.3 ^b	3.7	4.2	3.9
View and Nature	2.9 ^b	3.5	4.5	3.0	3.7	3.5	3.7
Facilities	3.6	4.1	3.3 ^b	3.7	3.6	3.9	3.7
Orientation and routing	2.5 ^b	4.3	3.9	3.6	4.1	4.1	4.0
Domesticity	2.1 ^b	3.9	4.6	4.0	3.4	4.5	4.1
Safety	4.3	4.7	4.3	2.0 ^b	4.7	4.7	4.1
<i>Total</i>	3.0 ^b	4.2	4.2	3.4	3.9	4.2	4.0

^a The scores for the traditional care facility are reproduced from B. de Boer et al. (2018) and used as a point of reference.

^b Marks the lowest scores for that particular category

Table 9 presents the mean outcomes of the OAZIS-Dementia Technology extension (OAZIS+T) for each care facility that was investigated for this study, again the lowest scores are marked by a 'b', the highest scores are in bold, and an extra column was added averaging the scores of all five facilities. When comparing categories scores within facilities, almost all care facilities score highest in the category safety and lowest on communication. The safety category includes questions on sensor surveillance and alarms, and the communication category refers to whether residents can use technologies to communicate with friends, family, and care professionals. For facility A, for example, one resident was having online video calls with her daughter since her daughter lived far away.

The largest differences between the facilities were found in the categories of autonomy, meaningful day, and support staff. The score for autonomy is highest for care facility A, because they provide some residents with a medicine dispenser and electronic calendar, assisting them in care and structure. Almost all care facilities, except care facility C have social companion robots, like a robotic dog or cat, the differences in the category meaningful day are therefore due to differences in technologies to support exercise and the amount of interactive image- and music devices facilities owned (e.g. music pillow, silent disco headsets). The green care farm (facility B) occasionally rents these devices and only possesses a few themselves, lowering their score. Staff support is highest for small-scale living facility D since staff can use an online platform for workshops, applications, and trainings. For care facilities A, B, and C staff needs to request an electric bed and for facilities D and E all beds are electric by default.

Table 9

Scores on the OAZIS+T per care facility

OAZIS- Technology Categories	Care Facility A (living and care separated)	Care Facility B (GCF)	Care Facility C (living and care separated)	Care Facility D (small-scale)	Care Facility E (small-scale)	Facilities A-E Combined (n = 5)
Communication	2.0	1.5 ^b	2.0	2.5	2.0	2.0
Autonomy	3.7	2.3	2.3	1.7 ^b	2.3	2.5
Meaningful day	3.5	2.5	1.5 ^b	3.0	3.5	2.7
Support staff	2.5	2.0 ^b	3.5	4.0	3.5	3.1
Safety	4.0	3.0 ^b	3.0 ^b	5.0	5.0	4.0
<i>Total</i>	<i>3.1</i>	<i>2.3^b</i>	<i>2.5</i>	<i>3.2</i>	<i>3.3</i>	<i>2.9</i>

^b Marks the lowest scores for that particular category, the highest scores are in bold

Qualitative Data Analysis

Six main themes emerged from thematically analyzing the transcripts, field notes, and observations. These themes consist of several subthemes, providing more detailed information.

Theme 1: The way in which technology is offered affects the level of use

This theme contains several considerations regarding how to offer technology to staff and residents. First, organizations and staff should consider where to store technological interventions. The interviews showed that **the physical location of technologies influences their level of use**. Whenever technologies were visible to staff, they felt more encouraged to use them. One participant said:

(...) we had 20 silent disco headsets and they were laying in a box... out of sight... and yeah then it is quickly... then it is done. In the end, we started to gather the headsets again, because we noticed that some residents were restless. (...) Now they are situated in a small basket next to the kitchen counter in the community room, (...). Well, then it gets used faster than when they are laying in the corner where we normally work, because then it is out of sight at some point. [P3, advisor care and technology]

Other participants confirmed this by elaborating on their experiences with sharing technologies across different sections of the care facilities. The quote below even voices a desire to have a fixed spot where some technological devices can be installed, so that residents and families might be tempted to use them more often. Most technological devices are stored somewhere and do not have a designated spot in the physical environment of care facilities, due to lack of space or the sharing of technologies.

(...) Only I always think, just like I said before, you need to share those technologies with other teams and it would be nice to have more of those games (interactive tables to facilitate play). It would be even better if there was a fixed place to situate a game that is already activated, so that people can walk by and immediately use it, without asking for it or having to build it. (...) Only there is the risk that people walk by and take something since they walk around a lot and might think "how nice" and it is gone. (...) So there are two sides to the story. On the one

hand, I believe that it will be used more often when there would be a fixed spot for it, where the family can sit and do nice things. Just like they have in a doctor's waiting room, like a small table with Lego where kids can sit and play, if we can make such a corner where you can do something. [P16, personal healthcare assistant+]

Another subtheme relates to what types of technologies should be offered to PwD. The interviews revealed that **it is important to match the technology to the stage of dementia**. Dementia is a progressive disease, which means that cognitive and physical abilities decrease over time. Some technologies might be more complicated to use for PwD than others, which is why some might be more suitable for people in the early stages of dementia. An example of this is the medicine dispenser, which works well for people with early stages of dementia. However, participants explained that this technology does not work well for people with later stages of dementia.

But this – the medicine dispenser – only holds for people who are quite cognitively abled. When people are in a later stage of dementia, this does not work anymore. [P2, personal healthcare assistant]

There are some technologies that do work well for people with later stages of dementia, such as the social companion robots. The same participant also illustrated that these companion robots do not work well for people with early stages of dementia.

Look, there are also people who are quite cognitively abled that notice that the dog is robotic. So for those, I do not need to offer that dog, because they will think "what do I need to do with this stupid thing, go away". You will hear that immediately, but if people are in a later stage of dementia, they associate it with a real dog or cat, so for those, it works well. [P2, personal healthcare assistant].

In summary, from the interviews it showed that some technologies work better for people with early stages of dementia, such as a medicine dispenser, tablet for video calling, or a brain trainer, while others work better for people with later stages of dementia, such as social companion robots and ‘tovertafel’ (i.e. interactive table to facilitate play).

Related to this is that **technology use should be monitored after its introduction to determine the duration**. In order to prevent misuse of technological interventions, staff should monitor how PwD use the technologies and verify its fitness-for-purpose. For example, at some point residents will not understand the medicine dispenser anymore and medicine will be forgotten, like is illustrated by a participant below. Therefore it is important that staff monitors how residents use technologies, and determine the duration of use based on those observations.

Well, suppose that the dispenser signals the resident, but the medicine are not retrieved. After about half an hour or 45 minutes we get a notification from the station “hey the medicine are not taken by the resident”. If that happens multiple times, it tells us that the medicine dispenser does not work anymore for that person. Then we will take over, the medicine dispenser will be removed, and we will deliver the medicine to the resident. [P2, personal healthcare assistant]

The last subtheme, related to the way in which technology is offered, is that **staff should empower and motivate residents to use technology**. The interviews showed that most residents take little initiative in using technologies, but do enjoy it whenever staff encourages them.

That is typical for this target group, you need to stimulate them. They need to be nudged. [P6, personal healthcare assistant]

You cannot ask them “shall we do something?” you need to be very specific, like “shall we go painting?” or “we are now going to do this”. (...) If you say something like “oh look what I brought”, they enjoy it, but you need to invite them to participate. [P13, nurse]

Theme 2: Care practices and technologies should tune into the needs and wishes of people with dementia

This theme is in line with the way of working of the care facilities included in this study since they have a **personal approach to care** where they tend to consider the previous lifestyle of residents with dementia and let them stay close to themselves. Residents also voiced this need to stay close to themselves, as illustrated below.

They let me be, that is important, that they let you stay true to yourself. [P1, resident with dementia]

By respecting what they are used to, if they are used to go to bed at eleven we should not wake them earlier than that. We ensure that our whole system, so for delivering medication, for waking people, that it happens from a specific time. [P16, personal healthcare assistant+]

Participants also emphasized that **residents should be able to maintain their independence as long as possible**. This is important because the ability to do it yourself is lost when others take over.

The more you take over for them, the less they can do on their own. [P2, personal healthcare assistant].

(...) the medicine dispenser that we use here, that is to let people remain as independent as possible, regarding taking medicine. What I notice on other locations is that people used to have a medicine dispenser, but when they move to the care facility this is not taken with them. So they were able to take their medicine independently, but they take it away. [P4, quality assurance nurse]

The interviews also showed that **when technology is used to constrain freedom, residents respond negatively.**

Ma'am hates domotics. She hates it. But yeah, she notices that because of the wristband the doors will not open for her. Which is why she says "what do I have to do with this, please take that thing off". [P13, nurse]

This theme does not suggest that technology is able to meet all needs and wishes of PwD, the interviews also showed **the importance of human contact and non-technological means** to tune into needs and wishes. Some care facilities for example take a non-technological approach to respond to needs, like illustrated by the quotes below.

There are often activities at this location, we have an experience theater for example. Amazing how these people tune into the emotions of the residents and seek for physical contact. You can hardly replace that by technology, that is impossible. People would want to feel warmth and eye contact is very important. [P2, personal healthcare assistant]

If you refer to our vision, that is to give people as many happy moments as possible. So what makes someone happy? That can be really simple, like baking fries, or... We had a resident here who loved puppies. This resident ended in bed at some point because she was not feeling well, so I took two puppies and put them in her bed. This lady was enjoying it so much, fantastic!
[P5, head of care]

During the interviews it was frequently mentioned that **social contact with other residents is important** to people with dementia. Moreover, **people with dementia might experience difficulties with initiating social contact.** For care facility C, participants explained that residents with dementia were experiencing loneliness and social isolation because they could not connect with the group or initiate contact:

(...) but what I see of residents here with dementia (...) they are very often in their room and say "I feel so lonely". (...) They are not coming out of their apartment, they are unable to do that on their own. They would benefit from a facility with a shared living room where coffee is served and people are taking to the toilet. [P9, team leader]

The last subtheme explains how **technology should not be too complicated or advanced for people with dementia**. Interviews with residents with dementia showed that they prefer technologies that are simple and practical. One resident explained that her son bought her an iron, but she switched it with another because it had too many functions. Other residents explained the following, indicating the value of simple designs for PwD.

If I sit on it (home trainer), I think I understand how it works, but I am not absolutely sure. (...) It looks complicated if you ask me. [P1, resident with dementia]

She had a radio on her table, with icons indicating the meaning of the buttons. When I ask about it she tells me that she can operate the radio in her own way. She likes it that it has a primitive design, because that is enough for her. [Interview notes, P10, resident with dementia]

These quotes illustrate that residents might feel resistance to using certain technologies, as is the case with the iron, but complicated interfaces can also lead to misuse or non-use of technologies. Figure 4 displays a light switch located in every resident room and the quote below explains how the residents struggle with this switch.

Yeah, and you see with this (points at light switch), the problems with a luxury light switch, or automatic light. Those are things... yes I think it is useful, but I am a grown women with sense, but if you are demented and only see some kind of square... (...) There are people who are sleeping with the lights on, where we make a note to check during the night whether their lights are off. [P16, personal healthcare assistant+]

Figure 4*Light switch in a resident's room*

So identified needs and wishes of people with dementia during this study are personal approach, independence, human contact, social contact with other residents, and technologies that are not too advanced or complicated. Both care practices and technology use should try to tune into these needs.

Theme 3: Technology use should be promoted by several layers of a care facility

This third theme refers to how needs for technology arise from different layers of a care facility, either staff requests technologies, managers introduce new technologies, or residents voice or display the need for technology. The interviews showed that there is an interplay between care staff and organizations for the facilitation of technology. First, **organizations should have an opportunistic and proactive attitude towards technology use**. The staff that was interviewed explained that whenever technologies were requested by them, some organizations would think of problems rather than opportunities.

It was very difficult to convince the organization that these residents, but also elderly with dementia, benefit from technologies that are of the modern age. And how much added value these would have for the residents here. Also for elderly, even when they live in black and white, the ones that are very old at least. How much added value a Smart TV is with which you can play any music that you want compared to a cassette. So that... I struggled with that. [P17, personal healthcare assistant]

Before you needed to think about who to ask and sometimes it was a real hassle. Nowadays, they have a more opportunistic attitude. [P4, quality assurance nurse]

Besides having an opportunistic attitude, organizations should try **to safeguard the underlying reasons as to why technologies are used**. The implementation of technology should be person-centered instead of technology-driven, as the quotes below suggest.

(...) Now people are starting to think "is technology really supporting us in our jobs or are we just taking over blindly?" [P3, advisor care and technology]

(...) they (specialized team in 'Snoezelen') will be thinking about what could help, for some residents a baby doll helps, for others a projector to give them something to look at in bed. We have a resident here with a music pillow underneath her own pillow. They are really customizing their approach and look for what someone would need. How someone reacts to that, what they can do. [P13, nurse]

Second, **staff should be educated regarding technology use**. During the interviews, staff indicated to be unfamiliar with all the possibilities for technology use. Organizations can provide education regarding the possibilities and correct use of technologies. This will also assist staff in requesting technologies whenever they feel necessary.

Well, you need to know what the possibilities are, I do not know what the possibilities are. [P9, team leader]

You need to share stories of success when you want to implement something. You need to make sure to facilitate your employees, because it is not without saying that everyone can operate the technologies. You need educate, e-learning, check whether everyone understands or whether they need additional help. That is what employees need, instead of having the feeling that technology is obliged. [P3, advisor care and technology]

Besides being aware of the possibilities of technology, **staff needs to signal the needs and wishes of residents in order to facilitate technology use**. As the quote below suggests, some residents show behaviors that indicate certain needs that could be fulfilled by technology use.

(...) across there is a man who is always cycling, with his hands and feet, so it would be amazing if he could cycle through [city] with the interactive home trainer. [P17, personal healthcare assistant]

Related to this, one of the care facilities explained that **having an advisor for care and technology is beneficial for technology implementation**. The interviews showed that this advisor should actively search for opportunities for technology implementation, have a proactive attitude, educate, inspire staff to use technology, and share successes of technology.

I notice with care staff that they are really uninformed; they do not know how to properly use technologies. And that's what I see within small-scale living facilities, for example, they use technologies because they err on the side of caution. [P3, advisor care and technology]

We need to find someone that knows more about it (Nintendo Swift) and stimulates us to use the thing. [P17, personal healthcare assistant]

Well... we have someone that has care and technology as a specialism, so to say, that investigates the possibilities of implementing care technologies. They were really promoting the medicine dispenser and now we have a lot of those. So that is constantly searching for "gosh, what can we do". [P2, personal healthcare assistant]

Theme 4: Fear of endangering resident results in clashing values

Staff tends to fear creating dangerous situations for residents, such as losing track of residents or having residents break a hip. **Staff also feels responsible** for incidents when they happen during their shift, as illustrated below.

(about a resident that walked away) and the direction says "you should not worry about it, that is our responsibility and the family signs for this", but then I think: that's nice, but it happens during my shift. [P6, responsible daytime activities]

Responsibility: they feel fear like "oh no what if someone falls during my shift" or "my team works and someone breaks a hip, then we are to blame". Here they feel that way less, but also

because of this concept. Because here it is more like home, but for small-scale living, everything is taken care of... Like incontinence materials, everything. But yeah... well... people working there are afraid "what if someone falls". Well yes, that happens. [P3, advisor care and technology]

Participants explain that this **fear of incidents and feeling of responsibility can lead to an urge to err on the side of caution**. To use sensors to detect resident behavior when there is no direct danger, to track residents with a GPS, or to keep residents inside when that is not necessary. So the value of providing safe care interferes with the values of providing personalized care, privacy, and the stimulation of independence. Even for care facilities where they say to prioritize values of independence and freedom, safety plays a role in the selection of residents, as illustrated below.

No that was impossible, because they tried to climb over the fence. And at some point, this is too dangerous and we are unable to do something about it. Because we have nothing we can lock here, and then it gets difficult, because then they need to go to a traditional care facility. These facilities then say "well, you only get to keep the nice people, because if it gets too difficult you send them to us". Well yes, only because it is too difficult to keep them safe here.

[P2, head of care]

In sum, most care facilities seem to struggle with providing safety versus providing freedom and independence, and the fear of endangering residents plays a role in this. Moreover, a participant who used to work at a closed facility also illustrated that in some cases **it is worth it to take a reasonable risk** and give someone the benefit of the doubt:

(...) You need to have a doctor who thinks "well, let's take the risk and see what happens". Because if you do not do that, it can lead to restless behaviors and feelings of being trapped. If you give someone their freedom back, beautiful things might happen. So you just need to be willing to take a risk. [P8, personal healthcare assistant]

Theme 5: Perceived barriers to the adoption of technology

Perhaps the most important barrier reported by participants was that **technology should not replace care staff**. Participants reported that technology should not aim to replace human contact and personal care.

Look, a caregiver is able to show emotions and convince someone who does not want to receive care by saying something like “come on, you will smell nice after this” and so on. A robot cannot do that. So the human aspect of care is really important here. [P2, personal healthcare assistant]

To really take over the daily care, I do think that personal care should stay. Or having conversations with people, I feel that that should be with real people instead of putting people in front of an iPad, doll or screen. I do think that it could support care or could serve as an extra activity, that’s fine. [P13, nurse]

Another barrier, in line with theme 4, relates to the reliability of technology. Participants explained that it is **dangerous that staff cannot always rely on technology**. Sometimes technology breaks down, batteries run out, it is misused, and signals are misplaced or delayed.

For me that is a disadvantage of technology, if it does not work, it does not work at all. Then it is not reliable anymore. [P13, nurse]

Well sometimes you see, for people with dementia, that they implement technologies... well it depends on the stage of dementia. But when it is used to provide medication I personally think that is really dangerous. [P15, project leader ICT]

Furthermore, multiple participants complained that **technology is expensive**, which seemed to be an important barrier for the organization. In addition, **the lack of knowledge and experience with the possibilities of technologies**, as mentioned for theme 3, was also seen as a barrier. Lastly, some participants mentioned **that technology should not violate the privacy of residents**.

Theme 6: Perceived drivers to the adoption of technology

All participants agreed that **technology use can save time for staff and residents**. It enables residents to be responsible for their own care, which offers them free time without regular visits. Besides, it saves time for staff to focus on personal care for residents:

Well, it saves me some time to give someone a silent disco headset. So that offers me some time to attend to another resident, give a hand massage or something like that, while I am still able to supervise. [P6, responsible daytime activities]

A frequently mentioned benefit was that **technology can be used to create a peaceful atmosphere and set the mood**, especially music:

In the morning she puts on music to create a peaceful atmosphere. [notes from conversation with P7, division responsible]

(...) And also movies, we have a moment to rest between one and 2 in the afternoon or half past 3, and sometimes we play a nature movie. To keep people seated to rest a bit, but still offer them something peaceful. Most residents stay more calm with the movie then when we only play music, but some are still wandering around. [P17, personal healthcare assistant]

Moreover, when technology is used to surveillance residents, staff can decide whether it is necessary to interrupt the resident in their activity. Before, staff needed to regularly check on residents during the night, but with surveillance technologies, this is not necessary anymore and a quiet atmosphere is maintained. In addition, some technologies could also be used to offer comfort while sleeping. Some participants explained that in some cases **technology makes it easier to perform certain care tasks** since it can distract or calm the residents:

For example, for one resident it was difficult to help them with going to the bathroom, and a staff member said: I gave them the silent disco headset and it was much easier to help them. The resident was distracted and did not focus on going to the bathroom anymore. So that is

really beneficial, even though I would not directly think about using it that way. [P4, quality assurance nurse]

Although less prominent, some participants mentioned that they felt positive about technologies that **excite and challenge people with dementia, or offer a diverse, and variety of activities**. Besides, technology could be used **to meet the needs of certain behaviors** (like making cycling movements or sadness). For some participants, the fact that **technology could offer security** was a reason to use technology. Lastly, experiencing the successes of certain technologies elsewhere showed to be a driver as well.

Discussion

Principal Findings

This study aimed to understand the appropriation and use practices of technological interventions within the contextual factors of innovative care facilities for people living with dementia. This was investigated through a qualitative descriptive approach consisting of structured observations and in-depth interviews with staff and residents of five dementia care facilities. The results provided insights on important processes for the contextualization of technology from the perspectives of residents, staff, and organizations. A theoretical overview of the findings of this study is presented by Figure 5, which describes technology appropriation by aligning the findings to several needs of people with dementia. The model describes how the use practices of residents, staff, organizations and advisory teams are important for all technology purposes, but the reasons differ for each identified need, and in the case of autonomy and safety even clash with each other. The most important findings included in the model are described in the following sections. Lastly, insights into whether the physical characteristics and implemented technologies of the separate innovative care facilities are suitable for providing psychosocial care are elaborated upon.

Appropriation by Residents

This research identified several processes that play an important role for how residents try to make technology their own and how it becomes part of how they live. First of all, it is important for residents that technology tunes into their personal needs and wishes. This is supported by the findings of this study, the psychosocial model of care, and the concept of Warm Technology (Finnema et al., 2000; IJsselsteijn et al., 2020). Residents with dementia indicated that it is important to them to stay close to themselves and their previous lifestyle, so in order to make technology their own, it should fit their lifestyle rather than changing it. This notion strongly overlaps with how Warm Technology entails personalized designs that acknowledge someone's history (IJsselsteijn et al., 2020). Another important notion identified by this study, consistent with Unbehauen et al. (2020), is that designs should be simple, familiar, and not too advanced. Otherwise residents can become overwhelmed and would try to avoid

using technologies. Besides, technologies that allow residents to remain independent are easily appropriated, whereas technologies that constrain freedom are experienced negatively. This is in line with how Warm Technology aims to increase self-reliance and avoid intimidation (Ijsselsteijn et al., 2020). Lastly, for people with dementia to be able to appropriate technology, the type of technology should match their disease stage. The literature review of van Boekel et al. (2019) confirms that matching technology to disease progression is crucial when introducing a technology to a person with dementia. Additionally, residents should be motivated to engage with technologies since they tend to take little initiative themselves. So, in summary, factors that play an important role for residents in order to appropriate technologies are the ways in which technology tunes into their personal needs and wishes, the complexity of the designs, whether technology enhances or constructs self-reliance, the technology-stage match, and whether residents are encouraged to use technologies. Residents with dementia can therefore be considered as users who should be empowered and encouraged by their socio-physical environment, as well as the technologies they use, in order to make technology their own.

Appropriation by Care Staff

The results of this study showed how and in what ways technology becomes part of the daily practices of care staff. First of all, care staff are potential mediators who assist residents in their interactions with technology. Simply introducing the technology in the environment is not enough, staff should activate residents to use the technologies and staff should incorporate technology use in daily care practices, for example by encouraging residents to weekly use an interactive home trainer. These findings are in line with the research of Unbehauen et al. (2020) that identified caregivers to be crucial for the appropriation of technology, as they can empower and motivate people with dementia. Second, the results of this study emphasize the monitoring role of staff to assess the fitness-for-purpose and determine the duration of technology use. Whenever residents misuse technology or lose their cognitive or physical abilities for using technology, staff should find ways to take over. This monitoring responsibility of staff for verifying whether the technology is still appropriate given

changing circumstances and human needs was already mentioned in a reflection on ethical challenges in dementia care technology (Tummers-Heemels et al., 2021). This research also identified several barriers perceived by staff to the adoption of technology. Most importantly, technology should not dehumanize care, which is a frequently reported fear among staff (Hastall et al., 2014). Staff also felt frustrated with technology when they were not able to rely on its function, which supports previous research regarding the unreliability of preventive sensor technologies (Nijhof et al., 2013). So whenever staff feels that technology would dehumanize care or is unreliable, appropriation is affected. Besides, staff reported to lack sufficient knowledge regarding the possibilities and correct use of technologies, which formed an additional barrier to the adoption of technology. Nevertheless, this study also identified several drivers that positively affect technology appropriation by staff. Some drivers related to the perceived benefits of technology for people with dementia that would encourage staff to incorporate technologies in their daily care practices. Examples of such drivers are how technology can challenge people with dementia and offer a variety of activities. Other drivers, however, related to the benefits of technology use for staff. For example, supported by the findings of Boumans et al. (2019), technology use can save time for staff. Additionally, a driver not highlighted in previous research is how technology can make it easier to perform certain care tasks. For example, assisting a resident in going to the bathroom while they were wearing a music headset made it easier for care staff and less stressful for the resident. This example also illustrates how staff can integrate the use of technologies in their daily care practices. So, in summary, factors that play an important role for staff in order to appropriate technologies are their role as potential mediators of technology use, the perceived dehumanization and unreliability of technology, and perceived benefits for residents and themselves (see Figure 5).

Appropriation by Organizations

With regards to care organizations several processes are identified to be relevant for the appropriation of technology. First, the organization should consider the accessibility of technology. The findings indicate that the accessibility of technologies influences their level of use by staff,

residents, and family. Factors that played a role in this were whether technologies were visible to staff, needed to be shared, or lack of space to permanently place a technology. This is in line with previous research on how the physical environment, and in this case, the physical location of technologies, can either support or obstruct social interactions (with these technologies) (Chaudhury et al., 2016; Davis et al., 2009; B. de Boer, Buist, et al., 2021). Besides, earlier research also pointed out that the placement of technologies facilitates their habitual use by residents (Kolasinska et al., 2021). It is up to the organization to decide how technologies should be divided across the different sections of the care facility and to be aware of how this affects their accessibility. In order to make technology their own, organizations need to consider the underlying reasons as to why technologies are implemented. As illustrated above, technology implementation should be driven by the needs and wishes of people with dementia. Nevertheless, these findings illustrate that organizations might be tempted to 'blindly' take over technologies. Just as IJsselsteijn and colleagues (2020) warn designers and developers about the temptations to innovate based on technological possibilities instead of user-centeredness, organizations should also be made aware of similar temptations. For example, organizations should be aware that if non-technological means can lead to the same or better results, technology should not be considered (IJsselsteijn et al., 2020). Based on these findings, one could argue that organizations take on the role of being technology providers, facilitating both staff and residents with dementia (see Figure 5).

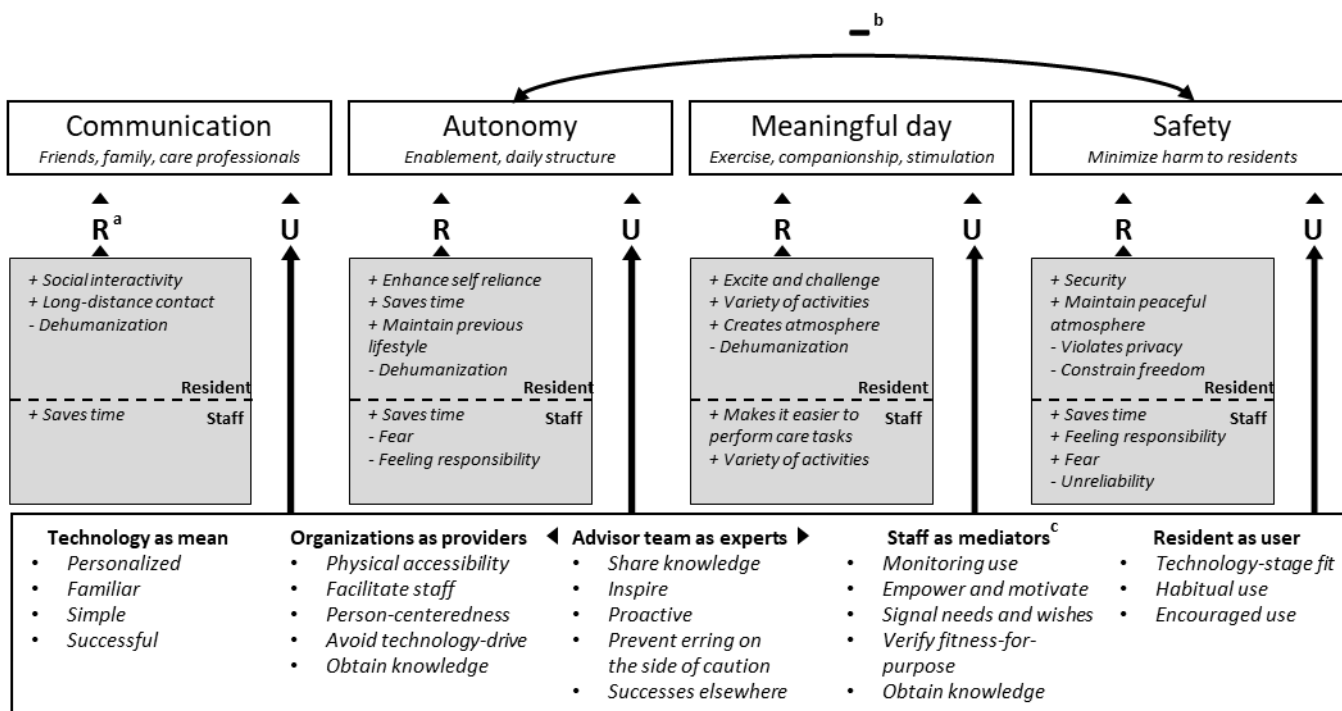
Remaining Factors Important for the Appropriation of Technology

A beneficial factor for the appropriation of technology in the context of care facilities is identified as having an advisory team specialized in technology use for people with dementia. The results indicate a lack of knowledge about the possibilities among care staff and organizations, which is perceived as a barrier to the adoption of technologies. Advisors can resolve this barrier by sharing their expertise on the possibilities and correct use of technologies in long-term dementia care. They can inspire staff and organizations to make use of technologies, while at the same time make sure that the underlying reasons are person-centered rather than technology-driven. Besides, the team can

serve as a point of contact, sympathizing with care staff and the organizational values. An advisory team can therefore act as experts on this topic, assisting both staff and organizations in their roles as mediators and providers. A limiting factor regarding the appropriation of technology is the fear of endangering residents, affecting all care facilities in this study. Organizations and staff tend to develop a strategy of erring on the side of caution, which results in conflicts with providing privacy and independence. This fear results in either non-adoption of technologies that are potentially risky for residents, such as a medicine dispenser that might be used incorrectly. Or it results in the adoption of technologies that create a feeling of safety but violate privacy, such as sensors. IJsselsteijn and colleagues (2020) refer to this clash as a cost-benefit tradeoff between ensuring health and safety and emphasizing the individual aspects of people with dementia in need of support. This is also reflected in the technology use, as will be discussed later on.

Figure 5

Theoretical model including the important processes for the appropriation of technology within the context of psychosocial dementia care facilities



^a R = reasons for (not) implementing technologies to fulfil that need; U = important use processes for the appropriation of technology
^b this illustrates a negative relationship between the need for autonomy and the need for safety, defined as the cost-benefit tradeoff between ensuring health and safety and enhancing self-reliance.
^c informal caregivers were not included in this study, but previous research showed similar roles for formal and informal caregivers (Unbehaun et al., 2018).

Characteristics of Innovative Care Facilities

Physical Characteristics. From the outcomes of the OAZIS-Dementia assessment, it is evident that the physical environments of all care facilities investigated in this study have more potential to be beneficial for people with dementia than the physical environment of a traditional care facility, in terms of privacy and autonomy, view and nature, orientation and routing, and domesticity. The physical environments of all care facilities within this study especially contribute to more privacy, autonomy, and a greater sense of domesticity. This indicates that these environmental characteristics (privacy, autonomy, domesticity) are potentially important for distinguishing the physical environments of innovative care facilities from traditional ones. Physical characteristics regarding safety and facilities differed the least between the traditional care facilities and the care facilities investigated in this study, indicating that these physical aspects are less important for defining innovative care facilities. Besides, the physical aspects of the green care farm can be distinguished from the other innovative types of facilities by its focus on nature view and the animals present. Whether or not residents are provided with a fully-equipped apartment distinguishes the living and (mixed) care facilities from the GCF and small-scale facilities. Beware, however, that the social and organizational environmental factors are also impacting a meaningful daily life of people with dementia, in different ways (Chaudhury et al., 2016; Davis et al., 2009; B. de Boer, Bozdemir, et al., 2021; B. de Boer, Buist, et al., 2021; Garcia et al., 2012).

Technology Use. The results of the OAZIS+T suggest a variety in technology use among the care facilities investigated. The 'green care farm' and 'living and mixed care separated' facilities scored below average (total scores < 3.0), which is why they can be considered as minimal users. Both 'small-scale care' facilities as well as the 'living and care separated' facility can be considered as active or innovative users since their total scores are above average (total scores > 3.0). It is noticeable that the lion's share of technology is intended to support safety – for all but one facilities. This suggests that, even for innovative dementia care facilities, technologies are prioritized when they assist in keeping residents safe. The interview data supports this, as the feeling of responsibility of staff and fear of

endangering residents tends to result in erring on the side of caution, which most likely comes at the cost of the values of providing personalized care, privacy and independence. The fact that technologies for safety are the most advanced for these care facilities, indicates that the implementation of technology is not in line with the psychosocial approach to care, which prioritizes emotional wellbeing over physical wellbeing (Finnema et al., 2000).

The OAZIS+T scores lowest on the category of communication for most care facilities. Earlier research found that technologies for communication enable social interactivity, which was positively received by people with dementia (Pakrasi et al., 2015) and is important for experiencing activities as meaningful (Phinney et al., 2007; Vernooij-Dassen, 2007). Supporting this, the interview data of this study shows that for some residents communication technologies worked well, as for the resident whose daughter lived far away. These findings indicate that innovative care facilities should explore the possibilities of communication technologies, given that this would increase social interactivity or fit the needs and wishes of residents.

Limitations and Future Research

First of all, a limitation of this study is the number of people with dementia (PwD) that were interviewed, affecting the generalizability of the data. Research showed that including PwD in research can lead to valuable insights into the experience of dementia, contributing to an understanding of their needs (Hellström et al., 2007; Hubbard et al., 2003) and impacting the development of technology (Suijkerbuijk et al., 2019). Research also points out that interviews with PwD should be well-executed and sensitively handled, which is why the researcher of this study became familiar with multiple interview techniques (Beuscher & Grando, 2009; Digby et al., 2016; Nygård, 2006). Despite these preparations, interviewing PwD remained a challenge, mainly because of the topics discussed. Questions like “what do you dream of?” or “what makes you happy?” are rather sensitive to discuss with a distant other identified as a researcher. Hendriks and his colleagues (2020) therefore recommended to build a relationship with the specific person who will be interviewed, by frequent visits, participating in non-functional activities, and personal contact. This way, it will be easier to

trigger the person with suitable questions and approaches. They argue that researchers and designers should adjust their methodological approach based on the individual, by becoming part of their reality and environment (Hendriks et al., 2020, p. 103). Additionally, interviewing PwD for this study showed that it is helpful to pay attention to subtle cues and things that seem to occupy a person. We would also recommend future researchers to try and present residents with dementia with some technologies used at the facility or observe residents interacting with technology to obtain more direct information about lived experiences with technologies. Another limitation is the possibility that selection bias occurred, resulting in staff who were mainly positive about the care concept and technology to be willing to participate in the interviews. Due to the descriptive, explorative nature of this study, a relatively small sample of staff were interviewed, which limits the generalizability of their experiences. Additionally, this study was executed individually for a large part, but it would have been more objective to perform the OAZIS observations with two or more researchers who can discuss and compare their observations. Besides, most study locations were visited only once or twice, except for location C where the researcher spent two nights. Despite the fact that this was time consuming, it did contribute to obtaining a complete overview of the atmosphere and environment of the facility. It is therefore recommended to either visit the facilities more often or spend the night there to really get a sense of the atmosphere. To ensure the credibility of the research findings, it is recommended to validate the findings with the participants, as to confirm that the researcher correctly understood the social world of the people studied (i.e. respondent validation). This can be done by means of a focus group or a second round of interviews discussing the findings with the same participants, similar to the method applied by Feijt et al. (2018). Additionally, future research on the appropriation of technological interventions in the context of dementia care facilities should include the perspective and experiences of informal caregivers and family, as they participate in social and personal activities and are involved in care decisions, which makes them valuable actors to consider (Koster & Nies, 2022). Moreover, this study did not investigate the appropriation of technology within the context of traditional care facilities since current trends seem to indicate that these will be renovated or re-build

into innovative care facilities in the upcoming years. However, it would have been interesting to compare the use and adoption of technology for facilities with less beneficial environmental aspects and investigate whether that increases the dependability on technology. It is therefore recommended for future studies to explore the appropriation of technology for traditional care facilities. Lastly, it is recommended for future research to study the long-term appropriation of technology in dementia care facilities, similar to the 4-month evaluation performed by Unbehauen and colleagues (2020). Longitudinal studies allow researchers to investigate changes over extended periods of time, which can lead to valuable insights into how the appropriation of technology develops.

Methodological Reflections

Performing qualitative research made me aware about its benefits and pitfalls. Having the freedom to explore experiences and perspectives of staff and residents with dementia by interviewing them in a semi-structured or unstructured way proved valuable as it allowed me to become familiar with the social worlds and context of dementia care facilities. Grounded theory provided me with several tools for generating concepts out of data, such as theoretical sampling and the phases of coding. Following the practices of grounded theory, however, also made clear that the approach of this research could have been improved by coding while gathering the data, as this may have sharpened my understanding of the data and helped me with the theoretical sampling (Bryman, 2016, p. 581).

Using the OAZIS-Dementia tool to judge the physical environment proved valuable since it created awareness about the physical aspects of the environment that are important for people living with dementia and allowed me to compare the care facilities to each other in an objective manner. Moreover, the OAZIS scores provide insights in whether the physical environment of a long-term dementia care facility is suitable for providing psychosocial, person-centered care for residents with dementia. The tool is therefore categorized based on several needs of people with dementia, such as the need for autonomy and domesticity. Some needs are more vaguely defined by the tool, for example the category 'facilities', which for example regards access to a restaurant and spatial facilities

to meet others. This category can, for example, be renamed into “opportunities for social gatherings”. I believe that this tool and the reflections according to this tool can be optimized when all items are clustered according to the needs of people with dementia that the environment supports. Besides, the tool leaves little space for certain nuances as to why specific designs were chosen. For example, the GCF tried to challenge and activate residents by having grass, stones, and gravel, which was reflected negatively according to the OAZIS tool despite the positive effects it had on the residents. Furthermore, it might be helpful to assign weights to the different categories of the tool since some seem to be more beneficial for people with dementia than others, for example having a restaurant nearby seems of lesser importance than having privacy. Lastly, researchers should be aware that the tool solely investigates the potential of the physical environment, and neglects the extent to which residents or staff make use of that physical environment. This is why it is recommended to broaden this knowledge by using qualitative techniques to elaborate upon the insights provided by the OAZIS. Researchers for example use the MEDLO-tool for this and observe aspects of daily life: engagement in an activity; the location of the activity; and the type of social interactions (B. de Boer et al., 2016). So in order to make proper inferences regarding the potential of the *whole* environment, including social and organizational aspects, the OAZIS should be accompanied by other measurements.

Since technologies also can be beneficial for people with dementia, this study developed an extension to the OAZIS tool, namely the OAZIS+T. Similar to the original OAZIS, the OAZIS+T is categorized based on several needs of people with dementia, such as the need for autonomy and a meaningful day. However, a category regarding technologies that support staff was also added since these can affect resident-staff relationships or efficiency of care, which is important due to the expected shortage of care staff. Just as for the OAZIS tool, the OAZIS+T extension can provide insights into whether the technologies present within long-term dementia care facilities are suitable for providing person-centered, psychosocial care for residents with dementia. Additionally, it provides insights into what needs are prioritized by care organizations in the decision for technology implementation. Still, it remains important to extend the insights provided by this tool by investigating

whether certain needs of residents require fulfilment. For example, the residents from a green care farm are surrounded by animals and are able participate in agricultural activities, which is why exercise technologies might only be required during the winter.

Based on this study, the OAZIS+T has been adjusted to increase the objectivity of the observations (see Appendix C). To improve the inter-observer consistency, each item is provided with an explanation as to when a certain score should be given, e.g. for item 7 regarding whether residents have access to technologies to assist them in their daily care, the following explanation is added: “totally disagree: none of the residents has access to such technologies, neutral: only when absolutely necessary, a resident can have access to the technologies, agree: one of the technologies is available for all residents, totally agree: multiple technologies are available for all residents”. These explanations were lacking in the initial version of the OAZIS+T, which made it difficult for the researcher to score items objectively. Adding explanations for all five Likert-scale items was a challenge since it was difficult to determine what would be more beneficial for some items. For example, item 8 about whether technologies for exercise were present at the facility, between having no technologies for exercise (totally disagree) and sharing these (neutral), no proper explanation for “disagree” could be found.

For future use of the improved OAZIS+T it is recommended to test the inter-observer consistency by having two or more researchers perform the OAZIS+T for the same care facility and compare their results to each other. Regarding construct validity, i.e. whether findings are consistent with theory, the publication of Vos et al. (2020) was reviewed and certain items were moved to other categories. For example, item 20 about whether residents have a pendant alarm was originally in the category of autonomy by Vos et al. (2020), but since it was mentioned by participants of this study to give residents a feeling of safety, we moved it to the category of safety instead. A remaining challenge for the implementation of the OAZIS+T tool regards how to differentiate between cold and warm technologies, since this contributes to the understanding of the potential of technologies to provide psychosocial, person-centered care for people with dementia and therefore enhance the validity of the extension.

Strengths

Given the fairly new field of studying the contextualization of technology within dementia care facilities, this thesis makes several contributions. Greenhalgh et al. (2017) gave rise to new ways for explaining non-adoption and abandonment of technologies by focusing on the organizational, social, political and policy context. This research tries to take this one step further by including the physical environment as an additional dimension to help explain non-adoption and abandonment of technologies. By appropriating technologies, i.e. 'making them your own', they tend to be shaped by or modify the socio-physical affordances of an environment. Environmental psychology refers to how behavior is shaped by the environment, and especially people with dementia are sensitive to prompts in the form of physical cues (Foley et al., 2019; Gibson, 2000). The specific context in which technologies are offered to people can therefore affect the perceived affordances of that technology. For example, having an automatic light in a private bathroom is confusing since people will search for the button to switch it off, but this will be less likely to happen for automatic lights in public bathrooms. The other way around, offering technologies might also modify the perceived affordances of a certain space. For example, the silent disco headset made it easier to assist a resident in going to the bathroom, which indicates that the socio-physical environment was pleasantly modified by the headset. It seems that whether or not technologies are permanently placed in the environment is affecting this duality of either being shaped by the socio-physical context versus shaping the socio-physical context. This study therefore suggests that in order to make sense of how technology is contextualized relies, in some part, on the physical placement strategies. Future research should further investigate how to explain (non-)adoption by affordances of the physical environment.

Another strength of this study regards the variation of care facilities that were investigated. So far, research investigated the success of green care farms and small-scale dementia care facilities (B. de Boer et al., 2018a, 2018b, 2021; de Bruin et al., 2017). However, new approaches to innovative living for people with dementia are emerging, and the ways in which these try to provide psychosocial care need to be investigated. This research took a first step into investigating the potential of

unexplored types of innovative dementia care facilities, where living and care are separated and residents are part of a community. It is important to expand our knowledge about the potentially beneficial factors of different types of innovative dementia care facilities, in order to be able to attune to the variety of living preferences of people with dementia.

Lastly, this study anticipates to the upcoming trends and developments regarding long-term dementia care in The Netherlands. The expected shortage of care staff will eventually decrease levels of human care in dementia care facilities, calling for alternatives of providing psychosocial care. This research is therefore concerned with how to maximize the psychosocial potentials of technology in the context of dementia care facilities. Future research is encouraged to continue with this investigation and make sure that technologies are appropriated in ways beneficial for people with dementia.

Conclusion and Recommendations

This research resulted in three main insights into the care practices and technology appropriation within the context of psychosocial and innovative dementia care facilities. First, it provides points of attention for contextualizing technologies for people with dementia within care facilities, so that these contribute to their wellbeing and a meaningful daily life. Second, this research advanced existing insights into the specific drivers and barriers relevant for the (non-)adoption of technologies within psychosocial dementia care facilities. Third, it investigated ways in which innovative dementia care facilities try to provide psychosocial, person-centered care. Based on these findings, several recommendations can be formulated:

1. The implementation and appropriation of technology should be approached from a psychosocial perspective, prioritizing Warm Technologies.
2. Care facilities should install an expert team to advise, create awareness among, and inspire staff and organizations about the possibilities of technology for residents with dementia.
3. Care organizations and staff should stimulate the accessibility of technology with regards to the socio-physical environment.

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Appendices

Appendix A Photos of Study Locations

Care Facility A



Care Facility B



Care Facility C





Care Facility D



Care Facility E



Appendix B OAZIS-Dementia Technology Extension (OAZIS+T) V1

Item <i>Zorginstelling:</i>	Helemaal mee oneens	Mee oneens	Neutraal	Mee eens	Helemaal mee eens
Communicatie					
1. Bewoners beschikken over technologie om te kunnen communiceren met naasten <i>Door middel van beeldbelapplicaties op tablet of tv, videoboodschappen, online kaartjes, digitale fotolijsten of seniorentelefoons. Ken een hogere score toe wanneer er ook beeld is en betreft de toegankelijkheid.</i> Toelichting:	1	2	3	4	5
2. Bewoners beschikken over technologie om te kunnen communiceren met zorgprofessionals <i>Door middel van beeldbelapplicaties op tablet of tv die speciaal bedoeld zijn voor contact met zorgprofessionals. Ken een hogere score toe wanneer er ook beeld is en betreft de toegankelijkheid.</i> Toelichting:	1	2	3	4	5
Eigen Regie					
3. Bewoners beschikken over technologie om hun dag structuur te geven en te helpen met de planning <i>Door middel van uitgebreide kalender klokken, dynamische verlichting, interactieve kalenders en robotmaatjes die herinneringen geven. Ken een hogere score toe wanneer bewoners zelf controle hebben over de apparatuur.</i> Toelichting:	1	2	3	4	5
4. Bewoners beschikken over een GPS-locatie systeem <i>Deze kan gebruikt worden om de bewoners te lokaliseren en/of toegang te geven tot bepaalde ruimtes. Hoe meer vrijheid ze hebben, hoe hoger de score (4-5).</i> Toelichting:	1	2	3	4	5

<p>5. Bewoners beschikken over technologie die dagelijkse handelingen voor henzelf vergemakkelijkt <i>Zoals eten, drinken, persoonlijke verzorging. Bijvoorbeeld een lepel die trillingen opvangt, of een bed waar je makkelijker uit kunt stappen. Wanneer personeel gebruikt maakt van deze technologie om bewoners mee te assisteren in hun dagelijkse handelingen een lagere score toekennen.</i></p> <p>Toelichting:</p>	1	2	3	4	5
Zinvolle daginvulling					
<p>6. Bewoners beschikken over technologie die hen motiveert om te bewegen <i>Bijvoorbeeld: interactieve fietstocht, beweegstok, beweegrobot. Hoe meer lichaamsdelen de bewoners ermee kunnen bewegen, hoe hoger de score mag zijn.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>7. Bewoners beschikken over technologie om sociaal contact onderling te stimuleren <i>Bijvoorbeeld: verhalen vertellen, contact tussen familie en bewoner, muziek, spelletjes om contact te leggen</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>8. De woonvorm beschikt over gezelschapsrobots <i>Denk aan robotkat, zeehond, knuffelaap</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>9. De woonvorm beschikt over interactieve beelden en muziek <i>Denk aan beleef tv, tovertafel, breintrainers en/of beamer, muziekkussen, praatpaal, platenspeler, beleefkussen, luisterboeken. Ken een hogere score toe wanneer er een spelelement aanwezig is.</i></p> <p>Toelichting:</p>	1	2	3	4	5

10. De woonvorm beschikt over online varianten van uitstapjes en dagbesteding <i>Denk aan online bingo, geloofsviering, museum, dierentuin en/of optredens en virtual reality belevingen.</i> Ken een hogere score toe wanneer deze interactief zijn en ingaan op reacties van bewoners.	1	2	3	4	5
Toelichting:					
Ondersteuning Zorgmedewerkers					
11. De woonvorm beschikt over technologie om zorgmedewerkers te ondersteunen <i>Denk aan smart glasses, elektrisch kantelsysteem om mensen mee uit bed te tillen, slimme koelkast.</i> Hoe meer er aanwezig is, hoe hoger de score mag zijn.	1	2	3	4	5
Toelichting:					
12. De woonvorm beschikt over technologie om de bezoekersregeling te ondersteunen <i>Bijvoorbeeld: reserveringshulp en digitale receptie.</i>	1	2	3	4	5
Toelichting:					
13. Zorgmedewerkers krijgen psychosociale ondersteuning met behulp van technologie <i>Denk aan online zelfhulptraining, app voor stressmanagement</i>	1	2	3	4	5
Toelichting:					
Veiligheid					
14. De woonvorm beschikt over technologie om veiligheid te waarborgen <i>Denk aan hefstoelen, slim incontinentie materiaal, sensortoezicht, plintverlichting, heupairbag, bedsensor.</i>	1	2	3	4	5
Toelichting:					
15. Wat zou je zelf nog graag toevoegen aan technologie?	1	2	3	4	5

This extension is based on a publication of Vos et al. (2020) on an inspirational guide for organizations that want to implement technological interventions. They made distinctions between several themes: communication, autonomy, meaningful day, support for caregivers and safety.

Appendix C OAZIS-Dementia Technology Extension (OAZIS+T) V2

Item	Helemaal mee oneens	Mee oneens	Neutraal	Mee eens	Helemaal mee eens
<p>Zorginstelling:</p>					
Communicatie					
<p>1. Bewoners beschikken over technologie om te kunnen communiceren met naasten. Door middel van beeldbelapplicaties op tablet of tv, videoboodschappen, online kaartjes, digitale fotolijsten of senioren telefoons.</p> <p><i>Helemaal mee oneens: de meerderheid van de bewoners heeft geen telefoon of andere techniek om te communiceren met naasten, mee oneens: de meeste bewoners beschikken over een (senioren)telefoon, neutraal: bewoners beschikken over een (senioren)telefoon en op de afdeling is er een tablet aanwezig die gebruikt kan worden voor beeldbellen, mee eens: een aantal bewoners beschikken over een beeldbelapplicatie of kunnen berichtjes ontvangen van naasten, helemaal mee eens: de meerderheid van de bewoners heeft een beeldbelapplicatie.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>2. Bewoners beschikken over technologie om te kunnen communiceren met zorgprofessionals Door middel van beeldbelapplicaties op tablet of tv die speciaal bedoeld zijn voor contact met zorgprofessionals of beeldschermzorg.</p> <p><i>Helemaal mee oneens: de zorgprofessional komt op bezoek bij de bewoners, neutraal: bewoners kunnen bellen met zorgprofessionals, helemaal mee eens: bewoners hebben een beeldbelverbinding met zorgprofessionals.</i></p> <p>Toelichting:</p>	1	2	3	4	5

<p>3. De woonvorm beschikt over technologie om bewustzijn te creëren voor medewerkers en familie betreft de omgang met mensen met dementie. Denk aan VR brillen met interactieve trainingen of online simulaties van de leefwereld van iemand met dementie. <i>Nee = 1, ja = 5</i></p> <p>Toelichting:</p>	1	2	3	4	5
Eigen Regie					
<p>4. Bewoners beschikken over technologie om hun dag structuur te geven en te helpen met de planning Door middel van uitgebreide kalender klokken of interactieve kalenders die herinneringen geven. <i>Helemaal mee oneens: geen van de bewoners beschikt over techniek voor dag structuur, mee oneens: sommige bewoners hebben een klok met tijdsaanduiding en dag aanduiding, neutraal: sommige bewoners beschikken over technologie om hun dagplanning mee aan te geven, mee eens: de meerderheid van de bewoners beschikt over technologie om hun dagplanning mee aan te geven, helemaal mee eens: de meerderheid van de bewoners beschikt over technologie om hun dagplanning mee aan te geven.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>5. Bewoners beschikken over een sprekende (interactieve) robot om structuur in de dag aan te brengen en herinneringen geeft. Zoals Tessa of Robot Maatje. <i>Nee = 1, ja = 5</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>6. Bewoners beschikken over een GPS-locatie systeem. Deze kan gebruikt worden om de bewoners te lokaliseren en/of toegang te geven tot bepaalde ruimtes. Kijk of het mogelijk is als familie dat wil, niet of het ook gebruikt wordt. <i>Helemaal mee oneens: bewoners kunnen niet naar buiten, neutraal: alle bewoners hebben een GPS-locatie systeem, helemaal mee eens: een aantal bewoners hebben een GPS-locatie systeem in samenspraak met familie.</i></p> <p>Toelichting:</p>	1	2	3	4	5

<p>7. Bewoners beschikken over technologie die dagelijkse handelingen voor henzelf vergemakkelijkt. Zoals eten, drinken, persoonlijke verzorging. Bijvoorbeeld een lepel die trillingen opvangt, een bed waar ze zelf makkelijker uit kunt stappen, of een medicijndispenser.</p> <p><i>Helemaal mee oneens: geen van de bewoners beschikt over zulke techniek, neutraal: alleen wanneer het écht nodig is, kan een bewoner toegang krijgen tot een van de technieken, mee eens: een van de technieken is beschikbaar voor alle bewoners, helemaal mee eens: er zijn meerdere technieken beschikbaar voor alle bewoners.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>8. Bewoners beschikken over technologie om hun eigen deur te openen en sluiten. Zoals een tag.</p> <p><i>Nee = 1, Ja = 5</i></p>	1	2	3	4	5
Zinvolle daginvulling					
<p>9. Bewoners beschikken over technologie die hen motiveert om te bewegen. Bijvoorbeeld: interactieve fietstocht, beweegstok, beweegrobot.</p> <p><i>Helemaal mee oneens: er is geen techniek voor beweging aanwezig, neutraal: de techniek hiervoor wordt gedeeld met meerdere afdelingen, mee eens: een van de technieken is beschikbaar, helemaal mee eens: er zijn meerdere technieken beschikbaar.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>10. De woonvorm beschikt over gezelschapsrobots. Denk aan robotkat/hond, zeehond, knuffelaap, dino, zorgrobot</p> <p><i>Nee = 1, ja = 5</i></p> <p>Toelichting:</p>	1	2	3	4	5

<p>11. De woonvorm beschikt over interactieve beelden en muziek. Denk aan beleef tv, tovertafel, breintrainers en/of beamer, muziekkussens, beleefkussen, of belevenis tafel.</p> <p><i>Helemaal mee oneens: geen van deze technieken is aanwezig, mee oneens: technieken worden af en toe gehoord, neutraal: technieken worden gedeeld over meerdere afdelingen, mee eens: een van de technieken is aanwezig, helemaal mee eens: meerdere technieken zijn aanwezig.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>12. De woonvorm beschikt over tv-kanalen, muziek en spraakberichten. Dit zijn non-interactieve vormen van beelden en muziek, zoals Smart tv, muziekkussens, luisterboeken, silent disco headset, praatpaal, eenvoudige platenspeler of radio en Qwiek Up.</p> <p><i>Helemaal mee oneens: geen van deze technieken is aanwezig, mee oneens: technieken worden af en toe gehoord, neutraal: technieken worden gedeeld over meerdere afdelingen, mee eens: een van de technieken is aanwezig, helemaal mee eens: meerdere technieken zijn aanwezig.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>13. De woonvorm beschikt over online varianten van uitstapjes en dagbesteding</p> <p><i>Denk aan online bingo, geloofsviering, museum, dierentuin en/of optredens en virtual reality belevingen.</i></p> <p><i>Nee = 1, ja = 5</i></p> <p>Toelichting:</p>	1	2	3	4	5
Ondersteuning Zorgmedewerkers					
<p>14. De woonvorm beschikt over technologie om zorgmedewerkers te ondersteunen in hun zorgtaken óf huishoudelijke taken. Denk aan slimme bril/smart glasses, elektrisch kantelsysteem om mensen mee uit bed te tillen, slimme koelkast, raizer mobiele hefstoel, tandenborstel speciaal ontworpen voor ouderen.</p> <p><i>Helemaal mee oneens: er is niets aanwezig voor zorg- en huishoudelijke taken, mee oneens: er is niets aanwezig voor zorgtaken, neutraal: medewerkers moeten om ondersteunende middelen vragen, mee eens: er is ondersteuning aanwezig voor zorgtaken, helemaal mee eens: er is ondersteuning aanwezig voor huishoudelijke en zorg taken.</i></p>	1	2	3	4	5

Toelichting:					
15. De woonvorm beschikt over technologie om de communicatie met familie te regelen. Bijvoorbeeld: reserveringshulp, digitale receptie, applicatie voor patiëntendossier, online platform waar updates over de bewoner en activiteiten geplaatst kunnen worden. <i>Nee = 1, ja = 5</i>	1	2	3	4	5
Toelichting:					
16. Zorgmedewerkers krijgen psychosociale ondersteuning met behulp van technologie <i>Denk aan online zelfhulptrainingen, app voor stressmanagement</i> <i>Nee = 1, Ja = 5</i>	1	2	3	4	5
Toelichting:					
17. Zorgmedewerkers kunnen leren over de inzet van technologie via e-learnings en online trainingen <i>Helemaal mee oneens: er zijn geen online trainingen, neutraal: medewerkers krijgen eenmalig een online training, helemaal mee eens: medewerkers hebben permanent toegang tot e-learnings en online trainingen.</i>	1	2	3	4	5
Toelichting:					
18. Zorgmedewerkers kunnen storingen van systemen rapporteren via een online portaal of zelf aanpassingen maken aan hoe de systemen staan ingesteld. <i>Helemaal mee oneens: geen van beide, neutraal: een van de twee, helemaal mee eens = beide mogelijk</i>					
Toelichting:					
Veiligheid					
19. De woonvorm beschikt over technologie om op een directe manier veiligheid te waarborgen. Denk aan plintverlichting of een heupairbag. <i>Nee = 1, ja = 5</i>	1	2	3	4	5
Toelichting:					

<p>20. De woonvorm beschikt over sensor technologieën. Denk aan slim incontinentiemateriaal, bed sensor, deur sensor, etc. <i>Helemaal oneens: geen sensoren aanwezig, neutraal: sensoren aanwezig, extra punten erbij tellen wanneer er een inkijk optie is en wanneer sensoren persoonlijk afgestemd kunnen worden per bewoner. Bijvoorbeeld mogelijkheid voor verschillende soorten sensoren zoals bedsensor, bewegingssensor of deursensor.</i></p> <p>Toelichting:</p>					
<p>21. Bewoners beschikken over een hals of polszender om alarm te slaan. <i>Helemaal mee oneens: geen van de bewoners heeft een zender om alarm te slaan, neutraal: sommige bewoners hebben een zender, punten erbij tellen wanneer er alarmopvolging is d.m.v. een spreek- en luistermodule.</i></p> <p>Toelichting:</p>	1	2	3	4	5
<p>22. Welke technologie die jullie hebben is nog niet genoemd?</p>					

This extension is based on a publication of Vos et al. (2020) on an inspirational guide for organizations that want to implement technological interventions. They made distinctions between several themes: communication, autonomy, meaningful day, support for caregivers and safety.

Appendix D Semi-Structured Interview Guide for Staff**Facilities A, B, and E**

Demografische gegevens	
Participant nr.	
Leeftijd	
Geslacht	
Functie binnen de organisatie	
Afdeling werkzaam	
Jaren in dienst bij deze specifieke organisatie	
Sinds wanneer werkt u in uw huidige functie?	
Jaren werkzaam in de zorg voor ouderen met dementie?	
Hoogst afgeronde opleiding	
Hoe veel uur werkt u gemiddeld per week?	

Inleiding interview: Ik wil het graag met u hebben over het gebruik van technologie binnen jullie woonvorm. Ik ben geïnteresseerd in waar de technologie staat in jullie woonvorm en hoe jullie het gebruiken. Graag zou ik beginnen met een brede algemene vraag: wanneer heeft u voor het laatst gebruik gemaakt van technologie in de zorg?	
Hoofdvraag	Interviewvragen
Hoe denkt de persoon over het gebruik van technologie?	<p>Wanneer heeft u voor het laatst gebruik gemaakt van technologie in de zorg?</p> <ul style="list-style-type: none"> • Wat was de situatie • Hoe was dat u bevallen? <p>Hoe denkt u over het gebruik van technologie?</p> <ul style="list-style-type: none"> • Waarvoor is naar uw mening technologie in de zorg wel of niet geschikt? • Voorbeelden?
<i>Uitleggen welke definitie van technologie ik aanhou</i>	Denk aan technologie speciaal ontworpen voor de persoon met dementie of de verzorger van deze persoon. Voorbeelden zijn zorgrobots, tovertafels, GPS tracking, videocommunicatie, etc.
Hoe is technologie opgenomen in de organisatorische omgeving?	<p>Hoe zou u de visie van de organisatie beschrijven?</p> <ul style="list-style-type: none"> • Waar staan jullie voor? • Hoe doen jullie dat? • Waar ligt de focus van jullie werk? • Wat is de rol van de bewoner? <p>Wat zijn in de komende jaren belangrijke thema's?</p> <ul style="list-style-type: none"> • Wat zou jou als medewerker trots maken? <p>Hoe wordt er binnen uw organisatie over het algemeen gedacht over het gebruik van technologie?</p> <ul style="list-style-type: none"> • Is er een verschil tussen hoe er vanuit het management wordt gedacht over het gebruik van technologie vergeleken met de mensen die aan het bed staan?

<p>Hoe is de technologie opgenomen in de sociale omgeving?</p>	<p>Wordt technologie gebruikt om een gesprek te ondersteunen of contact te leggen met een bewoner?</p> <ul style="list-style-type: none"> • Op welke manier? • Hoe reageren de bewoners binnen de woonvorm op de technologie die jullie gebruiken? • Vragen bewoners erom of bieden jullie het aan? • Wat vind de familie van het gebruik van technologie? • Faciliteert de technologie contact tussen bewoners en hun medebewoners, familie en zorgprofessionals? • Voorbeelden?
<p>Hoe is de technologie opgenomen in de fysieke omgeving?</p>	<p>Hebben jullie speciaal nagedacht over de plaatsing van de technologie?</p> <p>Is er een speciale ruimte waarin bepaalde technologie gebruikt wordt?</p> <ul style="list-style-type: none"> • Is technologie onderdeel van het interieur, of is het ergens opgeslagen? • Zijn de technologieën toegankelijk voor elke bewoner? • Heeft het een passieve of actieve rol?
<p>What are barriers and drivers for the use of technology interventions?</p>	<p>Wat zijn de belangrijkste redenen waarom u technologie wel/niet gebruikt heeft?</p> <ul style="list-style-type: none"> • Wat zijn de voordelen van het gebruik van technologie voor jezelf? • Wat zijn de voordelen van het gebruik van technologie voor de persoon met dementie/bewoner? • En wat zouden nadelen voor u zijn/de bewoner? <p>Heeft u een voorbeeld van een recente situatie waarbij u tegen belemmeringen van technologie in de dementiezorg aan liep?</p> <ul style="list-style-type: none"> • Hoe heeft u geprobeerd deze belemmering op te lossen of te omzeilen? <p>Wat zou er nodig zijn om technologie vaker te gebruiken in deze woonvorm?</p> <p>Welke technologie binnen deze woonvorm ervaart u als het meest positief voor bewoners en medewerkers, en waarom?</p>

Appendix E. Additions to Semi-Structured Interview Guide for Staff**Care Facility C**

Additional questions regarding the experiences with the new concept

Leonie Copraij – 01-05-2022

<p>Inleiding interview: Ik wil het graag met u hebben over uw ervaringen met deze nieuwe woonvorm en het gebruik van technologie binnen de dementiezorg. Ik ben geïnteresseerd in hoe het concept ervaren wordt en wat de mogelijkheden zijn om technologie in te zetten in deze woonvorm. Graag zou ik beginnen met een brede algemene vraag: hoe vind u het om op deze locatie te werken?</p>	
Hoofdvraag	Interviewvragen
Algemene indruk van woonvorm	<p>hoe vind u het om op deze locatie te werken?</p> <ul style="list-style-type: none"> • Hoe bevalt de nieuwe werkwijze? • Hoe bevalt de indeling van de woonvorm? • Hoe bevallen de nieuwe faciliteiten? • Zijn er dingen die nog ontbreken volgens u? <p>Is deze woonvorm voor iedereen geschikt, of een specifieke groep?</p> <ul style="list-style-type: none"> • Ook betreft mensen met dementie
Sociale aspecten woonvorm	<p>Hoe gaan jullie om met bewoners die ondersteuning nodig hebben?</p> <ul style="list-style-type: none"> • Hoe reageren bewoners daar op? • Wat is het voordeel van deze werkwijze? • Wat is het nadeel van deze werkwijze? <p>Hoe bevalt de zorg voor de bewoners met dementie specifiek?</p> <ul style="list-style-type: none"> • Verschil met reguliere verpleeghuiszorg?
Wat ervaren ze als innovatief?	<p>Wat vind u innovatief aan deze woonvorm?</p> <ul style="list-style-type: none"> • Voorbeeld? • Hoe draagt het bij aan de kwaliteit van leven en zelfredzaamheid van mensen?

Care Facility D

Additional questions regarding the process and experiences with moving

Mara Brouwers – 25-04-2022

Personeel en management		
Het verloop en de inhoud van het verhuisproces		
<p>Inleiding interview: Ik wil het graag met u hebben over de verhuizing naar de nieuwe locatie en hoe technologie binnen jullie woonvorm wordt gebruikt. Ik ben geïnteresseerd in hoe u de verhuizing heeft ervaren en waar de technologie staat in jullie nieuwe woonvorm en hoe jullie het gebruiken. Graag zou ik beginnen met een brede algemene vraag over de verhuizing: Bevalt de nieuwe locatie?</p>		
Hoofdvraag	Interviewvragen	Categorie
Hoe heeft het personeel/het management de verhuizing van of naar een innovatief woonzorgconcept ervaren?	Bevalt de nieuwe locatie?	Initiële vraag
	Hoe is de aanloop naar de verhuizing verlopen? <ul style="list-style-type: none"> • Heeft u het gevoel dat de bewoners en naasten voldoende voorbereid waren voor de verhuizing? Waarom wel/niet? • Hoe heeft u de weken voor de verhuizing ervaren? • Hoe was de gemoedstoestand van de bewoners in de weken voor de verhuizing? 	Aanloop verhuizing
Hoe denkt het personeel/het management dat de bewoners en de naasten het verhuisproces hebben ervaren?	Hoe is de verhuizing zelf verlopen? <ul style="list-style-type: none"> • Welke aspecten van de verhuizing vond u goed gaan? • Welke aspecten van de verhuizing vond u minder goed gaan/ hadden nog mogelijkheid tot verbetering? • Vond u de verhuizing goed georganiseerd? Zo ja, waarom wel? Zo nee, waarom niet? • Hoe was de gemoedstoestand van de bewoners tijdens de verhuizing? • Hoe heeft u de verhuizing persoonlijk ervaren? 	Verhuizing
Welke procedures doorloopt het concept tijdens de verhuizing van of naar een innovatief woonzorgconcept?	Hoe is het gewennen van de bewoners aan het nieuwe gebouw verlopen? <ul style="list-style-type: none"> • Hoe was de gemoedstoestand van de bewoners gedurende de eerste week? • Op welke wijze werden de bewoners geholpen met het gewennen aan de nieuwe omgeving? • Hoe heeft u de eerste weken na de verhuizing ervaren? • Bevalt de nieuwe omgeving u? Zo ja/nee, wat bevalt er wel/niet? 	Na verhuizing
Hoe ziet het sociale netwerk van de bewoners eruit?	Hoe bevalt de nieuwe omgeving? <ul style="list-style-type: none"> • Hoe bevalt de nieuwe indeling van de gebouwen? • Hoe bevalt uw nieuwe werkwijze? • Hoe bevallen de nieuwe faciliteiten? 	Nieuwe locatie

Appendix F Informed Consent Forms Staff

Informed Consent Form Staff for Facilities A, B and E

Informatieformulier voor proefpersonen

Dit document geeft u informatie over het onderzoek 'technologie binnen de dementiezorg'. Voordat het onderzoek begint is het belangrijk dat u kennisneemt van de werkwijze die bij dit onderzoek gevolgd wordt en dat u instemt met vrijwillige deelname. Leest u dit document a.u.b. aandachtig door.

Doel en nut van het onderzoek

Het doel van dit onderzoek is om ervaringen met technologie binnen de dementiezorg in kaart te brengen. De verkregen informatie wordt gebruikt om technologie beter te kunnen plaatsen in de zorgomgeving.

Het onderzoek wordt uitgevoerd door Leonie Copraij, student onder supervisie van Wijnand IJsselsteijn van de Human-Technology Interaction groep.

Procedure

Het interview start met een aantal open vragen over uw houding tegenover technologie in de dementiezorg. Vervolgens zullen we ingaan op hoe technologie plaatsneemt in uw organisatie en de sociale rol van technologie. Als laatste hebben we het over de belangrijkste redenen waarom u technologie wel of niet gebruikt.

Risico's

Dit onderzoek brengt geen risico's met zich mee, en ook geen nadelige bijwerkingen.

Duur

Het interview duurt ongeveer 60 tot 90 minuten.

Participanten

U bent geselecteerd omdat werkzaam bent als zorgprofessional op een afdeling in een verzorgingstehuis of zorgboerderij voor mensen met dementie in Nederland.

Vrijwilligheid

Uw deelname is geheel vrijwillig. Er is helaas geen vergoeding voor deelname. U kunt zonder opgaaf van redenen weigeren mee te doen aan het onderzoek en uw deelname op welk moment dan ook afbreken. Ook kunt u nog achteraf (binnen 24 uur) weigeren dat uw gegevens voor het onderzoek mogen worden gebruikt. Dit alles blijft te allen tijde zonder nadelige gevolgen.

Vergoeding

U zult een kleinigheid ontvangen als dank voor uw deelname.

Vertrouwelijkheid en gebruik, opslag en delen van data

Bij alle onderzoeken van Human-Technology Interaction wordt gewerkt volgens de ethische code van het NIP (Nederlands Instituut voor Psychologen) en deze studie is goedgekeurd door de Ethische Commissie van de HTI groep.

In deze studie zullen geen persoonlijke data, zoals namen en adressen worden verzameld. Audio opnames die u kunnen identificeren, zullen niet gedeeld worden of afgespeeld worden in het bijzijn van personen anders dan de onderzoekers van deze studie. De opname van het interview zal alleen voor wetenschappelijke publicaties gebruikt worden, en verwijderd worden nadat deze is geanonimiseerd en getranscribeerd. Het doel van het verzamelen, analyseren en opslaan van deze data is om de onderzoeksvraag te beantwoorden en de resultaten te publiceren in wetenschappelijke literatuur. De anonieme data wordt gepubliceerd in wetenschappelijke literatuur waarbij de gegevens nooit terug te voeren zijn naar u persoonlijk. Om uw privacy te beschermen zullen alle verzamelde data die u zouden kunnen identificeren opgeslagen worden op een versleutelde server van de Human-Technology Interaction groep op de Universiteit die alleen toegankelijk is voor geselecteerde stafleden van de HTI-groep voor ten minste 10 jaar. Geen informatie die gebruikt kan worden om u persoonlijk te identificeren zal met anderen worden gedeeld.

De verzamelde data kan ook relevant blijken voor geautoriseerde onderzoekers van andere instituten. Daarom zullen de anonieme transcripten op een beveiligde server, toegankelijk voor geautoriseerde onderzoekers, worden opgeslagen.

Onderaan dit formulier kunt u aangeven of u wilt deelnemen aan deze studie. Deelname is niet mogelijk als u geen toestemming geeft.

Nadere inlichtingen

Als u nog verdere informatie wilt over dit onderzoek, dan kunt u zich wenden tot Leonie Copraij (email: l.a.copraij@student.tue.nl).

Voor eventuele klachten over dit onderzoek kunt u terecht bij de docent, Wijnand IJsselsteijn (W.A.IJsselsteijn@tue.nl). U kunt onregelmatigheden op het gebied van wetenschappelijke integriteit rapporteren bij vertrouwenspersonen van de TU/e.

Geïnformeerde toestemming

Onderzoek naar technologie binnen de dementiezorg

- Ik heb de informatie van het bijbehorende informatieformulier voor deelnemers gelezen en begrepen.
- Ik heb de gelegenheid gekregen om vragen te stellen. Mijn vragen zijn voldoende beantwoord en ik had voldoende tijd om te beslissen of ik meedoe.
- Ik weet dat mijn deelname volledig vrijwillig is. Ik weet dat ik kan weigeren deel te nemen en dat ik mijn deelname op elk moment tijdens de studie kan stopzetten, zonder opgaaf van redenen. Ik weet dat ik de toestemming om mijn gegevens te gebruiken kan intrekken tot 24 uur nadat de gegevens zijn vastgelegd.
- Ik ga ermee akkoord om vrijwillig deel te nemen aan dit onderzoek uitgevoerd door de onderzoeksgroep Human-Technology Interaction van de Technische Universiteit Eindhoven.
- Ik weet dat geen informatie die kan worden gebruikt om mij of mijn reacties in dit onderzoek persoonlijk te identificeren, zal worden gedeeld met iemand buiten het onderzoeksteam.
- Ik
 - geef**
 - geef niet**
 toestemming om mijn geanonimiseerde opgenomen gegevens beschikbaar te stellen aan de onderzoekers van deze studie, en het uploaden van mijn geanonimiseerde transcript op een beveiligde onderzoek server, alleen toegankelijk voor geautoriseerde onderzoekers.

Certificaat van toestemming

Ik, (NAAM)

Wil en geef toestemming en consent om deel te nemen aan dit onderzoek.

Handtekening van de deelnemer

Datum

Informed Consent Form Staff for Facility C**Betreft: Innovatieve woonzorgomgevingen voor ouderen**

Geachte heer/mevrouw,

Momenteel loopt er een onderzoek naar de verhuizing naar [naam locatie] gepland in samenwerking met de Universiteit Maastricht.¹ Als betrokkene bij deze woonvorm vragen wij u vriendelijk uw medewerking te verlenen aan het onderzoek genaamd: ‘*Innovatieve woonzorgomgevingen voor ouderen*’.

Doel van dit onderzoek:

In de afgelopen jaren is de ontwikkeling van innovatieve verpleeghuiszorg enorm toegenomen. Hiervoor zijn twee redenen. Ten eerste zijn verpleeghuizen deels verouderd en voldoen ze vaak niet meer aan de eisen van deze tijd. Zorgorganisaties kiezen er daarom voor locaties te verbouwen of nieuwbouw te ontwikkelen. Ten tweede worden nieuwe woonzorgomgevingen ontwikkeld om betere zorg en ondersteuning te kunnen bieden aan bewoners en hun naasten. Deze nieuwe, innovatieve, woonzorgomgevingen bieden een alternatief aan de traditionele verpleeghuiszorg. Door de ontwikkeling van al deze woonzorgomgevingen krijgen ouderen die veel ondersteuning nodig hebben en in een verpleeghuis wonen steeds vaker te maken met verhuizingen. In dit onderzoek willen we twee doelen bereiken. Ten eerste willen we kijken hoe ouderen, de verzorging en het management de woonvorm ervaren. Ten tweede willen we graag weten welke rol technologie voor de nieuwe woonvorm kan spelen.

Hoe wordt het onderzoek uitgevoerd?

In het kader van het onderzoek zouden we graag een kort gesprek met u voeren waarin we vragen stellen over uw ervaringen met de nieuwe woonvorm. Dit gesprek zal worden uitgevoerd door een getrainde interviewer die zorgvuldig geïnstrueerd is over het project. Het gesprek zal in totaal 60 tot 90 minuten duren. Dit interview zal plaatsvinden bij [naam locatie] in Hilversum. Mocht u een voorkeur hebben voor een interview via telefoon of beeldbellen dan is dit ook mogelijk.

Voordelen verbonden aan het onderzoek

Uw deelname aan het onderzoek wordt zeer gewaardeerd. Het onderzoek zal op u geen invloed hebben. Wel zullen de gegevens een toekomstige verbetering van het verhuisproces en technologie binnen innovatieve woonzorgomgevingen kunnen betekenen.

Toestemming voor het onderzoek

Indien u geen problemen heeft met dat wij bovengenoemde gegevens verzamelen, willen wij u vragen het bijgevoegde formulier in te vullen. Ook indien u niet wenst mee te werken aan het onderzoek vragen wij u vriendelijk het formulier in te vullen.

Uw besluit om dit formulier wel/niet in te vullen zal op geen enkele wijze invloed op u hebben. Uw medewerking aan het onderzoek is geheel vrijwillig en u bent vrij om op elk gewenst moment uw

¹ Dit project is onderdeel van het project ‘Verhuizen in het verpleeghuis’. *“Het project Verhuizen in het Verpleeghuis is een gezamenlijk project van de Samenwerkende Academische Netwerken Ouderenzorg (SANO), bestaande uit: de Academische Werkplaats Ouderenzorg Limburg, het Universitair Kennisnetwerk Ouderenzorg Nijmegen, Tranzo Academische Werkplaats Ouderen, het Universitair Netwerk voor de Care sector Zuid-Holland, het Universitair Netwerk Ouderenzorg Amsterdam en het Universitair Netwerk Ouderenzorg van het Universitair Medisch Centrum Groningen”*

medewerking aan het onderzoek af te breken zonder hiervoor een reden te geven. Ook het beëindigen van de medewerking zal op geen enkele manier invloed op u hebben.

Vertrouwelijkheid van de gegevens

Alle onderzoeksgegevens zullen vertrouwelijk worden behandeld en uw anonimiteit wordt gegarandeerd. Doordat de gegevens anoniem verwerkt worden, zijn deze niet meer herleidbaar naar individuele personen. Uw gegevens zullen 15 jaar worden bewaard op de onderzoekslocatie: Universiteit van Maastricht. De leden van het onderzoeksteam en toezichthoudende autoriteiten kunnen toegang krijgen tot de data die verzameld wordt. Dit is nodig om te kunnen controleren of het onderzoek goed en betrouwbaar is uitgevoerd. Personen die ter controle inzage krijgen in uw gegevens zijn: dr. Bram de Boer (onderzoeker binnen dit project), prof. dr. Hilde Verbeek (onderzoeker binnen dit project), dr. Wim Groen (onderzoeker binnen dit project) en nationale en internationale toezichthoudende autoriteiten, bijvoorbeeld, de inspectie Gezondheidszorg en Jeugd. Zij houden uw gegevens geheim. Wij vragen u voor deze inzage toestemming te geven.

Wat gebeurt er als het onderzoek is afgelopen?

U zult op de hoogte gehouden worden van de resultaten van het onderzoek via een nieuwsbrief die wij zullen verspreiden via de verschillende zorginstellingen die deelnemen aan het onderzoek.

Als u vragen heeft

Bij vragen kunt u contact opnemen met Leonie Coprail. Indien u klachten heeft over dit onderzoek, dan kunt u dit bespreken met de hoofdonderzoeker (Mara Brouwers) of coördinerend onderzoeker (Bram de Boer). Wilt u dit liever niet, dan kunt u zich wenden tot de klachtenfunctionaris van Maastricht Universiteit.

Namens de onderzoeksgroep,

Met vriendelijke groet,

Leonie Coprail, student onderzoeker
T:
E: l.a.coprail@student.tue.nl

coördinerend onderzoeker: dr. Bram de Boer

Bijlagen bij deze informatie

- A. Contactgegevens
- B. Toestemmingsverklaring

Bijlage B: toestemmingsverklaring (1 kopie voor u)

Verhuizingen binnen innovatieve woonzorgconcepten voor ouderen

- Ik heb de informatiebrief gelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is. Ook weet ik dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik geef toestemming voor het verzamelen en gebruiken van mijn gegevens voor de beantwoording van de onderzoeksvraag in dit onderzoek.
- Ik weet dat voor de controle van het onderzoek sommige mensen toegang tot mijn gegevens kunnen krijgen. Die mensen staan vermeld in deze informatiebrief. Ik geef toestemming voor inzage door deze personen.
- Ik geef
 - wel**
 - geen** toestemming om mijn persoonsgegevens langer te bewaren en te gebruiken voor toekomstig onderzoek op het gebied van verhuizingen binnen innovatieve woonzorgconcepten.
- Ik wil meedoen aan dit onderzoek.

Mijn naam: **dhr / mw** _____

Contactgegevens:

Telefoonnummer: _____

Mailadres (indien van toepassing): _____

Ik wil graag per e-mail op de hoogte gehouden worden van de resultaten van dit onderzoek en ander onderzoek dat wordt uitgevoerd door de Academische Werkplaats Ouderenzorg (www.academischewerkplaatsouderenzorg.nl). Ik meld me daarom aan voor de nieuwsbrief (vink aan indien van toepassing).

Uw naam:

Handtekening:

Datum : __/ __/ __

Ik verklaar dat ik deze proefpersoon volledig heb geïnformeerd over het genoemde onderzoek.

Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de proefpersoon zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker:

Handtekening:

Datum: __/ __/ __

De proefpersoon krijgt een volledige informatiebrief mee, samen met een kopie van het getekende toestemmingsformulier

Informed Consent Form Staff for Facility D**Betreft: Verhuizingen naar innovatieve woonzorgomgevingen voor ouderen**

Geachte heer/mevrouw,

Momenteel loopt er een onderzoek naar de verhuizing naar [naam locatie] gepland in samenwerking met de Universiteit Maastricht.² Als betrokkene bij deze verhuizing vragen wij u vriendelijk uw medewerking te verlenen aan het onderzoek genaamd: *‘Verhuizingen naar innovatieve woonzorgomgevingen voor ouderen’*.

Doel van dit onderzoek:

In de afgelopen jaren is de ontwikkeling van innovatieve verpleeghuiszorg enorm toegenomen. Hiervoor zijn twee redenen. Ten eerste zijn verpleeghuizen deels verouderd en voldoen ze vaak niet meer aan de eisen van deze tijd. Zorgorganisaties kiezen er daarom voor locaties te verbouwen of nieuwbouw te ontwikkelen. Ten tweede worden nieuwe woonzorgomgevingen ontwikkeld om betere zorg en ondersteuning te kunnen bieden aan bewoners en hun naasten. Deze nieuwe, innovatieve, woonzorgomgevingen bieden een alternatief aan de traditionele verpleeghuiszorg. Door de ontwikkeling van al deze woonzorgomgevingen krijgen ouderen die veel ondersteuning nodig hebben en in een verpleeghuis wonen steeds vaker te maken met verhuizingen. In dit onderzoek willen we twee doelen bereiken. Ten eerste willen we kijken hoe ouderen, mantelzorgers, het personeel en het management de verhuizing ervaren. Ten tweede willen we graag weten wat voor effecten verhuizingen binnen innovatieve woonzorgomgevingen hebben op bewoners.

Hoe wordt het onderzoek uitgevoerd?

In het kader van het onderzoek zouden we graag een kort gesprek met u voeren waarin we vragen stellen over de verhuizing en hoe u die ervaren heeft. Dit gesprek zal worden uitgevoerd door een getrainde interviewer die zorgvuldig geïnstrueerd is over het project. Het gesprek zal in totaal maximaal een uur duren. Dit interview zal plaatsvinden bij [naam locatie]. Mocht u een voorkeur hebben voor een interview via telefoon of beeldbellen dan is dit ook mogelijk.

Voordelen verbonden aan het onderzoek

Uw deelname aan het onderzoek wordt zeer gewaardeerd. Het onderzoek zal op u geen invloed hebben. Wel zullen de gegevens een toekomstige verbetering van het verhuisproces binnen innovatieve woonzorgomgevingen kunnen betekenen.

Toestemming voor het onderzoek

Indien u geen problemen heeft met dat wij bovengenoemde gegevens verzamelen, willen wij u vragen het bijgevoegde formulier in te vullen. Ook indien u niet wenst mee te werken aan het onderzoek vragen wij u vriendelijk het formulier in te vullen.

Uw besluit om dit formulier wel/niet in te vullen zal op geen enkele wijze invloed op u hebben. Uw medewerking aan het onderzoek is geheel vrijwillig en u bent vrij om op elk gewenst moment uw

² Dit project is onderdeel van het project ‘Verhuizen in het verpleeghuis’. *“Het project Verhuizen in het Verpleeghuis is een gezamenlijk project van de Samenwerkende Academische Netwerken Ouderenzorg (SANO), bestaande uit: de Academische Werkplaats Ouderenzorg Limburg, het Universitair Kennisnetwerk Ouderenzorg Nijmegen, Tranzo Academische Werkplaats Ouderen, het Universitair Netwerk voor de Care sector Zuid-Holland, het Universitair Netwerk Ouderenzorg Amsterdam en het Universitair Netwerk Ouderenzorg van het Universitair Medisch Centrum Groningen”*

medewerking aan het onderzoek af te breken zonder hiervoor een reden te geven. Ook het beëindigen van de medewerking zal op geen enkele manier invloed op u hebben.

Vertrouwelijkheid van de gegevens

Alle onderzoeksgegevens zullen vertrouwelijk worden behandeld en uw anonimiteit wordt gegarandeerd. Doordat de gegevens anoniem verwerkt worden, zijn deze niet meer herleidbaar naar individuele personen. Uw gegevens zullen 15 jaar worden bewaard op de onderzoekslocatie: Universiteit van Maastricht. De leden van het onderzoeksteam en toezichthoudende autoriteiten kunnen toegang krijgen tot de data die verzameld wordt. Dit is nodig om te kunnen controleren of het onderzoek goed en betrouwbaar is uitgevoerd. Personen die ter controle inzage krijgen in uw gegevens zijn: dr. Bram de Boer (onderzoeker binnen dit project), prof. dr. Hilde Verbeek (onderzoeker binnen dit project), dr. Wim Groen (onderzoeker binnen dit project) en nationale en internationale toezichthoudende autoriteiten, bijvoorbeeld, de inspectie Gezondheidszorg en Jeugd. Zij houden uw gegevens geheim. Wij vragen u voor deze inzage toestemming te geven.

Wat gebeurt er als het onderzoek is afgelopen?

U zult op de hoogte gehouden worden van de resultaten van het onderzoek via een nieuwsbrief die wij zullen verspreiden via de verschillende zorginstellingen die deelnemen aan het onderzoek.

Als u vragen heeft

Bij vragen kunt u contact opnemen met Mara Brouwers. Indien u klachten heeft over dit onderzoek, dan kunt u dit bespreken met de hoofdonderzoeker (Mara Brouwers) of coördinerend onderzoeker (Bram de Boer). Wilt u dit liever niet, dan kunt u zich wenden tot de klachtenfunctionaris van Maastricht Universiteit.

Namens de onderzoeksgroep,

Met vriendelijke groet,

Mara Brouwers, onderzoeker

T:

E:

coördinerend onderzoeker: dr. Bram de Boer

Bijlagen bij deze informatie

- A. Contactgegevens
- B. Toestemmingsverklaring

Bijlage B: toestemmingsverklaring**Verhuizingen binnen innovatieve woonzorgconcepten voor ouderen**

- Ik heb de informatiebrief gelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is. Ook weet ik dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik geef toestemming voor het verzamelen en gebruiken van mijn gegevens voor de beantwoording van de onderzoeksvraag in dit onderzoek.
- Ik weet dat voor de controle van het onderzoek sommige mensen toegang tot mijn gegevens kunnen krijgen. Die mensen staan vermeld in deze informatiebrief. Ik geef toestemming voor inzage door deze personen.
- Ik geef
 - wel**
 - geen** toestemming om mijn persoonsgegevens langer te bewaren en te gebruiken voor toekomstig onderzoek op het gebied van verhuizingen binnen innovatieve woonzorgconcepten.
- Ik wil meedoen aan dit onderzoek.

Mijn naam: **dhr / mw** _____

Contactgegevens:

Telefoonnummer: _____

Mailadres (indien van toepassing): _____

Ik wil graag per e-mail op de hoogte gehouden worden van de resultaten van dit onderzoek en ander onderzoek dat wordt uitgevoerd door de Academische Werkplaats Ouderenzorg (www.academischewerkplaatsouderenzorg.nl). Ik meld me daarom aan voor de nieuwsbrief (vink aan indien van toepassing).

Uw naam:

Handtekening:

Datum : __/ __/ __

Ik verklaar dat ik deze proefpersoon volledig heb geïnformeerd over het genoemde onderzoek.

Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de proefpersoon zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker:

Handtekening:

Datum: __/ __/ __

De proefpersoon krijgt een volledige informatiebrief mee, samen met een kopie van het getekende toestemmingsformulier

Appendix G. Information Document for Residents with Dementia**Toestemmingsformulier Deelname Onderzoek****Doel van dit onderzoek**

Het doel van dit onderzoek is om meer te weten te komen over uw ervaringen met [naam locatie]. Wij zijn geïnteresseerd in uw behoeftes en wensen. Ook willen we meer weten over wat technologie voor u zou kunnen betekenen.

Wat is belangrijk om te weten?

U doet mee aan een interview van max. 1 uur met een afstudeerder van de universiteit. U beslist zelf of u meedoet aan het onderzoek. Meedoen is vrijwilliger. Doet u mee aan het onderzoek? Dan kunt u zich altijd bedenken. U mag tijdens het onderzoek stoppen. U hoeft niet te zeggen waarom u stopt. Als u hiervoor toestemming geeft, verzamelen we tijdens het onderzoek geluidsopnamen.



Uw gegevens worden gebruikt zonder uw naam erbij. Uw gegevens blijven dus **anoniem**. De uitkomsten van het onderzoek zullen in wetenschappelijke publicaties beschreven worden. Deze uitkomsten kunnen gedeeld worden met derden.

Om mee te doen is uw schriftelijke toestemming nodig. Voordat u beslist of u wilt meedoen aan dit onderzoek, is het belangrijk om deze toestemmingsverklaring goed door te lezen en te begrijpen wat meedoen betekent. Lees deze informatie rustig door en stel alle vragen die u heeft.

Bij wie moet u zijn voor vragen?

Dit onderzoek wordt uitgevoerd door een studente van de Technische Universiteit in Eindhoven. U kunt met Leonie Copraij contact opnemen met vragen over het onderzoek. Leonie wordt begeleid door twee professoren van de universiteit.



Leonie Copraij
TU Eindhoven
l.a.copraij@student.tue.nl
(tel. Nummer)

Begeleider 1: Professor dr. Wijnand IJsselsteijn
TU Eindhoven
W.A.IJsselsteijn@tue.nl

Begeleider 2: ir. Ans Tummers
TU Eindhoven
a.i.m.tummers-heemels@tue.nl

Toestemmingsformulier (1 voor u)

Ik heb de informatiebrief gelezen.

Ik kon vragen stellen. Mijn vragen zijn beantwoord.

Ik had genoeg tijd om te beslissen of ik meedoe.

Ik weet dat meedoen vrijwillig is. Ik weet dat ik op ieder moment kan

beslissen om toch niet mee te doen. Daarvoor hoef ik geen reden te geven.

Ik geef toestemming om mijn gegevens te gebruiken, voor de doelen die in de informatiebrief staan.

Ja, ik wil meedoen aan dit onderzoek.

Naam: _____

Handtekening: _____

Datum: _____

----- dit gedeelte in te vullen door onderzoeker -----

Ik heb deze deelnemer alle beschikbare informatie gegeven. Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de deelnemer zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam:

Handtekening:

Datum:

Appendix H. Unstructured Interview Guide for Residents with Dementia**Facilities A, B, and E***Leonie Copraij – 14-04-2022*

Locatie: neem de interviews af in een stille en voor de bewoner bekende omgeving.

Begin met een gesprek om het ijs te breken, over iets algemeen, zoals het weer, het uitzicht of iets wat die persoon aan het doen is. Dit helpt de persoon zich op gemak voelen.

Demografische gegevens:

- Leeftijd en geslacht
- Jaren woonachtig in de woonvorm

Technologie in de ruimte:

Probeer te kijken naar de technologie die aanwezig is in de ruimte waar je je bevind, zoals een televisie, sensoren, camera's etc. Vraag de persoon hiernaar en kijk of zij de technologie herkennen en wat ze erover kunnen zeggen. Je kunt ook naar spullen kijken die aanwezig zijn in de kamer van de persoon, zoals foto's om bepaalde vragen toe te lichten of door te kunnen vragen.

Inleiding interview: ik wil het graag met u hebben over hoe u het wonen hier ervaart. Ik ben geïnteresseerd in uw mening en uw behoeftes, ook specifiek betreft technologie. Graag zou ik beginnen met een algemene vraag: hoe bevalt het wonen hier?	
Hoofdvraag	Interviewvragen
Algemene indruk woonvorm	<p>Waarom bent u hier komen wonen?</p> <ul style="list-style-type: none"> • Bewuste keuzen? • Wat waren uw drijfveren? <p>Hoe bevalt het wonen hier?</p> <ul style="list-style-type: none"> • Wat vind je fijn? • Wat vind je niet fijn? <p>Voelt u zich veilig hier?</p> <p>Hoe voelt u zich op dit moment? Bent u vrolijk? Bent u moe?</p>
Waar worden mensen met dementie blij van?	<p>Ik verzamel graag dromen en verlangens...:</p> <p>Waar wordt u blij van?</p> <p>Waar droomt u van?</p> <p>Hoe ziet een geluismoment voor u eruit?</p> <p>Verveelt u zich wel eens? Wat gaat u dan doen?</p> <p>Bent u creatief?</p> <ul style="list-style-type: none"> • Waarin bent u creatief? <p>Wat vind u belangrijk in het leven?</p> <p>Waar kunt u boos over worden?</p> <ul style="list-style-type: none"> • Waar kunt u verdrietig over worden? <p>Waar bent u dankbaar voor in uw leven?</p> <p>Wat zou u doen als u de loterij zou winnen?</p>

<p>Wat hebben mensen met dementie nodig in hun woning? – algemeen</p>	<p>Hoe ziet uw droomhuis eruit? (roep wellicht op tot tekenen of teken zelf)</p> <ul style="list-style-type: none"> • Is er een boven en beneden? • Zou u een groot huis willen hebben of juist een knus huisje? • Wilt u wonen in de stad of in de natuur? • Woont u liever alleen of samen met anderen? • Vind u het belangrijk om veel ramen te hebben in uw huis? Waarom wel/niet? • Vind u het belangrijk om veel planten te hebben? • Hoe belangrijk is een tuin voor u? <p>Ziet u iets in deze ruimte waar u zuinig op bent?</p> <ul style="list-style-type: none"> • Welke spullen in uw huis zijn belangrijk? <p>Bent u iemand die graag thuis is of gaat u graag naar buiten?</p> <p>Bent uw nieuwsgierig naar nieuwe uitvindingen?</p> <ul style="list-style-type: none"> • Waarom juist wel of niet? • Kunt u een voorbeeld geven?
<p>Wat hebben mensen met dementie nodig in hun woning? – communicatie</p>	<p>Wie ziet u nog graag? Met wie babbel je graag? Telefoneert u vaak op een dag?</p> <ul style="list-style-type: none"> • Vind u dat een prettige manier van praten met mensen? <p>Babbel je graag met anderen?/ Houdt u wel eens een praatje met anderen?</p> <p>Is er genoeg gezelligheid in deze ruimte?</p> <p>Zou techniek u hierbij kunnen helpen?</p> <p>Naar foto's kijken en vragen hoe het contact is tussen hen (familie/vrienden)</p>
<p>Wat hebben mensen met dementie nodig in hun woning? – eigen regie</p>	<p>Hoe ziet uw dag eruit? Hoe staat u op? Wie maakt uw ontbijt? Waar zou u hulp bij kunnen gebruiken?</p> <ul style="list-style-type: none"> • Zou u hiervoor techniek willen inzetten? <p>Wat zou u graag nog zelf blijven doen?</p> <ul style="list-style-type: none"> • Wat zou u daarbij kunnen helpen? <p>Welke taken heeft u in het huishouden?</p> <ul style="list-style-type: none"> • Wat is leuk in het huishouden? • Waaraan heeft u een hekel?
<p>Ending on a positive note</p>	<p>Eindig met iets positiefs: Bedankt voor uw bijdrage, u heeft mij ontzettend goed geholpen! Geef het presentje Compliment geven, grapjes maken</p>
<p>Impressie van het gesprek</p>	<p>Wat was de houding van de persoon, hoe verliep het gesprek?</p>

(onderzoeker zelf, notities)	Wat verliep goed in het gesprek? Wat verliep minder vlot in het gesprek, of waar liep ik vast? Had ik iets anders aangepakt nu ik erop terugblik?
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Facility C

Leonie Copraij – 01-05-2022

- Inleiding gesprek:
 - o voorstellen,
 - o korte uitleg onderzoek: *Het doel van dit onderzoek is om ervaringen met deze nieuwe woonvorm en met technologie binnen de dementiezorg in kaart te brengen. De verkregen informatie wordt gebruikt om het [naam locatie] concept te valideren en te kijken naar mogelijkheden voor technologie binnen deze woonvorm.*
- Toestemmingsformulier introduceren en laten lezen/ondertekenen
 - o Ik zou het gesprek graag opnemen, bent u daar akkoord mee?
- Demografische gegevens:
 - Leeftijd en geslacht
 - Maanden/jaren woonachtig in de woonvorm

Inleiding interview: ik wil het graag met u hebben over hoe u het wonen hier ervaart. Ik ben geïnteresseerd in uw mening en uw behoeftes, ook specifiek betreft technologie. Graag zou ik beginnen met een algemene vraag: waarom bent u hier komen wonen?	
Hoofdvraag Algemene indruk woonvorm	Interviewvragen Waarom bent u hier komen wonen? <ul style="list-style-type: none"> • Bewuste keuzen? • Wat waren uw drijfveren? Hoe bevalt het wonen hier? <ul style="list-style-type: none"> • Wat vind je fijn? • Wat vind je niet fijn? • Waar heb je moeite mee? Voelt u zich veilig hier? Wat voor een cijfer zou u deze woonvorm op dit moment geven? <ul style="list-style-type: none"> • Waarom?
Wat ervaren ze als innovatief?	Wat vind u innovatief aan deze woonvorm? <ul style="list-style-type: none"> - Fysieke ruimtes, zoals het Hart van [naam locatie] - Sociale omgeving/ hoe jullie binnen [naam locatie] met elkaar omgaan? - Organisatorische omgeving/ hoe [naam locatie] is georganiseerd Bent u iemand wie graag nieuwe dingen probeert?

<p>Wat vinden bewoners van de verschillende domeinen?</p>	<p>Hoe bevallen de verschillende domeinen? Wat zou volgens u het doel zijn van deze ruimtes?</p> <ul style="list-style-type: none"> - Binnentuin - Keuken - Familiekamer - Café <p>Waar zit u zelf het meest?</p> <p>Wat zou leuk zijn om erbij te hebben?/ Wat zou je willen toevoegen?</p>
<p>Kwaliteit van leven en beeld van de toekomst?</p>	<p>Bent u gelukkig hier?</p> <ul style="list-style-type: none"> • Waarom? Wat maakt het dat u hier gelukkig bent? • Wat betreft uw zelfredzaamheid? <p>Wat zou u later nodig hebben om hier prettig te kunnen blijven wonen?</p> <p>Waar ben je bang voor, betreft uw woonsituatie?</p>
<p>Vragen over technologie</p> <p>Nu zou ik het specifiek willen hebben over het gebruik van technologie en hoe u daar tegenover staat.</p>	
<p>Wat zou techniek kunnen betekenen voor de bewoners?</p>	<p>Waar zou u techniek voor in willen zetten?</p> <ul style="list-style-type: none"> • Communicatie met familie/vrienden/zorgprofessionals • Zelfredzaamheid/ eigen regie • Bewegen, gezelligheid, spelletjes, dagbesteding • Veiligheid <p>Wat zou voor u de belangrijkste reden zijn om techniek in te zetten? (zie lijstje hierboven)</p> <ul style="list-style-type: none"> • Wat zouden de voordelen zijn voor uzelf? • Wat zouden de nadelen zijn? Waar is techniek niet geschikt voor?

<p>Vragen specifiek voor mensen met dementie/NAH</p>	
<p>Algemene indruk woonvorm</p>	<p>Waarom bent u hier komen wonen?</p> <ul style="list-style-type: none"> • Bewuste keuzen? • Wat waren uw drijfveren? <p>Hoe bevalt het wonen hier?</p> <ul style="list-style-type: none"> • Wat vind je fijn? • Wat vind je niet fijn? • Waar heb je moeite mee? <p>Voelt u zich veilig hier?</p>

<p>Waar worden mensen met dementie blij van?</p>	<p><i>Ik verzamel graag dromen en verlangens...:</i></p> <p>Waar wordt u blij van? Waar droomt u van? Hoe ziet een geluuksmoment voor u eruit? Verveelt u zich wel eens? Wat gaat u dan doen? Bent u creatief?</p> <ul style="list-style-type: none"> • Waarin bent u creatief? <p>Wat vind u belangrijk in het leven?</p> <p>Waar kunt u boos over worden?</p> <ul style="list-style-type: none"> • Waar kunt u verdrietig over worden? <p>Waar bent u dankbaar voor in uw leven?</p> <p>Wat zou u doen als u de loterij zou winnen?</p>
<p>Wat hebben mensen met dementie nodig in hun woning? – algemeen</p>	<p>Hoe ziet uw droomhuis eruit? (<i>roep wellicht op tot tekenen of teken zelf</i>)</p> <ul style="list-style-type: none"> • Is er een boven en beneden? • Zou u een groot huis willen hebben of juist een knus huisje? • Wilt u wonen in de stad of in de natuur? • Woont u liever alleen of samen met anderen? • Vind u het belangrijk om veel ramen te hebben in uw huis? Waarom wel/niet? • Vind u het belangrijk om veel planten te hebben? • Hoe belangrijk is een tuin voor u? <p>Ziet u iets in deze ruimte waar u zuinig op bent?</p> <ul style="list-style-type: none"> • Welke spullen in uw huis zijn belangrijk? <p>Bent u iemand die graag thuis is of gaat u graag naar buiten?</p> <p>Bent uw nieuwsgierig naar nieuwe uitvindingen?</p> <ul style="list-style-type: none"> • Waarom juist wel of niet? • Kunt u een voorbeeld geven?
<p>Wat hebben mensen met dementie nodig in hun woning? – communicatie</p>	<p>Wie ziet u nog graag? Met wie babbelt u graag? Telefoneert u vaak op een dag?</p> <ul style="list-style-type: none"> • Vind u dat een prettige manier van praten met mensen? Babbelt u graag met anderen?/ Houdt u wel eens een praatje met anderen? <p>Is er genoeg gezelligheid in deze ruimte?</p>

	Zou techniek u hierbij kunnen helpen? <i>Naar foto's kijken en vragen hoe het contact is tussen hen (familie/vrienden)</i>
Wat hebben mensen met dementie nodig in hun woning? – eigen regie	Hoe ziet uw dag eruit? Hoe staat u op? Wie maakt uw ontbijt? Waar zou u hulp bij kunnen gebruiken? <ul style="list-style-type: none"> • Zou u hiervoor techniek willen inzetten? • Wat zou u graag nog zelf blijven doen? • Wat zou u daarbij kunnen helpen? Welke taken heeft u in het huishouden? <ul style="list-style-type: none"> • Wat is leuk in het huishouden? • Waaraan heeft u een hekel?
Ending on a positive note	Eindig met iets positiefs: Bedankt voor uw bijdrage, u heeft mij ontzettend goed geholpen! Geef het presentje <i>Compliment geven, grapjes maken</i>

Addition for Facility D

Ervaringen van bewoner rondom de verhuizing		
Inleiding interview: Ik wil het graag met u hebben over de verhuizing die heeft plaatsgevonden. Ik ben vooral geïnteresseerd in hoe u deze verhuizing heeft ervaren en wat u als positief en negatief hebt ervaren tijdens het verhuizen. Hier zullen de meeste vragen dan ook over gaan. Graag zou ik willen beginnen met een brede algemene vraag: Hoe bevalt uw nieuwe huis?		
Hoofdvraag	Interviewvragen	Categorie
Hoe heeft de bewoner het verhuizen van of naar een innovatief woonzorgconcept ervaren?	Hoe bevalt uw nieuwe huis?	Initiële vraag
	Hoe is de aanloop naar de verhuizing verlopen? <ul style="list-style-type: none"> • Wat vond u van de oude locatie? • Wat is de reden van uw verhuizing? Is de verhuizing vrijwillig of niet? • Op welke wijze werd u voorbereid op de verhuizing? • Wanneer werd u geïnformeerd over de verhuizing? • Wat vond u van het nieuws dat u ging verhuizen? • Heeft u de nieuwe locatie voor de verhuizing gezien en/of bezocht? • Zo ja, hoe heeft u dit bezoek ervaren? • Hoe heeft u de weken voor het verhuizen ervaren? 	Aanloop verhuizing
Welke aspecten heeft hij/zij als negatief ervaren en welke als positief?		

Hoe ziet het sociale netwerk van de bewoner eruit?	<p>Hoe is de verhuizing zelf verlopen?</p> <ul style="list-style-type: none"> • Zou u me stap voor stap uit kunnen leggen hoe de verhuizing is verlopen? (Bijvoorbeeld, hoe zijn spullen verhuist, welke wijze van vervoer, samen met andere bewoners of alleen verhuist etcetera) • Vond u de verhuizing goed georganiseerd? Zo ja, waarom wel? Zo nee, waarom niet? • Hoe heeft u de verhuizing ervaren? 	Verhuizing
	<p>Hoe is het gewennen aan uw nieuwe huis verlopen?</p> <ul style="list-style-type: none"> • Hoe heeft u de eerste week na de verhuizing ervaren? • Op welke wijze werd u geholpen aan de nieuwe omgeving te wennen? 	Nasleep verhuizing
	<p>Hoe bevalt de nieuwe omgeving?</p> <ul style="list-style-type: none"> • Hoe bevalt de nieuwe indeling van de gebouwen? • Hoe bevalt de nieuwe werkwijze van het personeel? • Hoe bevallen de nieuwe faciliteiten? 	Nieuwe locatie