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## Implementing welfare technologies

### On wash toilets and self-reliant citizens

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# Implementing welfare technologies

## On wash toilets and self-reliant citizens

Anne Marie Dahler, Lis Holm Petersen & Pernille Tanggaard Andersen

*Welfare technology, along with science and innovation, is often presented as a means to solve what is referred to as the demographic challenge: an ageing population with more chronic diseases, fewer resources and fewer hands to take care of their needs. In this paper, the focus is on implementation practices regarding the use of welfare technologies for elderly people, exemplified by the implementation of the wash toilet in a specific municipality. Adhering to a socio-material view on technologies, the article focuses on how welfare technologies are enacted in terms of what they are expected to do and what kind of elderly people they are expected to produce. Based on an analysis of national and local strategies, and interviews with employees involved in various aspects of implementation, it is found that legislations, policy strategies, rehabilitation and the business-case logic enact welfare technologies/the wash toilet with different expectations and notions of the citizen, namely the self-reliant citizen, the compensated citizen and the independent (of rehabilitation) citizen. The paper discusses identified tensions within and between these enactments. The main contribution of the article is to make visible the various versions of welfare technology, enacted by different socio-technical techniques involved in the implementation of welfare technologies and thereby to question the naturalised link between welfare technology and self-reliance.*

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<sup>1</sup> This and the following citations from policy documents, as well as interviews, have been translated by the authors.

## Introduction

The Danish National Board of Health and Welfare states on its homepage that “Welfare technologies in the social field contribute to high quality and more effective welfare services. Welfare technology supports self-reliance and empowerment. Welfare technology can also be used to provide preventive and coherent social interventions”<sup>1</sup> (National Board of Health and Welfare, 2017). Here, as in other political strategies regarding welfare technologies, the technologies are presented, together with science and innovation, as a means to solve what is often negatively described as the demographic challenge or elder burden, where an ageing population with more chronic diseases is expected to go hand in hand with fewer resources and fewer hands to take care of their needs (Aceros, Pols, & Domènech, 2015; Liveng, 2014; Peine, Faulkner, Jæger, & Moors, 2015). The key idea is that welfare technologies, qua their specific functionalities, enable users to do things on their own which they would otherwise need assistance for, or that they change workflows in ways that reduce workloads and attrition in care workers. Welfare technology is a Danish term, as the common English terms for technological aids for elderly or disabled people include assistive technology, assistive devices, health technology, and similar terms, and, in a Danish context, welfare technology is primarily provided as an element of welfare services.

In this paper, we want to expand the understanding of how welfare technologies become intertwined with specific normativities by attending to the implementation practices in which they are enacted. Here, we use the term implementation practices more broadly, to cover the various practices involved in the provision of welfare technologies in the municipality, for example, strategy making, planning, project management, needs assessment and visitation practices. Drawing on Mol’s (2002) notion of how things are not given but rather enacted in practices, by those related to them in these practices,

and also drawing on Akrich's analysis of how technologies are scripted with various expectations of their intended users, the question we intend to answer is how welfare technologies are enacted in these practices in terms of what they are expected to achieve for their users, i.e. the role they are expected to play (Akrich, 1992).

Knowing that welfare technology is a broad category of technologies, we address both welfare technologies in general and the wash toilet more specifically. Wash toilets are explicitly mentioned in the Danish Strategy for Implementation and Dissemination of Digital Solutions and Welfare Technologies, issued by the Danish Government, the Regions and the Danish Municipalities in 2013 as a technology that all municipalities must test in the period of 2013-2017 (Regeringen, Kommunernes Landsforening, & Regionerne, 2013). The wash toilet is, in this context, a seat that you place on the top of an ordinary toilet. After using the toilet, the user presses one or more buttons, whereby his or her posterior is first washed and then dried. Washing and drying takes around 6-8 minutes in total.

The materials generated for the empirical work are national and local/municipal policy strategies regarding the implementation of wash toilets and interviews with employees involved in implementation practices in a larger Danish municipality. By attending to these practices, we find that various socio-technical techniques, such as policy strategies, legislation, business-case logic and rehabilitation take part in and enact different versions of welfare technology, and that these versions concern themselves with different ageing bodies and versions of (in)dependence. The analysis also points to tensions within and between these enactments and the main contribution of the article then is to question the taken-for-granted-ness of the association between welfare technology and the making of self-reliant citizens.

## **STS, welfare technology and normativities**

The study is informed by Science and Technology Studies (STS), which takes into account the broader socio-material networks within which technologies are embedded and focuses on the transformative effects they have on work, knowledge and power (Langstrup, Iversen, Vind, & Erstad, 2013). With regard to welfare technologies, an STS approach has primarily been applied in studies of the relationship between: 1) design and use of technologies (Brodersen, Hansen, & Lindegaard, 2015; Brodersen & Lindegaard, 2014), and 2) implementation of welfare technologies (primarily telemedicine) and how it affects care (Hout, Pols, & Willems, 2015; Langstrup et al., 2013; Meldgaard Hansen & Kamp, 2016; Nickelsen, 2015; Oudshoorn, 2009; Oudshoorn, 2008; Pols, 2010).

A few studies have dealt with aspects of ambitions/expectations of technologies in policy strategies/recommendations and/or implementation practices. Jensen and Winthereik approach policy as an intertwining of humans, technologies and discourses, and attend to what they call political and moralising moments in order to articulate invisible political processes in the domain of healthcare and IT (Bruun Jensen & Ross Winthereik, 2002). From this point of departure, they view policy strategies and recommendations regarding IT in Danish healthcare as material agents enrolled in the work of producing, negotiating and stabilising visions of healthcare. These documents have, they find, the ability to carry contradictory messages, and this flexibility is a specific feature of this kind of report. It is through, and by means of, such documents that "the natural cause of action" is shaped and defined (Bruun Jensen & Ross Winthereik, 2002).

In her study of 20 e-health policy and related documents from the European Union regarding telemedicine, Andreassen (2012) also addresses policies regarding technologies, and finds that policy rhetoric on patient involvement through telemedicine relies on aspects of information and consumerism. Paradoxically, this rhetoric has the unintended effect of strengthening the opposing ideal of the compliant patient. Her study points to the normativities in those documents and

to how they define technology users and/or patients in terms of needs and obligations.

With a focus on implementation, Nickelsen addresses how policy aims/success criteria such as cost saving, quality and flexibility are balanced in practice, and the role played by the specific technology in balancing these criteria (Nickelsen, 2015). From a post-human perspective, he points to agency as a characteristic of socio-material assemblages, and not solely as a human undertaking. Following this, he studies the implementation of feeding robots by attending to mobile assemblages of feeding robots, disabled bodies, professional values and social policy, finding that the implementation of these robots is followed by changes in management tasks and care tasks, as well as new care subjects and institutions (Nickelsen, 2015).

Our aim is to investigate how welfare technologies are intertwined with normativities in terms of what they are expected to achieve for their users, and we therefore attend to the practices involved in the provision of the technologies. Drawing on the insights of the above-mentioned studies, implementation practices are approached as involving various heterogeneous agents such as, for example, management, political, technology, and professional values (Nickelsen, 2015). More than being 'visions from above', we approach strategies and other documents as material agents enrolled in the work of producing, negotiating and stabilizing visions of welfare technologies, and at the same time envisioning the users of these technologies (Bruun Jensen & Ross Winthereik, 2002; Andreassen, 2012).

As we are interested in normativities by and in the wash toilet, we attend to implementation practices and how welfare technologies are enacted and scripted in these practices. Objects, as welfare technologies, are neither to be understood as an objective reality or as subjective constructions, but rather as enacted in various practices, where they participate in events that occur and plays that are staged (Mol, 2002). By attending to the practices in which objects – as, in this case, welfare technology, or, more specifically, wash toilets – are enacted,

we focus on multiple versions of the wash toilet and the normativities enacted in these practices.

Akrich addresses normativity through the notion of script, in the sense that this notion concerns the role of objects in relation to other human and non-human actors (Akrich, 1992). The notion of script implies that technologies may be analysed like a play, where characters are defined and roles and relations between actors (human and non-human) are set (Akrich, 1992). The notion of script has been used in numerous studies in the field of care technologies, often with a focus on the design of technologies, but also in analysing what values technologies embody for their users by attending to the practices in which they are used (Pols & Moser, 2009). In this study, where the focus is on the enactments of wash toilets in implementation practices, we find the notion of script helpful, because it directs attention to the various actors involved (human and non-human), the relations between actors, the roles of actors, and hence what Akrich terms 'the geography of responsibilities' regarding welfare technologies (Akrich, 1992).

Taken together, the work of Mol and Akrich is used in this article to analyse how wash toilets are scripted in terms of the role they are set to play in municipal practices and, in particular, the types of self-reliant elderly citizens they are supposed to produce.

## Methods and Materials

Materials generated for the empirical work are national and local/municipal political strategies regarding the implementation of welfare technologies, and also a case study in a large Danish municipality, observational notes, local documents and interviews with employees from different organisational units involved in various practices regarding welfare technologies. The way this municipality handles welfare technologies is not representative of all municipalities. However, although different municipalities have organised their work with welfare technologies differently, all municipalities share a

number of important agents, such as laws and regulations, changing values in welfare institutions and the requirement of cost reductions in eldercare.

Strategies and other documents are relevant because documents of various sorts play a central role in modern organisations, where, among others, they can be seen as an attempt to establish order in a complex world, in order to take governance initiatives (Gad, 2010; Järvinen & Mik-Meyer, 2005). Documents can be seen as a physical inscription, where something is held true or where meaning is anchored for a time or, in Gad's (2010) formulation, where society and nature are made durable (Dahler-Larsen, 2005). For the purpose of this study, it is interesting to investigate which presentations of welfare technologies the various documents attempt to make durable. The included documents are important with regard to investigating normativities and subjectivities in welfare technologies because they state, in terms of descriptions of and expectations towards the technologies, what kind of society and what kind of lives are regarded as desirable.

A central document in the study is the Danish National Strategy for Digitalization and Welfare Technology, which was issued by the Government, the Municipalities and the Regions in 2013 (Regeringen, Kommunernes Landsforening, & Regionerne, 2013). The document is important because it represents the actual political strategy on the dissemination of welfare technologies. Municipalities are obliged to follow the strategy and also return data on the dissemination of specific technologies every year. The wash toilet is mentioned explicitly in this strategy. Moreover, local municipal strategies, notes and action plans regarding the wash toilet are included in the study, as well as the annual report from the municipality.

Interviews were conducted by the first author with employees from wards concerned with various tasks relating to welfare technologies, planning, implementation, needs assessment and referral. With the exception of employees from a cross-cutting ward in the administration, the Center for Welfare Technology, which is in charge of the

general planning in the municipality regarding welfare technology, the wards are situated in the Department for Ageing and Disability. This department is the largest consumer of welfare technologies in the municipality. An overview of the interviews is provided below:

	Individual	Group	Comment
Project manager	1		Responsible for the implementation of wash toilets. - Formal interview, and several meetings and phone calls.
Center for Welfare Technology		2	Responsible for overall planning and strategies regarding welfare technology across departments in the administration. - Formal interview and participation in meetings.
Implementation Unit		5	Employees working with needs assessment, implementation and project management in the Department for ageing and Disability.
Referral Unit		3	Referring according to law. Formal interview.
Electrician	1		Installation of toilets and information regarding use. Focus on the High Voltage Regulation. Formal interview.

Table 1. List of interviews.

Besides interviewing, the first author took part in various meetings regarding the implementation of wash toilets and was in frequent contact with the Project Manager and a contact person in the Center for Welfare Technology.

Documents, as well as interviews, were analysed with inspiration from the mapping strategies from Situational Analysis, as the data were coded and situational and relational maps were utilised in order to 'open up' data (Clarke, 2005). This made visible the various (individual, collective, non-human, discursive, temporal) agents and elements in the situation, the relations between these elements, and major issues and debates in the situation. The analysis has subsequently been guided by the research questions by examining how wash toilets are scripted in terms of the role they are set to play, their relation to other agents, how responsibility is distributed, and what kind of users they produce. As an introduction to the analysis, a brief case story of the implementation of wash toilets in the municipality is presented.

## The case of the wash toilet

The wash toilet was introduced in the municipality in the beginning of 2013. After the trial period with four test subjects, the decision was made to implement wash toilets in the municipality. This was based on a positive business case in another large municipality, and testing and implementation had started before the national strategy was published.

From the outset, the intention in July 2013 was to distribute 390 wash toilets within a year on a project basis, funded by a public grant allocated for welfare technology. The toilets were to be distributed as a working device for employees according to §42 of the Work Environment Act. The toilets were to be distributed to citizens who had been referred to the modules, demanding most human resources, according to the categorisation system for care provision in the municipality. The care workers were asked to point out potential users within these modules, and then the manager of the care unit could order a toilet, in accordance with the Work Environment Act.

The business case from the other municipality had, however, shown that only very few citizens would actually become self-reliant by using the toilet. The wash toilet had other benefits, according to

this other municipality, for instance, reducing skin problems, improving work posture, improving quality of life for the citizens and had also a cost-saving potential. In October 2013, a "Business Case Light" was drafted, and it concluded that the employees would save 2 minutes per toileting for other tasks.

A little more than a year later, 95 toilets had been installed. Of these, 64 toilets were installed in one care centre, 20 in private homes with homecare and 11 in other places. However, 295 toilets were still in stock. Of the 64 toilets in the care centre, an audit had shown that only 23 were in use, due to dementia, cognitive challenges, bedridden citizens, etc. The homecare units had not been able to identify potential users in the defined modules, the toilets were too small for obese users, in some places installing the toilets conflicted with the High Voltage Regulations and/or with workflows in care homes. During the summer of 2014, the target group had been extended to include citizens who received less care. Only one had accepted a visit. By the end of 2015, 133 toilets had been installed, and a new action plan was drafted, including a wider target group, and also training of both employees and citizens in the use of wash toilets was planned. Regarding the new target groups, there would be an overall budget reduction in the care units for each toilet installed.

In the municipality, the wash toilet was also provided as an 'assistive aid' to citizens, with reference to the Social Services Act, but mainly to citizens who had not previously received homecare. Firstly, the toilet was allocated as a 'consumer benefit' (§113.3), which means that the citizens have to pay 50% of the expenses themselves. The National Appeal Board rejected this decision and decided that the toilet should be given as a 'home alteration' (§116), requiring that the citizen has a permanent disability and that the change is necessary to make his/her home a more suitable residence.

This story shows that the wash toilet is intervening in an already existing network of heterogeneous agents as various potential users (managers of care units, administrators, employees or the elderly/citizens with disability), various laws and regulations (Social Services

Act, the Work Environment Act, High Voltage Regulations) and various organisational constructs, such as the 'positive business case', 'business case light' and 'the self-reliant citizen'. The problems that wash toilets are expected to solve thus concern work postures, skin problems, (lack of) dignity and reliance on welfare services and also saving costs, though distribution has been problematic.

In the next sections, the ways in which these expectations towards the toilet were inscribed and enacted and also towards welfare technologies in general, in terms of the roles and relations they take, and what kind of citizens they are expected to promote, will be elaborated upon. Based on an analysis of the empirical material, we have found that legislation, policy strategies, rehabilitation and the business-case logic enact welfare technologies/the wash toilet with different expectations and notions of the citizen, e.g. the self-reliant citizen, the compensated citizen and the independent citizen (of rehabilitation). Subsequently, the paper discusses identified tensions within and between these enactments.

### **A win-win-win situation: Welfare technology, self-reliant citizens and cost reductions**

Policy strategies are primarily referred to by employees who are involved in strategic practices or planning practices regarding welfare technology. Representatives from the Center for Welfare Technology (CFW), a unit which is responsible for overall planning and strategies regarding welfare technology across departments in the administration, have been taking part in meetings regarding the drafting of the strategy, 'Digital Welfare. An easier life' (DW), which is the Danish national strategy for the implementation and dissemination of digital solutions and welfare technology, and interviewees from both CFW and Department for Ageing and Disability (ÆHF), who are responsible for all aspects of home care services to elderly citizens and citizens with disabilities, have been involved in drafting the local strategy (Regeringen, Kommunernes Landsforening, & Regionerne, 2013).

Common to the national and the local strategy, is that welfare technology is expected to enhance the quality of life for citizens and make them self-reliant, reducing attrition of employees, freeing up time and resources, and thereby reducing costs, while at the same, in collaboration with companies and educational institutions, creating growth. In this sense, welfare technologies go hand in hand with self-reliant citizens, a reduction of attrition among employees, growth and cost reductions to solve the increasing burden of elderly and chronically ill citizens, who are dependent on welfare services.

DW describes various initiatives for digital welfare in different societal sectors. One of the focal points, "Welfare Technology in Care Work", describes four welfare technology solutions, which are expected to be deployed nationwide in the municipalities in 2017 (Regeringen, Kommunernes Landsforening & Regionerne, 2013). One of these solutions is the wash toilet (ibid.). DW states that the point of departure for the strategy is that, in the future, there will be more elderly, more people with chronic diseases, more children and young adults in education and more people with functional impairments (ibid). The public sector is under pressure and must adjust to societal changes. 'Technological development' represents the answer to the challenges of the welfare society in the form of digitalised welfare benefits and services, which are described as key elements in future welfare, and are expected to provide 'an easier daily life for less costs'. Welfare technologies are expected to make citizens self-reliant, improve their quality of life and also reduce the need for practical aid and personal care (ibid). With regard to the wash toilet, it is stated that it enhances self-reliance and dignity:

"For citizens who need help to use the toilet, a wash toilet can be an important tool to enhance self-reliance and dignity. At the same time, the need for personal care is reduced, and the caretakers in the municipal homecare will reduce their workload in drudgery positions. Automatic wash toilets are therefore relevant for citizens in



their own homes and in care centres” (Regeringen, Kommunernes Landsforening, & Regionerne, 2013).

The national strategy states that the technologies provide citizens with an opportunity to contribute to welfare, and requires active citizens, who – in collaboration with technologies – can be self-reliant, so time and resources will be saved for core welfare services (Regeringen, Kommunernes Landsforening, & Regionerne, 2013). Employees, who will have reduced tasks, are, together with managers, obliged to support and encourage the use of technologies (Ibid, p. 3). Furthermore, authorities are obliged to use digitalisation and new technologies to share knowledge and generate efficiency and cooperation to create a coherent and transparent public sector (Ibid, p. 4). In 2017, it is expected that the municipalities will save half a billion Danish kroner as a result of the use of welfare technologies alone (Ibid, p. 12). The strategy entails a long list of collective actors and non-human actors, who are expected to cooperate with the technologies in order to fulfil the goals of the strategy: the health sector, the social sector, the educational sector, authorities, citizens, employees, managers, companies and also laws, rules and regulations.

The municipality has its own local strategy, which is available on its homepage. In line with the national strategy, the municipal strategy states that welfare technologies will provide citizens with the opportunity to live a self-reliant and independent daily life, and reduce their dependency on public services and benefits. Regarding the wash toilet, it is stated that it is for people who need assistance with ‘lower hygiene’, and that the toilet provides well-being and a feeling of freshness. For the employees, welfare technologies are, according to the local strategy, associated with reduced physical strain, and, for the municipal economy, welfare technologies will contribute to reduced costs. The ambition is that the municipality will deliver a high level of service at reduced costs.

These strategies are thus inscribed with users who will become self-reliant and employees with less physical injuries, as well as

growth, and cost-reductions to solve the upcoming burden of elderly and chronically ill citizens who are dependent on welfare services. Implementing welfare technology is thus a win-win-win situation.

## **Laws and regulations in allocation of wash toilets: compensated bodies**

As mentioned, there are two (main) ways in which the wash toilet can be provided, referring to two different bodies of law and, accordingly, also to notions of technology as either welfare technology or assistive devices. The toilet is named an ‘assistive device’ when it is enacted by the Social Services Act in referral practices and ‘welfare technology’ if it is enacted in project-based practices as a work environment device. The bodies of law enact the wash toilet differently, in terms of who the users are, but, in both cases, the toilet is expected to compensate either citizens’ permanent impairments or homecare assistants’ physical work. But, as will be the point below, when enacted as a welfare technology the toilet potentially undermines the purposes of toilets enacted as assistive devices in that they compensate rather than rehabilitate the citizen.

As stated in the case, it was the intention in the municipality to install wash toilets on a large scale in 2013, when 390 toilets were purchased. These toilets were to be distributed as a working device for care employees, according to §42 of the Work Environment Act, which stipulates that the workplace should be arranged so that it is safe and healthy. The role of the wash toilet then was to prevent the homecare assistants from working in physically strenuous positions and also to reduce the time that homecare assistants spend in the home by 2 minutes per visit/toileting. Accordingly, it is the homecare assistants who are defined as users, when the toilets are distributed under this legislation. The homecare assistants were also the ones who were given the task of identifying citizens who should have the toilet installed, within the predefined care module. As illustrated in

the case, the identification of citizens was not easy. From the interviews, two main reasons were given. The first was that citizens who were referred to this specific module of care required so much care, including 'lower hygiene', that it would be difficult to save time. The homecare units would have no interest in the toilets being distributed. The second, which is related, was a more general resistance among the leaders of the homecare units to welfare technologies, as these were seen merely as a way for the municipality to reduce the number of homecare assistants. According to the project manager, this would explain that it was only one out of five geographical units that were able to identify citizens in the first year of the project.

In the Referral unit, it is the Social Services Act that guides allocation practices and thus defines the role of the technology. The main task here is to process applications from citizens, staff, hospitals or relatives. Applications can be made specifically for a particular technology or for an assessment of which devices would potentially help a citizen who has just been discharged from hospital. The rehabilitation counsellors articulate welfare technology/assistive devices through the legal categories whereby they are allocated, namely as 'assistive devices', 'home alterations' or 'consumer goods'. According to §112 of the Social Services Act, impairments must be permanent in order for the citizen to be granted assistive devices, or there must be a substantial relief in the everyday life of the citizen. If the citizen has not finished his or her treatment or can be rehabilitated or retrained, he/she cannot be granted an assistive device. The law inscribes who has the right to be granted an assistive device, and who has not.

The rehabilitation counsellors do not automatically share the view that wash toilets or other technologies solve all kinds of problems. In their view, technology can potentially aggravate citizens' functional levels, and must be given only as a last resort. One counsellor gives an example of an elderly woman who had applied for a wash toilet due to weakness in her arms. To assess whether she could actually regain functionality in her arms, she was provided with another technology for a period, consisting of a stick with toilet paper attached to the end,

as this stick would keep her arms active and eventually restore her functional level. The counsellors claim that they have a reputation for being conservative, and they find that the rest of the organisation has very little understanding of the law they are administering.

The counsellors find that the homecare employees are too quick to hand out technologies. Conflicts sometimes arise when homecare provides a wash toilet according to the work environment legislation in homes where, according to the rehabilitation counsellors, the elderly could and should be rehabilitated. In some cases, however, the rehabilitation counsellors find that the toilet has made enormous differences for the citizens who have received them, because they have become 'self-reliant' and perhaps are no longer dependent on their primary caregiver to help them wash and dry. The wash toilet has, they say, provided freedom, self-respect and dignity. The normativities made manifest in the counsellors' interpretation of the law are that the citizens should primarily be retrained to be self-reliant without technologies, and only secondly use the technologies to become self-reliant citizens.

A further example of how toilets enacted as rehabilitation of elders are not the same as those enacted as welfare technologies meant to improve the efficiency of care, is related to the High Voltage Regulations. As mentioned in the case story, the High Voltage Regulations are involved in the implementation of wash toilets, as it requires a certain distance between the toilet and water installations. In the homecare centre, where the wash toilets were tested, hand showers which were placed too close to the toilets had to be removed. These hand showers were used by the care personnel to shower the residents while the residents were sitting on the toilets, and therefore care personnel were required to change their work routines when the toilets were installed.

## A 'new' notion of rehabilitation: Welfare technology as support – if relevant

As technology, in the view of the rehabilitation counsellors, is potentially aggravating, a new wave of rehabilitation is at stake in the municipality, where technology is regarded meaningful in so far as it supports rehabilitation goals. These goals are not foremost articulated as self-reliance, but in terms of an independent and meaningful life. This rehabilitative approach to care has been employed in almost all Danish municipalities since 2008, and is articulated as a paradigm shift in care work (Hansen & Kamp, 2016). Rehabilitation is defined in the following manner:

"Rehabilitation is a goal-oriented and time-limited workflow involving citizens, relatives and professionals. The objective is that the citizen, at risk of significant limitations in his/her physical, and/or social functional ability, obtains an independent and meaningful life. Rehabilitation is based upon an assessment of the life situation of the citizen as a whole, and decisions consist of a coordinated, coherent and knowledge-based effort" (MarselisborgCentret, 2004).

In recent years, the employees at all levels in the Department for Ageing and Disability have undergone a competence development programme in order to transform the administration into what they call 'the rehabilitating administration'. According to interviewees, implementation of welfare technology is subordinate to the goals of rehabilitation, and welfare technologies are inscribed with roles and expectations in concrete practices – if welfare technology is considered relevant at all.

On the one hand this new notion of rehabilitation interferes with referral practices in the sense, that it broadens the aims of providing

technology. Rehabilitation counsellors (who are actually administering the law) expressed the view that, due to the changes towards the rehabilitating administration, they have become a little more generous with referrals. They have to think in terms of 'rehabilitation' in a new way, although it is not unique or obvious for them that rehabilitation, in the new sense, is actually rehabilitation. Using an example of an electric scooter, one interviewee says:

"You have to use it several times a week because it is necessary in order to go shopping and it is necessary for you to get somewhere to have a meal, or it is necessary in order to visit some people. But if you just want to use the scooter to get out into nature once a week or do some shopping, even though there is someone shopping for you, then it's like, it's rehabilitative to come out and be more active, but this is a different law than the one we actually administer" (Interview with referral unit)

If, for example, it is argued that a wash toilet is 'nice to have' rather than a 'need to have', then it is a different concept of rehabilitation than previously enforced, and also not supported by the law.

One interviewee elaborates that when you cooperate with the citizen or the relatives around rehabilitation, then the basic idea is that: *"the citizen would rather be able to do this by himself and is not just sitting there, waiting for services from the municipality [...] Research shows [...] that you can stay at home or manage things on your own for longer, if you are supported earlier than if you are just sitting there passively and have services delivered"* (Interview with implementation unit).

As the citation above shows, the normativity of being able to manage your life on your own, is still inscribed in this new notion of rehabilitation, as it is articulated in the municipality. In the view of rehabilitation counsellors, this version of rehabilitation does in some

cases enact welfare technology more as a luxury good than as a necessity, which is a challenge for them, as they have to adhere to the legislation.

The point here is, that on the one hand rehabilitation aims can require technology in cases where impairment is not permanent, e.g. to prevent permanent impairment, and in cases where technology contribute to a meaningful life. On the other hand, rehabilitation only involves technology in so far that technology will support rehabilitation goals. If technology does not support rehabilitation, it will not be considered. Rehabilitation *in principle* inscribe welfare technology with the overall goal of enacting a meaningful and independent life for the citizen, where 'meaningful' and 'independent' are defined in actual rehabilitation practices, - or it leaves no role for technology.

## **Welfare technology must always enact a positive business case**

The business case plays a major role in implementation of welfare technologies, as it overrules other arguments in the decision-making process. It enacts welfare technology as either cost or cost-reduction, and only in the latter case, the technology will be implemented.

The municipality is obliged to comply with the national strategy and the overall goal of cost reduction by implementing digital solutions and welfare technologies according to the strategy. Every year (2014-2017), the municipality must report its results to Local Government Denmark (KL, the association and interest organisation of the 98 Danish municipalities), both in terms of numbers of specific technologies in use, and in terms of cost reduction/savings following the use of those technologies. Welfare technologies will only be implemented if there is a positive business case:

“...we are very strict in accordance with our strategy, that there must be a cost-reduction potential, otherwise we do not roll out things [...] The department does not

implement anything unless there is either a saving or break-even with improved quality” (Interview with implementation unit).

In this sense, the business-case enacts welfare technologies as instruments of cost-saving, and inscribe in them the purpose of saving money. As mentioned above, though, welfare technologies will only be implemented if they also support rehabilitation objectives. According to the interviewees from CFW, most technologies have the potential to increase the quality of life of citizens and to promote self-reliance, while some technologies, however, have a strong potential to increase the quality of life of the user, but are very expensive and conflict with the cost-saving objectives. Welfare technologies will only be implemented if, on the one hand, they do not conflict with rehabilitation goals, and, on the other, if, as mentioned above, they enact a positive business case. According to CFW, the municipality has achieved by far the largest savings on technologies that are not aimed directly at citizens, but are instead directed at employees and linked to workflows, for example in the form of screens that are installed in care centres, making documentation work easier for the employees. As in the case of the wash toilet, it is not the technologies that support rehabilitation of citizens that achieve the greatest savings.

On the other hand, when asked about these different and potentially conflicting aims that welfare technology have to fulfil, rehabilitation and cost reduction seems to be perceived as two sides of the same coin:

Interviewer: “...so there are actually very different interests at stake: costs, work environment and then rehabilitation?”

P1: “Often, they go hand in hand”

P2: "Rehabilitation is also about saving money; it is because a decision has been made that this [rehabilitation] is a good approach, but you can also see that if we make the citizens self-reliant, then we can save money..." (Interview with implementation unit)

In this version of rehabilitation, the aim of rehabilitation – and thus welfare technology – is conceived of as making citizens self-reliant, and self-reliant citizens leads to cost-reduction and thus adhere to the positive business-case. The business-case enacts welfare technologies as cost-saving devices and goes hand in hand with rehabilitation, when rehabilitation enacts self-reliant citizens, who do not need (so much) home care service. As noticed in the case story, a business-case was made for the wash-toilet, which estimated that it would save 2 minutes per toileting. The point to be made here is, that in addition to policy strategies, legislation and various notions of rehabilitation, the business case enacts welfare technology in a decisive way, as only welfare technologies with positive business cases will be implemented.

According to the logic of the business-case, welfare technologies with a positive business-case are expected to reduce expenses for the municipality. In referral practices welfare, technologies are mainly enacted by legislation, and the rehabilitation counsellors do not associate technology with cost-saving. In their view, referral of technologies is associated with expenses in terms of money spend from their local budget.

## Discussion and Conclusion

By studying policy strategies and interviewing employees involved in various practices related to implementation of welfare technology, we have found that different socio-technical techniques such as policy strategies, legislations, rehabilitation and the business-case enact

welfare technology in various ways, in terms of what they are expected to do, i.e., the role they are expected to play, and what kind of citizen they are expected to produce.

From the national and local strategies, the problem that the welfare technologies are set to solve is perceived as the challenge of higher numbers of elderly citizens and people with chronic diseases, who will be dependent on services from the welfare state. Welfare technology is expected to alter this dependence by constituting self-reliant citizens, who with the aid of the respective technologies (e.g. wash toilets) become independent of the welfare state and its services.

Here, welfare technology, self-reliant citizens and cost reductions go neatly hand in hand, and, as noted in the introduction, such strategic documents can be regarded as a material agent enrolled in making and stabilising visions, and have the ability of carrying contradicting messages (Bruun Jensen & Ross Winthereik, 2002).

The vision is enrolled in strategic considerations and planning regarding implementation of welfare technologies in the municipality, but here other versions of welfare technology are also enacted. Laws, regulations, notions of rehabilitation and the logic of the business case are acting and enact different roles and relations for the technologies and their users. The business case enacts welfare technology as a means to reduce costs. A positive business case leads to implementation of technology, if rehabilitation goals are attained and a negative business case leads to rejection. In this sense, the self-reliant citizen, configured as citizen plus technology, is the goal, insofar as the business case is positive.

The Social Services Act provides welfare technology with the role of compensating permanent impairments, with the users thus being citizens with functional impairments. The ideal of the citizen, the compensated citizen, is a configuration of citizen and technology, but in the actual and also changing referral practices, technology should be seen as a last preference after training has been undertaken. The

Work Environment Act also provides a compensating role for technologies/wash toilets, as the users are homecare assistants and the role of technology is to compensate physical work.

Welfare technology does not automatically have a role to play in rehabilitation unless it supports rehabilitation goals; here, the envisioned citizen is an independent citizen with a meaningful life, i.e. citizen plus technology, if technology is relevant.

The Work Environment Act considers the employee as the user of the technology, and the Social Services Act considers the citizen as the user. In the municipality, it was decided to distribute the wash toilet under the Work Environment Act, but, at the same time, the target group was defined in terms of citizens who were referred to specific care modules. Although the toilet was legally directed at the employees as users, the implementation challenge was to identify citizens within the specific target group/module who would benefit from the toilet, and, therefore, it was difficult to clarify who the actual users were. Both laws operate with a single user (group) of technologies, and do not take into account that technologies work in specific contexts.

Another challenge here, related to the Social Services Act, is that the law holds a compensatory view on technologies and emphasises permanent impairments as a criterion for referral. In this sense, providing technologies for rehabilitation purposes in cases where impairments are temporary, is not supported by the law. Neither is, for example, providing a technology which provides some kind of life quality, such as in the example with the electric scooter, although providing an electric scooter could, in the longer term, encourage the citizen to actively engage in rehabilitation processes in other life areas. The 'compensated citizen' (or even 'overcompensated') produced by the legislation differs from the 'rehabilitated citizen', produced by the ideology of rehabilitation, where the role of technology would, in this ideology of rehabilitation, not be solely to compensate for permanent impairments, but to play an active role, if relevant, in the process of achieving an independent and meaningful life.

Economic factors are evidently a primary consideration in the strategies regarding the macro-economic need for self-reliant citizens, and also in the administration in terms of "the positive business case". In relation to the administration of the Social Services Act, however, the technologies are subject to a more local budgetary logic. Here, the main concern is whether or not the legal basis can be found for the referral of an assistive aid, but the ever-present duty to economise is accommodated by a very conservative interpretation of the law and a similarly strict assessment of the citizens' "objective" need for an assistive device.

In relation to the overall ideology of rehabilitation, the notion of "the positive business case" seems to play a role that somewhat resembles that of a veto player. The main concern of the rehabilitation approach is the question of whether the ideal of the self-reliant citizen is *enabled* or *disabled* by the use of welfare technology but, despite any normative and/or professional account of rehabilitation concerns regarding the citizen, the question of whether it is economically efficient remains the main decision-making rule of thumb. This article thus points to an awareness of how welfare technologies, in this case the wash toilet, qua the association with self-reliance and cost saving, pushes more complex rehabilitative objectives towards a narrower (economic) notion of self-reliance.

The notion of self-reliance, understood as the ability to do things without assistance, has been especially criticised within disability studies. The critique has led to the elaboration of other notions of autonomy, also emphasising the voice and the will of the individual at the centre of care work and care policy and also at the centre of the Danish notion of rehabilitation (Reindal, 1999). Here, it is elaborated that 'independence' refers to 'control over his or her own life to the extent that he or she wishes', and which is practically possible in relation to the resources of the citizen, relevant laws, etc. (MarselisborgCentret, 2004). Independence, in this sense, differs from the no-

tion of self-reliance, which is associated with the use of welfare technologies, where independence refers to being able to manage your life with no homecare service.

A more far-reaching critique of the various notions of the self-reliant citizen is that we, as human beings, are always embedded in relations of dependency. The modernist view of the subject, underlying most notions of autonomy, has been criticised from a wide range of scholars and positions who defy liberal policy notions of autonomy, in terms of independence, self-reliance, etc., referring to individuals as existing separately from social relations and being self-sufficient (Bacchi & Beasley, 2002; Struhkamp, 2005). Various strands of sociology assume that individuals and identities are constructed in social interactions, thereby framing sociality or interdependence or relationality as a fundamental human condition of existence (Weiss, 2009). As STS scholars emphasise, technologies and other materialities are crucial in these world-shaping activities (Verbeek, 2011). The notion of self-reliance, as it is promoted with welfare technology, seems to imply a very specific configuration of autonomy as being eventually dependent on welfare technology, but independent of assistance from homecare services – i.e. the welfare state.

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