DESIGN FOR HAPPINESS. A TELEHOMECARE PRODUCT CASE

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ABSTRACT

In this paper a design approach is introduced for designing products to increase happiness. Happiness reflects the degree to which people's concerns are fulfilled. Based on this fact, a framework of all human concerns was created. After that, the framework was applied to a telehomecare case. Telehomecare products release the pressure on healthcare by increasing the ability of people to manage on their own at home. When people become ill, their everyday life may change dramatically. People are no longer able to meet with specific concerns. In this study the unmet concerns of ill people coming from this change in their life were mapped on available telehomecare products, showing the gaps in the current assortment of telehomecare products. These gaps were used as starting point in developing product concepts.

Keywords: Happiness, concerns, needs, telehomecare products

1   INTRODUCTION

In this paper, an explorative design case in which happiness was the starting point for developing new product concepts is reported and discussed. The goal of the project was to identify product directions in the field of telehomecare products which can have a positive contribution to the users' happiness. Although in most design cases, the design is aimed to have a positive contribution to the well-being of the user, in this project the users' happiness was the explicit focus of the design intentions. Telehomecare products are products that are developed to guard the patient by medical monitoring and non-medical assistance from a distance. Telecare is mainly developed to release pressure on healthcare in two ways. Firstly, it supports people to manage on their own, and secondly, it increases efficiency in professional care. In addition, telecare can also have a positive contribution to the happiness of patients because they can stay at home instead of being required to spend their time in an hospital. There are two types of telehomecare products: those that focus on telecare and those that focus on monitoring. Telecare is about taking care of the patient (by e.g. a nurse), and monitoring is about enabling diagnostics and curing. An example of a telecare product is Exozorg, a service which provides telerevalidation by use of intelligent training equipment. An example of monitoring is The Health Buddy, a telediagnosis service. Although most of these products do have a positive contribution to the patient's life, these products are generally the result of a technology-push; the development of new products with a certain kind of technology as starting point. In this project, our starting point was the intended positive effect on happiness: happiness-pull.

This paper describes the approach we followed to design for happiness. The first step was to find a suitable definition of 'happiness'. Based on this definition we created a framework of human concerns, and we explored in what way illness influences the concerns in the framework. In the next step, we identify concern-gaps by analyzing to what degree the concerns are represented by existing telehomecare solutions. These gaps were used as starting point in developing product concepts. The discussion section reflects the application of this approach and possible implementations in other projects or domains.

2 DESIGN FOR HAPPINESS

What is happiness?
To define happiness Veenhoven [1] started by classifying four qualities of life; livability, life-ability, utility and enjoyment of life. Livability is about the environmental chances we get. Life-ability means the personal capacities we have. Utility of life is the external worth of life. 'Enjoyment of life' is about our subjective well being ; what we mean when we talk about 'Quality of Life'. The 'life chances' we get determine our 'life results'. The combination of the outer qualities (livability) and our inner qualities (life-ability) is the key to 'enjoyment of life'.

Table 1. Four qualities of life

Four qualities of life	Outer qualities	Inner qualities
Life chances	Livability of environment	Life-ability of person
Life results	Utility of life	Enjoyment of life.

Veenhoven described four 'enjoyments of life', enjoyments concerning life-aspects or life-as-a-whole. (Table 1). In this project, we only focused on the appraisal of life-as-a-whole. Veenhoven made a distinction between passing and enduring experiences in the appraisal of life-as-a-whole, respectively top experiences and life-satisfaction. Life-satisfaction, according to Veenhoven, is what we call happiness in every day life. Veenhoven primarily focuses on life-satisfaction as Csikszentmihalyi focuses on the top-experiences. Csíkszentmihályi [2] believes that people are most happy when they are in a state of flow— a state of concentration or complete absorption with the activity at hand and the situation. We believed that designing for happiness should imply the enjoyments that endure.

Table 2. Enjoyments of life

Enjoyments of life	Passing	Enduring
Life aspects	Instant satisfactions	Domain-satisfaction
Life as a whole	Top Experience	Life satisfaction (Happiness)

Life-satisfaction (Happiness)
Veenhoven described happiness as life-satisfaction. He defines happiness as the degree to which a person evaluates the quality of his present life-as-a-whole positively. The concept of happiness denotes an overall evaluation of life, all the criteria figuring in the mind of the individual, our concerns. External opportunities and one's ability to utilize abilities (life art) determine the degree of fulfillment of people's concerns, which will be reflected by our emotional state. When we appraise how much we appreciate life, we seem to use two sources of information: affectively, we estimate how well we feel generally -our emotional state-, and at the cognitive level we compare life 'as it is' with standards of 'how life should be'. The former source of information seems more important. [3]. In this paper it should be clear that based on these definitions, concerns are an important factor in the conditions of happiness.

2.1 STEP 1: Framework of concerns/Profile of concerns

What are concerns?
A concern is a disposition to have a desire for a certain kind of situation [4]. In the view of Frijda, the following events indicate that a concern is involved:
- Action; a person takes action to accomplish a certain situation
- Desire; a person speaks out the wish to achieve a certain situation
- Emotion; a person shows an emotional reaction after a certain situation is achieved or not.
A concern is like a baby; it is quiet as long as the circumstances match with the standard at a certain point. When the circumstances deviate considerably from the condition of satisfaction, the concern suddenly becomes visible. This results in a need. The existence of a need depends on the circumstances, and is therefore temporary. Basic needs, like food and shelter, will be present for lifetime. Others will only exist for a few minutes . In general, concerns are divided in three groups: food, drinking and sex; self-respect; and appreciation of others [4].

In short, concerns can either be met or not. When a concern is not met, it 'awakes' and the person will try to meet this concern; the person will develop a need.

In this project we have developed a framework of concerns (Figure 1) by combining several concern frameworks reported in the literature. The reason for combining frameworks was to enable us to have an as complete of an overview as possible.

The concern framework was based on the theories and frameworks of Maslow [5], CIN [6], Frijda [4], and Ford [7]. The framework consists of three layers: a basic layer that represents the concerns for well-being; a growth layer that represents the concerns for being; and a side layer that represents the opposing drivers: the concern for control and the concern for novelty.

In this project, the 'concern for well-being' is the basic layer; the basic preconditions for a healthy personal development. These basic preconditions are physiological concerns; intimacy, pleasure and autonomy. In case these preconditions are out of balance in someone's life, the person will become physically or mentally ill.

The layer 'concern for being' concerns the forming of a personality; self-development. Self-development consists of multiple facets: developing a personal identity, social relations, giving meaning to life, and task goals.

The concerns for control and novelty are the drives in daily life.
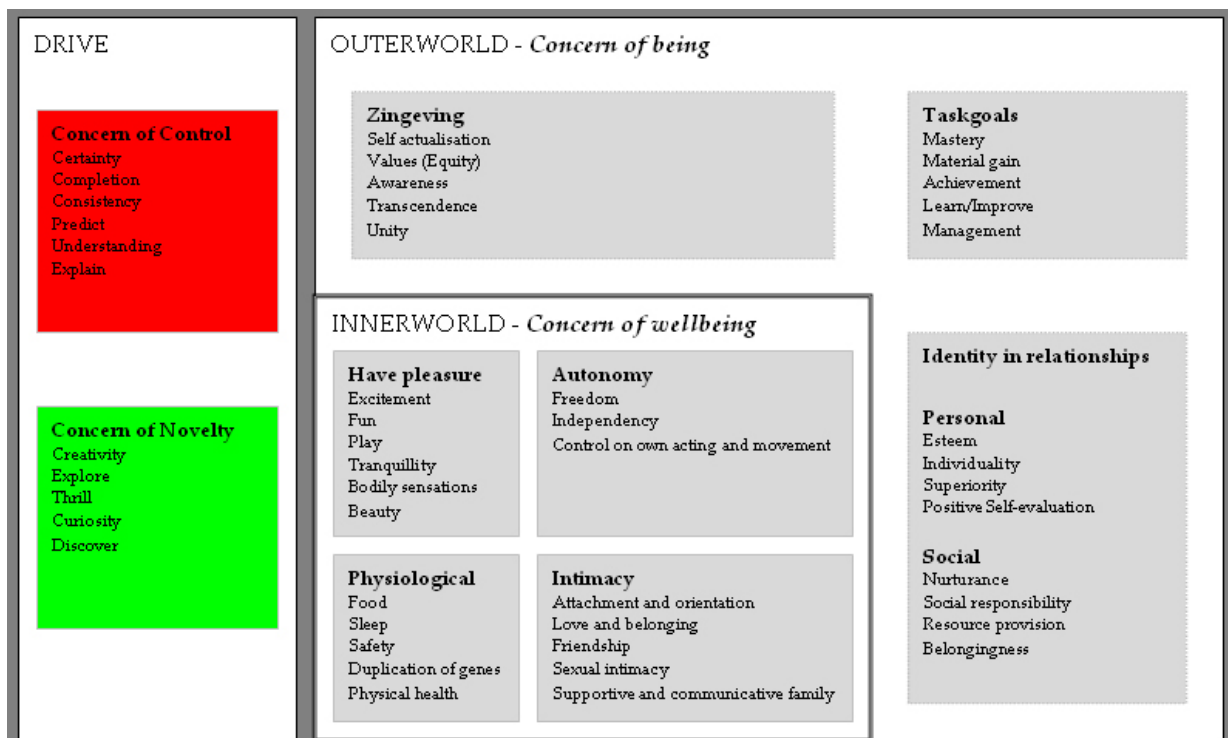

Figure 1. Framework of all human concerns.

In Figure 2, a visual metaphor is presented to represent the roles of the three layers in our life; our drives, the internal (well-being) concerns and the external (being) concern . 'Concerns for well-being' mainly revolve around the person and his or her inner world. 'Concerns for being' revolve around the external world and relations with others: a person's outer world. The metaphor shows a person walking his life path, where he meets different situations and events. 'Well-being' can be seen as the fuel to walk on. In case the fuel is disturbed the person's walk on the life path stagnates. The person focuses on goals which relates to the development of his or her 'being'. This influences the global direction of the life path he walks, his destination. The green and red characters on the person's shoulders respectively represent 'novelty' and 'control'. The specific situation, which he meets during his life path, determines which character is dominant, and subsequently influences what path he chooses to reach his destination.

Figure 2. Metaphor of role of concerns in one's life

2.2 STEP 2: Identifying concern-conflicts.

When people become ill, the circumstances of their everyday life change drastically. The way people were used to be able to meet their concerns is no longer applicable, and as a result, needs are born. A variety of sources was used to get insight in how this changed situation affects the concerns in the concern framework. The situation of ill people was explored from two angles. First, different instruments considering the quality of life (SF-36 (RAND36) [8], SF-12 [9], Euroqol [10], COOP WONCA [11]and adaptive tasks [12]) were analyzed to get an overview of all the aspects that affect people's quality of life during illness. Second, people's experience during illness were studied to verify if the previously created image of their situation was complete, and to get an impression of their point of view. The experiences of ill people were extracted from autobiographic books and informative books ([13], [14], [15]), patient-websites, magazines [16], television programs and literature.

Based on these sources, we concluded that being ill affects a particular set of concerns (see Figure 3). Concerns that could not be met anymore due to effects like loss of control, feeling uncertain, having physical constraints, less social contacts, being more dependent, having emotional problems, having lower esteem and that illness forces them to find meaning in their life.

These unmet concerns affect people's evaluation of life and therefore their degree of happiness. In our view, these concerns are valuable points of departure for happiness-pull design initiatives because it are these concerns that are endangered in the situation that involves a transition from being a healthy person to being a patient.
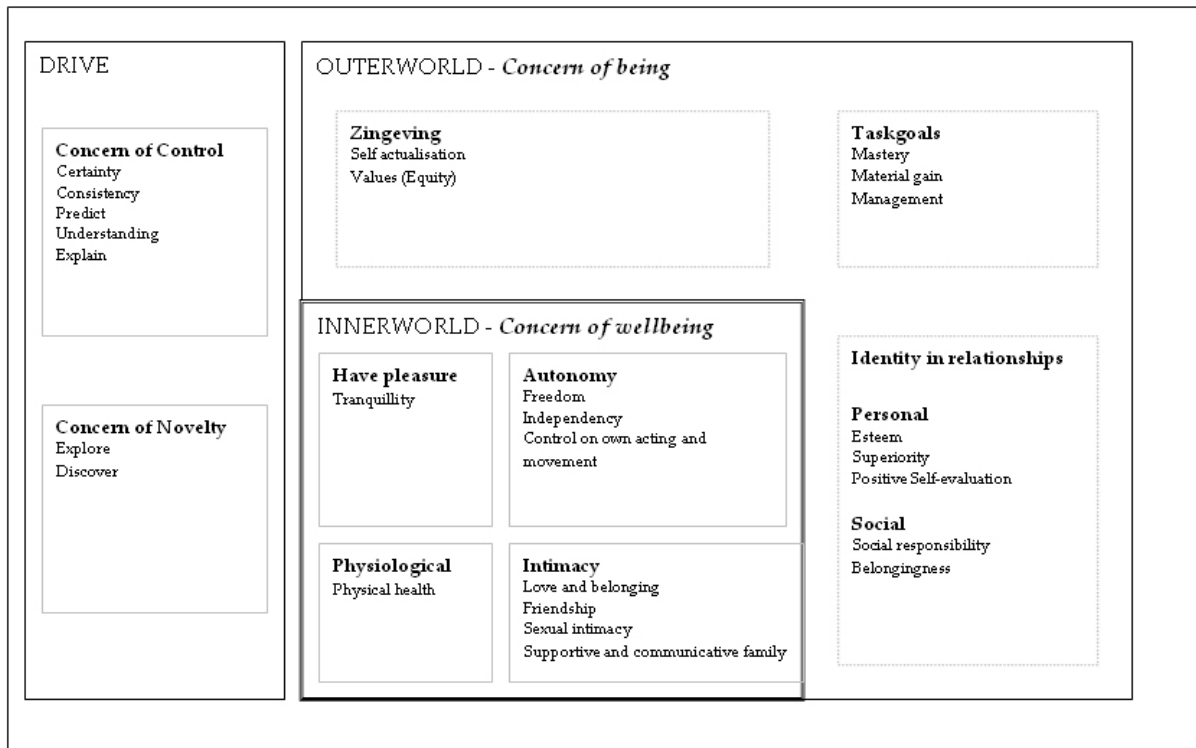
Figure 3. Concern-conflicts. Unmet concerns of ill people

2.3 STEP 3: Identifying concerns-gaps.

In this step we made an inventory of all existing telehomecare products available in The Netherlands. There is a huge variety of telehomecare products. We categorized them in eight categories (Table 3). Almost all products are developed with the aim to discover symptoms, to control and to treat them. Telehomecare products are used to guard the physical health; our concern for physical health. Examples of such a products are *Bloeddrukonline*, to measure your blood pressure online; *Interapy*, evidence based psychological treatment via the web; *Camea*, interactive flexible alarm system at distance; *Liverdoc,* a doctor-to-doctor online consulting system.

Camcare, *Telekit, Motiva* and *De Vertrouwenslijn* are exceptions; besides supporting the concern for physical health, they also partly support the concern for Identity. CamCare is an application which takes care via television. Telekit specifically focuses on asthma and COPD patients. Besides aiming for continuing the effect of the treatment in the asthmacentre , it makes it possible to keep contact with fellow sufferers. This supports our need for social responsibility. De Vertrouwenslijn is a service for people in the region The Hague to support ill people emotionally; which supports our need for positive self evaluation). Motiva is an interactive healthcare platform that uses broadband television. The goal is to turn the TV into the patient's own personal healthcare station or virtual health coach. In the future Motiva makes it possible to connect with family and friends; our need for belonginess.

5

Table 3. Categorization of telehomecare products

	Tele-information	Tele-consultation	Tele-diagnosis	Tele-treatment	Tele-doorverwijzing	Tele-monitoring	Tele-aftercare and -homecare	Anders
Tele Dermatologische Consultatie		x	x	x		x		
Telediagnostiek binnen de eerstelijn-		x	x			x		
Koala		x			x	x		
Sint Maarten						x		x
Smashing								
HARTIS		x	x			x		
Dokter.nl	x	x						
112bed						x		x
Tele-ECG		x	x			x		
CamCare	x	x			x	x	x	
Vitaphone	x	x	x			x		
Telezorg en monitoring voor chronisch zieken	x	x				x		
Kanker, wie helpt in Limburg?	x				x			
Tele-begeleiding bij COPD en hartfalen						x		
Telekit	x	x	x			x	x	
Camea		x				x	x	
Interapy			x	x	x			
Strengthening the autonomy of chronically ill people	x	x	x	x		x		
Ketenkwaliteit bij COPD	x					x		x
Healthcare system (HCS)	x	x						
Huisarts ECG		x	x			x		
Diabetes Zorg Protocol	x		x			x		
Elektronisch logboek voor hemofilie patienten.		x				x		
TeleFysi III		x						
ExoZorg				x		x	x	
Telecare Hersenbloeding	x			x	x			x
Bloedrukonline						x		
Gezondheidsportaal Almere	x		x			x		
Seniorzorg	x							
www.muziekenzorg.nl	x							
KSYOS	x	x	x	x	x	x	x	
Digitaal Ervaringen Dossier								x
TNO UAS-systeem						x	x	
HealthScreen BV			x		x	x		
My-SOS		x				x	x	
Thuisdialyse						x		
Buddy			x			x	x	
HeartsPoint: Medisch Service Center		x	x			x		
GigaBroCa	x	x						
Motiva	x			x		x		x
Icare								x
HeartsPoint		x		x				x

Based on this inventory we concluded that the existing products do not focus on all identified unmet concerns (Figure 3). In Figure 5, the blue boxes indicate which concern-conflicts the existing products apply to. Besides showing what concerns are met by the existing variety products, it shows the gaps: concern of novelty, concern for meaning in life, concern to have pleasure, concern for intimacy, concern for task goals and concern for identity.

These concern-gap are the starting points for the concept development to design for happiness.
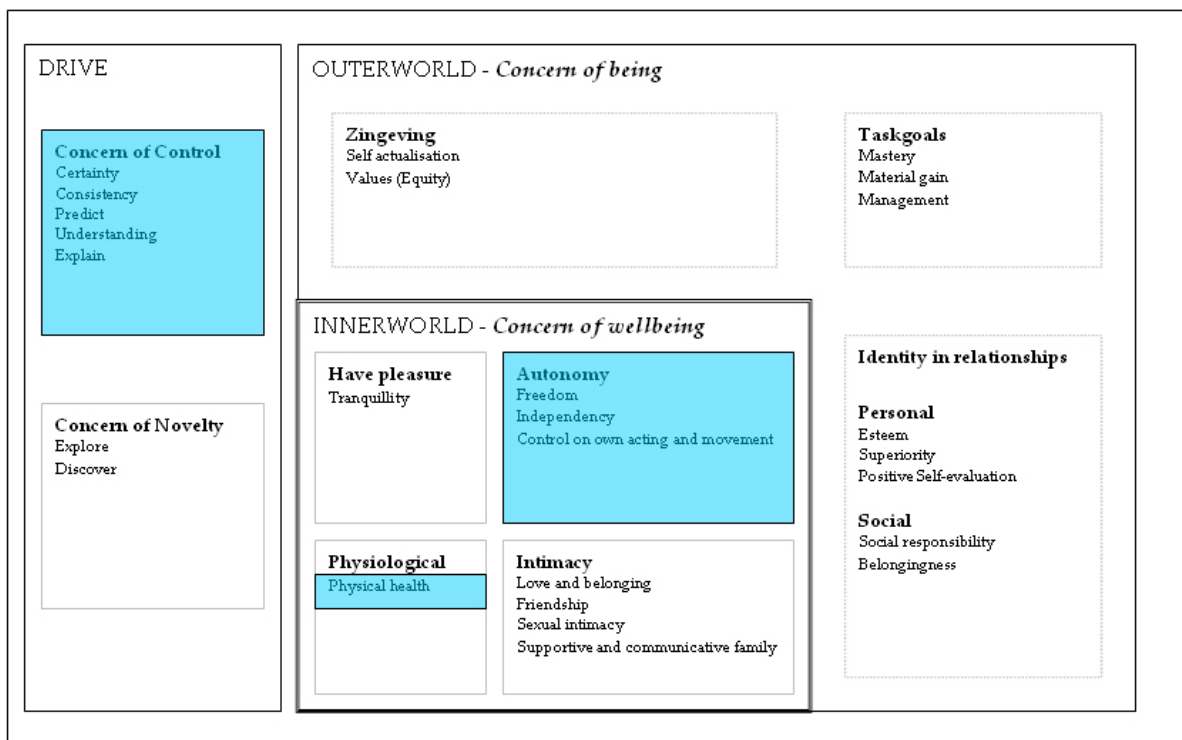
Figure 5. Concern-gaps

DISCUSSION

In this paper we described our study to develop a design method which could contributed to one's happiness in a constructive and consistent way. It seemed possible to approach happiness, our subjective appraisal of our emotional state, in an objective way. Happiness seemed to be the reflection of the degree of fulfillment of our concerns. In this paper it is stated that identifying all the unmet concerns and fulfill them, will automatically influence our degree of happiness. Unfortunately, it is not that easy. First, it is hard to expose the specific unmet concerns which causes our happiness. This is because most people are not capable of telling what lies behind their unhappiness and second, because due to our complex life our concerns relate to each other in a complex way. And last, every specific situation asks for a specific solution that suits; so for every specific situation a new design process is necessary.

Nevertheless we think our study was useful. First we proved that is possible to design for happiness. And second the framework can function as a reference tool to assess the users happiness and to reveal the causes of their unhappiness, which can be the starting point for the design process.

Nowadays more and more high technological products have been developed for sensitive applications in healthcare. This trend demands an approach in which the concerns of the user should be the main focus. Eventually technology should be used in a way it improves the situation. This seems logical, but in practice it does not work out this way. A caretaker has many tasks besides guarding the physical health. The effects of replacing the caretaker by a technological solution should be well considered. Introducing a certain kind of technology will save money at short terms, but can harm the wellbeing of a patient, because it does not replace the support of all awakened concerns.

The method to design for happiness was developed in this specific telehomecare case and proved to be effective in the second part of the project, the concept development ,which we did not describe in this paper. The concept was developed to meet the concern for identity. We chose this concern because we wanted to state that a unmet concern can be used as starting point for the concept development. The developed concept also showed that it is possible to develop telehomecare solutions that meet concerns other than just physical health.

The field of telehomecare solutions is mainly technology pushed. The risk of this approach is that only the concerns will be met where technologies are available for. Another risk is that not all unmet

concerns will be identified. A technology pushed approach does not focus on what the user really concerns and therefore does not contribute to people's welfare in a constructive way. Therefore we would suggest an happiness-pull development for the whole telehomecare-area. Actually in every domain design-pull development would be fruitful for a consistent and overall approach in the product development by helping to identify what concerns are awake and the gaps in the current assortment.

In this project we used possible sources of unhappiness as starting point; the unmet concerns of this specific targetgroup. Actually, this is a problem-based approach. Probably it is also possible to use the framework to identify opportunities instead of problems. This would be interesting for further research. This project has been a first modest attempt, but we are convinced that it is important that the effect of products on people's happiness should be given a firm position on the research agenda. Furthermore we want to stress that designing is context-related, which means that the context influences which solution is the best fit. Especially in design for happiness, an understanding of the context of usage is extremely important, in order to be able to understand how to meet the users' concerns. To this end, involving the user in many stages of the project proved to be essential.

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