# Hospital Care of the Future

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**Abstract**

Technology is making advancements in terms of healthcare to be more beneficial for patients. This paper discusses the whole design process towards solving the design problem with a prototype product. The use of the prototype will give a better understanding of why such solution is needed for the betterment of patient's recovery in terms of mobility. Some improvements of the product's future will also be mentioned to make the prototype in terms of usability, successful.

Keywords: advancements, future, usability

## 1. Introduction

Rehabilitation at one's possible level is crucial for every recovery process, and it has shown to help prevent issues that could prevent readmission at the hospital. From what has been learned through research it is essential that patients have a pleasant atmosphere and have some sort of movement for their care process during their stay at the hospital. For that, patients need to have an external motivation for patient satisfaction and the quality of care, which is why it is essential for designers to gather up and design a product which solves the problem.

## 2. Design Assignment

The design assignment was to create a product which solves the main problem.

### *2.1 Main design problem*

*"How can patients be motivated to autonomously make physical movement during their stay at the hospital?"*

Based on this main design problem there is the current situation and the desired situation. The current situation is that there is no motivation for the patients during their stay, moreover, there is no external motivation within the hospital. As a result, to that, the desired situation is that the patients should feel autonomous to move out of their beds, they should have a feeling of satisfaction as they make some movements during their stay.

Partial problems:

There are a few partial problems in the current situation. Some patients cannot move long distances for obvious reasons. As a result, these patients cannot go outside to, for example, take a walk in the garden. Also, the patients have different preferences when it comes to getting out and trying new things. So, the stimulation must have several options to choose. When designing a product, the hygiene of the hospital must be taken into place to prevent the patient to get or to spread any infections.

Main problems:

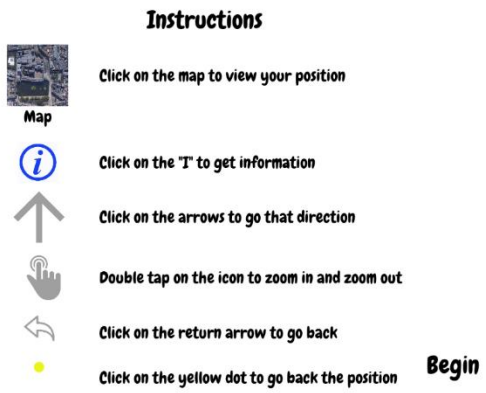
The main problems that has most impact on the patients are; The Patients don't have the motivation to get out of bed and they are not confident enough to make some movement. To solve this problem, the stimulation product must focus more on motivating and reassuring the patients to be more active during their stay.

### *2.2 Requirements for the design*

To get the successful solution to the problem some essential requirements were set out such as safety, autonomy, ease of use, adaptivity according to user's accessibility, engagement, information and the rewarding feeling.

### 3. The product prototypes

As a result, for ideation that was taken place, some concept was designed taking the requirements into mind. From the concepts some tests were carried out and based on their conclusions the final prototype was designed.





*3.1 Instructions on how the experience program works*

The prototype is an experience program through a city where they are provided with instructions (as it can be seen in the images of the screens). The user has a choice of going to different places by pressing on the arrows to look left or right or proceed forward. As the user is walking through the program, some figures are labelled from which information can be gathered by pressing on the "I" icon. Next, a quiz can be carried out based on the information that has been received, where the user has to choose the correct option from which points will be rewarded and added to their score board as a reward.

*3.2 The screen*

Part of the product is the screen where the program will be shown, a smart screen which has large enough dimensions that it is visible, and it has touch features as given below:

| Properties | Speechitouch UHD - 55 | **iiyama TH5565MIS-B1AG** |
|---|---|---|
| Price | €1760,00 | €1499,00 |
| Connection | HDMI, VGA, USB, RS-232 | HDMI, VGA, USB-type A |
| Weight | 32 kg | 37,5 kg |
| Store | Ergo educo | Coolblue |



*3.2.1 The screen support system*

The screen support system is essential to allow the screen to be more accessible to all users. First, to support the screen and second, to allow it to move up and down as desired. The following support systems are the ones that fit the requirements and also hold the screen as given above.

| Properties | DQ Elektrische TV Lift Basic 750 | Stralex Handy Spring Wit | Stralex TV standard Versatile |
|---|---|---|---|
| Price | €399,00 | €329,00 | €149,00 |
| Fixate | Tv-lift / wall | Standard / grounded | Standard / wheels |
| Max weight | 65 kg | 40 kg | 40 kg |
| Store | Muurbeugelsdirect | Stralex | Stralex |

*3.2.2 Hard coat on the screen*

When designing a product for the hospital it is essential to take hygiene into consideration which is why for a screen that will be used by several patients a protector is essential. The hard coat by sky technology on top of the film incorporates **pure metal Nano-technology**. This technology prevents bio-film colonization of the surface, killing pathogens such as **MRSA, E-coli** and other virulent bacteria.

## 4. Conclusion and Evaluation

Some conclusions have been drawn based on the evaluations done of the prototype with the requirements. The product is engaging as it keeps giving interesting information about old monuments, thus also meeting the requirement for being informative. The product also shows instructions on how to go through the experience by letting the users know what icon must be touched in order to continue, as well as having a reward in the end for earning points for the quizzes.

Requirements that were met are the feasibility of the project and motivate the patients to get out of bed. Other requirements that were met but still need some more research on are the railings for the frame to be able to move up and down and the hygiene of the screen. These requirements need more work on because it was talked about among the group and the client but did not come with a final decision.

Moreover, the idea of expanding the product by going to different places. Another requirement that was not fully met but talked about are the cleaning utensils for the cleaners. The requirement that was met the most talks about having smoothing images and sound. In this case, the product only has smoothing images.

On the whole, it can be said that there were a lot of changes made along the way and there is still room for more improvements.

### *4.1 Improvements*

Some improvements that could be implemented in the prototype is adding a possible rating system for personal feedbacks from users to improve the prototype even more. Moreover, having a reward system in the program such as discounts could make the user feel more satisfied. Finally, there is always room for adding more places in terms of the user's interest and also sounds to make it more aesthetically pleasing.

### *4.2 Next Steps*

Some possible next steps would be to carry out usability test of the final prototype with the nurses and patients in HMC. In functional aspects it could be tested on the safety, reliability, hygiene and durability of the product.

Based on the improvements that were mentioned before they could be possible specification that could be added to the prototype. Not only that, protentional interested stakeholders and companies could be contacted to implement more things to the product itself such as to the support system. The screen itself could provide many benefits to the user target group, however there is always room for more things that can be implemented to make the lives of patients during their stay at the hospital better.

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