

Product Vision and Planning

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Product Vision

The product is an extension for an existing system. The customer [1] is a company that makes virtual reality systems for Mental Health Problems such as Social Phobia or Psychosis [2]. The VR systems are based on Virtual Reality Exposure Therapy (VRET) [3] which helps patients to interact with a virtual world as realistic as possible and overcome their fears.

This product addresses the needs of the company to make the environment they work with more realistic, user-friendly and expand it with additional functionality. The simulated environment that the patient will work with needs to feel stable and realistic. The patient should feel comfortable and should be able to act as in the real world to experience the same feelings and help overcome them.

It is crucial for the patient to feel comfortable in the virtual environment and to be able to act naturally in it [4]. This will help the patient have a good indication of how it is like in the real world. This is very important in order to help the patient overcome his fears. So the patient should be able to walk around in the simulated supermarket, pick up items and interact with other 'people' and objects .

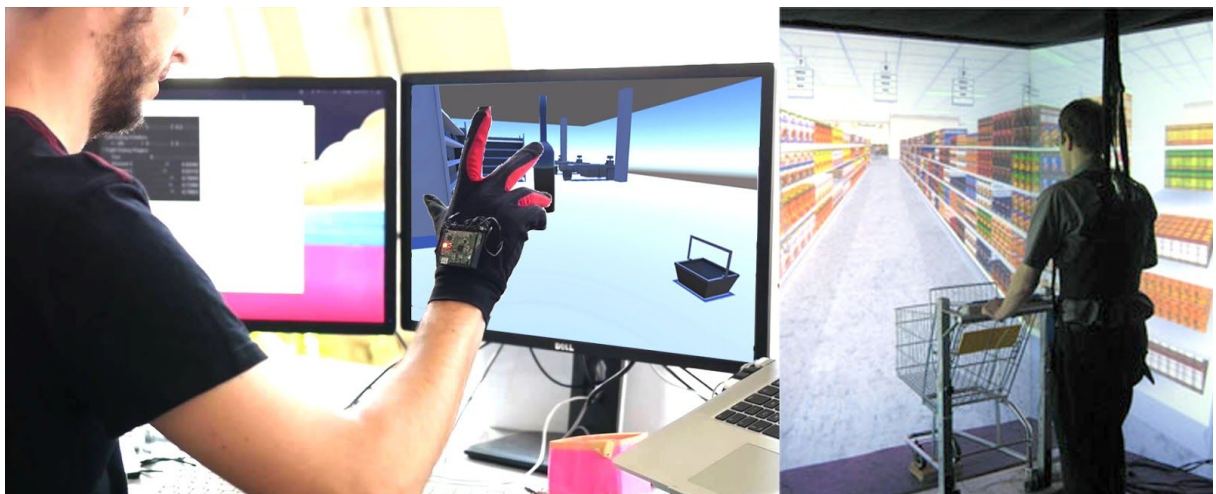
The uniqueness of this product lies in the user's experience in the virtual environment. This makes the therapy more effective, because of the Virtual Reality glasses. The users get a more realistic feeling. And another important thing that makes this therapy more effective is that the user can actually act in that virtual environment which makes the experience even more real. So the user will be able to pick up items, walk around the supermarket, search for items that he needs to buy and finally buy those items.

The time we have to develop and launch this project is approximately 10 weeks of which we will use the first three weeks for setting up the project and all related issues and documentation . We will try to keep the budget as low as possible without affecting the quality of the product.

When it comes to treating patients with psychosis problems, there are some researchers developing virtual worlds for better understanding the mind-set of these patients [5]. However, these only help into understanding their problems, these programs are not designed for helping them. For some areas other than psychosis, there are some developments into VRET. For example, at the University of Southern California Institute for Creative Technologies they are trying to help former soldier who suffer from PTSD (post-traumatic stress disorder)[6]. Yet, there is no direct competition for CleVR [1], meaning there are no companies who try to help psychosis patients.

Visuals

We have created several visuals to show how we view our simulation.



Product Planning

1. Introduction

The Health Informatics project 2016 has the goal to make a system that makes the experience better for the users of the Psychosis Virtual Reality Exposure Therapy. This system should allow the user to interact with the virtual environment in a natural way in order to experience the same feelings they have in real life and try to overcome their fears [7].

2. Product

2.1. High-level product backlog

The product needs to simulate the supermarket scenario as close to real life as possible. This realism can be achieved with the following epics:

- As a patient, I want to be able to move in the supermarket simulation in such a way that resembles real life as much as possible so that the simulation feels realistic.
- As a patient, I want to be able to interact with objects in a stable environment so that the simulation feels realistic.
- As a patient, I want to feel a physical presence using Virtual Reality input devices in the simulation so that the simulation feels immersive.
- As a patient, I want to be able to perform a normal shopping routine in the supermarket simulation so that I can overcome my psychosis after prolonged exposure to this simulation.
- As a client, I want the patients to be able to move through the supermarket so that the therapy will be more effective.
- As a client, I want the patients to be able to pick up items so that they will feel like part of the virtual world.
- As a client, I want the patients to be able to buy the items that they have collected so that they will experience more different real life situations and learn how to better react.

2.2. Roadmap

The roadmap below shows on which parts of the system will be worked on during the different sprints. Every part is categorised into one of five categories; documentation, environment, functionality, hardware-unity interaction and demo.

Sprint 1	Sprint 2	Sprint 3
Creating design documents	Sprintplanning	Sprintplanning
Building supermarket	Basic pickup items	Hand mesh
	Hand control Keyboard	Grabbing
		Hand control Manus VR
	Manus VR	Hand - Body interaction
		Demo

Sprint 4	Sprint 5	Sprint 6
Sprintplanning	Sprintplanning	Sprintplanning
Body mesh	Supermarket shelves meshes	Creating NPC's
	Supermarket basket mesh	
Body control Kinect	Walking	Basket interaction
	Demo	

Sprint 7	Sprint 8	Sprint 9
Sprintplanning	Sprintplanning	Finish design documents
Creating supermarket counter		
Interaction with NPC	Complex interaction with NPC	
	Demo	

	Documentation
	Environment
	Functionality
	Hardware - Unity Interaction
	Demo

3. MoSCoW Requirements

3.1. Functional Requirements

3.1.1. Must Haves

- The patient must be able to pick up pre-determined objects in the store.
- The predetermined objects must be holdable objects from real life supermarkets.
- The scene (store), apart from the products must be static.
- The patient must be able to hold the objects with one hand.
- The patient must be able to let go of the object
- The patient must be able to see his body moving.
- The patient must be able to walk in the supermarket.
- The patient must be able to put object down.
- The patient won't be able to put his hand through an object.
- The patient must be able to navigate in the simulation on their own.
- The patient must be able to use one of the Virtual Reality input devices such as the Kinect, Manus-VR and Leap Motion.
- The client must be able to provide functionality so that the patient can walk around in the supermarket
- The client must be able to provide the necessary functionality so that the patient will be able to pick up items.

3.1.2. Should Haves

- The patient should be able to hold items with both hands at the same time.
- The environment should provide a shopping basket in which items can be stored.
- The patient should be able to put items into the above described basket.
- The patient should be able to retrieve items from the above described basket.

3.1.3. Could Haves

- The patient could push other "people" in the environment.
- The patient should be able to buy the selected products by the cash register.
- The patient could push a shopping cart instead of holding a basket.
- Simulated people could be animated to look like they're picking up items.
- The simulation could make use of a combination of Virtual Reality input devices such as the Kinect, Manus-VR and Leap Motion.
- The client should be able to provide the necessary functionality for the patient to actually walk around the supermarket without using a joystick.

3.1.4. Won't Haves

- The environment won't have a reset button.
- There will be no option to design the environment the patient is in.

3.2. Non-Functional Requirements

- The product must be developed in C#
- The product must be developed in Visual Studio v2013 with .Net framework v3.5
- The product must be develop with Unity 5.3.4 P1 or newer stable releases.
- The product must be delivered by 20-06-2016 .
- The product should be unit tested.
- Tools that need to be used:
 - StyleCop (Code style enforcer)
 - NUnit Visual Studio Test Adapter (Integration between NUnit and Visual Studio)
 - Visual Studio Spell Checker
 - Productivity Power Tools 2013
 - GhostDoc
 - CodeMaid

4. Product Backlog

All features in the product backlog are prioritised by means of using the MoSCoW method [8]. Since the stakeholder - CleVR - wants the finished product to be as realistic as possible, as well as having the functional possibility to pick up items from the supermarket. All items in the backlog graded as 'must haves', are therefore essential for achieving these goals. All 'should haves' are features which would provide additional reality to the virtual world and are designed to create a real shopping experience.

4.1. User stories of features

- As a patient I must be able to pick up pre-determined objects in the store so that the simulation feels realistic.
- As a patient, I must only be able to pick up objects that are holdable objects from real life supermarkets so that the simulation feels realistic.
- As a patient, I must be able to hold predetermined objects with at least one hand so that the simulation resembles real life.
- As a patient, I must be able to put down previously picked up objects so that the simulation resembles real life.
- As a patient, I must be able to navigate through the simulated supermarket so that the simulation resembles real life.
- As a patient, I must be able to interact with the simulation using Virtual Reality input devices such as the Kinect, Manus-VR and Leap Motion so that my motions are realistically reflected in the simulation, giving me a feeling of presence.
- As a patient, I should be able to see my virtual body so that I feel present in the virtual environment.
- As a patient, I should be able to deposit picked up objects from the supermarket to a shopping basket so that this realistically reflects my shopping experience in real life.

- As a patient, I should be able to retrieve previously deposited items from the shopping basket so that this realistically reflects my shopping experience in real life.
- As a patient, I could be able to hold items with both hands at the same time so that the simulation closely resembles real life.

4.2. User stories of defects

- As a therapist, I want the patient to not be able to put their hand through objects in order to prevent unwanted emotional triggers from unrealistic simulation behavior.
- As a therapist, I want the simulation to prevent the patient from interacting with all objects so that the simulated environment stays believable.
- As a client I want the simulation to be very reliable and run smoothly.

4.3. User stories of technical improvements

- As a patient, I want to be able to use a combination of Virtual Reality input devices such as the Kinect, Manus-VR and Leap Motion so that I can realistically interact with the simulated environment.

4.4. Initial release plan

Date	Version
02-05-2016	Prototype Release
09-05-2016	Version 1 Release
16-05-2016	Version 2 Release
23-05-2016	Version 3 Release
30-05-2016	Version 4 Release
06-06-2016	Version 5 Release
13-06-2016	Version 6 Release
20-06-2016	Final Version Release

5. Definition Of Done

The definition of done states the exact meaning of what we – the developers – understand by marking our features, sprints and final version as finished [9]. This ensures that there cannot arise any discussion on the delivered products and their completeness.

For a specific feature to gain the status of finished, all of the following conditions need to be met:

- The feature provides the functionality as described in the user stories.
- The feature is tested for the criteria mentioned in the user stories.
- The feature does not add additional functionality not mentioned in the user stories.
- All code concerning the feature is documented by using comments.
- All code does not violate the criteria of the static analysis tools (StyleCop, CodeMaid)
- All code does have a reasonable test coverage
- Related documents are created for better understandability of the code (UML, State diagram).
- There should not be any runtime or compile errors
- All code including documentation of the feature is written according to coding conventions.

For a sprint to be successfully completed, all of the following conditions need to be met:

- All points described in the Roadmap for the given sprint are finished. Meaning that if a feature is expected the feature satisfies all above conditions for features.
- All related documents are updated and handed in
- All must have features described in the MosCow requirements are implemented at the end of the sprint.

For the final version to acquire the status of done, all “must haves” described in the functional requirements need to be implemented, meaning every feature described is finished.

Additionally, at least half of all “should haves” need to be implemented. This means that in our view point the product is finished and it can be showed to the customer.

- All must haves are implemented and working properly
- All should haves are implemented and working properly
- As much as possible could haves are implemented and working properly, otherwise an explanation is given why this is not the case.
- The final version has no significant errors or bugs
- The documentation of the final product is clear and understandable for the customers
- The customers are satisfied with the final version

6. Glossary

Term	Meaning
Hardware	The devices (Kinect, Manus-VR and/or Leap Motion) we use to interact with the virtual world.
Kinect	Kinect is a camera sensor device that works especially well for rough movement.
Leap Motion	Leap Motion is a camera sensor device that works well for fine movement and is able to determine the translation of body parts, something that is lacking in the other sensor devices used.
Manus-VR	Manus-VR is a sensor glove that tracks the movement of the hand and fingers, it is very effective in tracking fine movement.
Therapist	The therapist uses the product to expose patients to different simulated scenarios.
User	VRET aims to treat psychosis patients, these are the users of our product.
VRET	Virtual Reality Exposure Therapy.

References

- [1] Highly Interactive Virtual Reality Solutions. (2014). Retrieved, May 4, 2016 from <http://clevr.net/products>
- [2] Harvey, P. D., & Walker, E. F. (1987). Positive and negative symptoms in psychosis: Description, research, and future directions. Hillsdale, NJ: L. Erlbaum Associates.
- [3] Yellowlees, P. (2008). Your Health in the Information Age: How You and Your Doctor Can Use the Internet to Work Together.
- [4] P. Oskam. (2005). Virtual Reality Exposure Therapy (VRET) effectiveness and improvement. Retrieved May 04, 2016, from <http://referaat.cs.utwente.nl/conference/2/paper/7088/virtual-reality-exposure-therapy-vret-effectiveness-and-improvement.pdf>
- [5] Virtual psychosis environment helps understanding of schizophrenic hallucinations. (2007). Retrieved May 04, 2016, from http://www.ucdmc.ucdavis.edu/welcome/features/20070404_virtual_psych/
- [6] Bravemind - Medical Virtual Reality. (n.d.). Retrieved May 4, 2016, from http://ict.usc.edu/wp-content/uploads/overviews/Post%20Traumatic%20Stress%20Disorder_Overview.pdf
- [7] Using virtual reality to manage anxiety - Medical Realities. (2015). Retrieved May 04, 2016, from <http://www.medicalrealities.com/using-virtual-reality-to-manage-anxiety/>
- [8] MoSCoW method. (2016, April 20). In *Wikipedia, The Free Encyclopedia*. Retrieved May 11, 2016, from https://en.wikipedia.org/w/index.php?title=MoSCoW_method&oldid=716207016
- [9] Definition of Done: A Reference. (2008). Retrieved May 04, 2016, from <https://www.scrumalliance.org/community/articles/2008/september/definition-of-done-a-reference>