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Abstract

Advisory report containing recommendations for the future of the CareTech educational video game.

Advisory Report

CareTech

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# Summary

This report provides an advisory analysis on the possible continuation of development on the Educational Simulation Game, CareTech, for ROC PIT

The goal is to present recommendations and strategies that will improve the quality of the game and/or possible future systems and features.

# Introduction

Based on my advanced knowledge in Game Design and Technology and Software Engineering, I have carefully analyzed the current state of CareTech and its processes, including the strengths, weaknesses, opportunities, and pitfalls. The recommendations provided in this report are tailored specifically to the main stakeholder, Guus Vanhautem, and the people that will be working on the project up in the future.

# Analysis

In this section, I will discuss the findings from the analysis concluded per area.

## Game Design and Concept

The game design and concept of CareTech are unique and might have not been done in an educational context until now. I have tried searching for similar educational games, but there seem to be none available on the market.

This leads to a problem regarding design – it is a completely new design territory. Due to this I am unable to assess the quality of the design and concept on a “tried-and-tested” basis.

## User Interface & UX

During the development of CareTech, UI and UX have not been considered. The UI is crude and the UX is just good enough for a minimal viable product.

One thing that was explored in the UX however, is the showcase of advanced technology in a video game setting without overcomplication. Based on the feedback received from the paper prototype session and from Guus, I personally think that the representation of technology is very good, as it only shows the parts of the technology that a student would be interested in.

## Game Mechanics

The mechanics of CareTech are in-depth and modular. They are not complete, but they offer a very good base for future developments of the game.

CareTech has an advanced AI model built for the Non-Player Characters that is the base of all the other mechanics, scenarios and the gameplay loop.

## Graphics

The graphics of CareTech fall into the “low-poly” art style and are highly stylized. This has been done based on tried-and-tested research that this type of art style is better suited for non-gamers.

## Sound Design

The sound design in CareTech is not a big part of the project. It is needed in some areas, such as the bed sensor mechanics, but sound has not been implemented in other parts of the game yet.

# Recommendations based on Analysis.

In this section I will write in detail the recommendations per area and give justification to these recommendations.

I will also include a “Steps” section that will give a general overview on the steps that I believe necessary to achieve the desired outcome.

## Recommendation – Game Design and Concept

The game design and concept are in a good state right now; however, I think that more testing is needed.

### Justification

There is no justification for this recommendation. This is **NECESSARY.**

### Details

First and foremost, before testing, a prototype of the game needs to be created. During my internship I only achieved a vertical slice. I had a testing session with the students of health and wellbeing, but the data cannot be used to have a definitive answer of whether the design is good or not.

The reason for this is, as explained in the analysis section, that this type of educational game might have never been done before. We do not have data on how efficient this type of game is at conveying educational information, and I believe that this is the most critical part of the project.

The steps needed for this are very simple:

* **Create a prototype that can be shared with testers.**

The prototype must contain a full gameplay loop. A vertical slice is not enough to gather the data needed to conclude if there are any real issues.

* **Have a testing session with as many people as possible.**

Having testing sessions with the target audience is the best way to know if the design is good at relaying the educational information for educational needs.

* **Read and understand the data.**

The data gathered from the testing sessions needs to be thoroughly read through and understood.

* **Create/update based on data.**

Make decisions based on the data and do not let personal bias influence them.

## Recommendation – User Interface & UX

My recommendation when it comes to UI &UX is to continue updating it based on user feedback.

### Justification

User Experience (UX) is the backbone of any successful video game. It is, as in the name, the experience the user has with the game. And immersive and seamless UX leads to greater player satisfaction and increases the investment of the player in the game.

### Details

To have a better UX, I recommend doing the following:

* **Use a Human-Centered Design (HCD) [1] approach.**

Center the UX design around the users’ needs, behaviors, and paint points.

Use user research to gather the data such as: surveys, user interviews, and observation studies.

Base your decisions around the information gathered in order to tailor a specific experience for your target audience.

* **Improve Onboarding Experience.**

The main target audience of this project is non-gamers. If the first interaction with the game is too complicated for a non-gamer to understand, they will have a bad time, or worst-case scenario – refuse to play the game at all.

You should make sure that the onboarding process (or tutorial in gamer terms) is engaging, intuitive and educational (about game mechanics) even for a non-gamer.

At the end of my internship, the game has a non-tested tutorial, and I am not sure how efficient it is at teaching the main mechanics. Use user testing and interviews to make sure that the tutorial is a good onboarding experience, and if not – improve it.

* **Polish Game Mechanics**

A mechanic must be as polished as possible to offer a good user experience, and this is even more important when the target audience consists of mostly non-gamers.

Make sure that there are as few bugs as possible, and that mechanics are not janky by playtesting the game.

* **Keep the current representation of technology.**

While in a lot of projects that are handed over to new students a lot of the mechanics can get changed based on their research, I recommend keeping the representation of technology the same. Based on the research (which will be available in the ZIP file/GIT link the new student will receive) I found this to be a very simple and effective implementation.

## Recommendation – Graphics

My recommendation is to keep the graphics as it is and continue development using the same art style.

### Justification

Based on my research during the internship, the low poly stylized art style is the most efficient at accommodating non-gamers. Not only that, but as most of the target audience consists of them, they might not have computers strong enough to run higher-fidelity games.

### Details

To keep the current art style and improve it, my recommendations are as follows:

* **Design and Create Unique looking NPC rooms.**

Currently the rooms of the NPC look the same. This can lead to the player not knowing in which room he is.

A handful of unique rooms should be handcrafted to replace the monotonous same room.

* **Optimize Lighting and Drawcalls**

The game is not optimized when it comes to lighting and drawcalls. The lighting is all set to real-time with shadows disabled and the there is no mesh/texture baking for the drawcalls. This results in the game running poorly on low-end computers.

In order to optimize these lighting, multiple lightbakes should be made and switched between accordingly.

For the drawcalls, all meshes should be baked into sizeable regions together with their texture.

## Recommendation – Sound Design

My recommendation when it comes to sound design is to try and elevate the sound design to enhance immersion, engagement, and world-to-player response.

### Justification

Sound design is a crucial but often underestimated aspect of video game development. It greatly contributes to the overall immersive experience, provides essential feedback to players, and stimulates emotional responses. With that in mind, I suggest an enhancement in CareTech's sound design approach to further engage players and enrich the gaming experience.

### Details

To enhance the sound design, I recommend the following:

* **Emphasize on Audio Immersion**

Audio is a powerful tool for creating immersive environments. A combination of ambient noise, sound effects and possibly character dialogues should be used to create a livelier game world.

* **Leverage Dynamic Audio**

Dynamic audio should be used to respond to the player’s actions and changes in the environment. This could provide valuable feedback to players.

* **Use Distinctive Audio as Cues**

Audio cues are an effective way to communicate important information to the player. Audio cues can be used to guide and/or alert the player.

Cues should be distinctive and easy to understand.

# Personal Recommendations

In this section I will discuss about my personal recommendation that are not based on anything related to the already existing mechanics, systems, etc.

These recommendations will not have justifications and should be taken as a suggestion.

## Personal Recommendation – Utilize AI to enhance the NPCs

During my internship I came across a tool called InWorldAI [2]. This tool uses multiple AI powered tools to create AI characters for video games.

These AI character can have conversations with the player based on specific parameters, key words and phrases that can trigger events, etc.

The technology is quite limited now, and most of the events/triggers only work when the player starts the interaction. The NPCs also cannot speak with each other at the moment when using this tool.

### Details

The AI NPCs could be used in order to better communicate to the player what the issues of the NPCs might be. This can be done in multiple ways, but one of the easiest is to use the trigger system of the InWorldAI SDK – This can be used in such a way that the NPC will change their speech patterns/behaviors based on the problem he has.

Of course, the implementation should not directly give the answer to the player, as solving the “mini-mysteries” is an important part of the educational information sticking with the player.

Ideally, the AI integration would give hints and collaborate with the player to find the correct answer technology wise. This, however, is currently not possible with the state of the technology, but a proof of concept might be achievable.

# Conclusion

In conclusion, by adopting these recommendations, I believe that the future development of CareTech will be a useful tool for the students of health and wellbeing for learning the same educational material as books in video game format. I also believe that by following these recommendation we can help build a structure to a nearly non-existent type of educational video game.

# References

[1] Wikipedia contributors. (2023). Human-centered design. Wikipedia. <https://en.wikipedia.org/wiki/Human-centered_design>

[2] Inworld – The developer platform for AI characters. (n.d.). <https://inworld.ai/>