

Product Vision
Of
The Cave of Caerbannog
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0. Introduction

This document is the Product Vision of the game “The Cave Of Caerbannog”. As said by R. Pichler (2009): “the product vision guides the Scrum team and aligns stakeholders and customers.” The developers, MIGI2 or simply “us”, are this Scrum team and this document is here to inspire and guide us through the creation of the game.

We will start by listing the stakeholders of this project and identifying potential customers. This is followed by an examination of these customers while adhering to the stakeholder demands. With the needs of the customers and stakeholders clear, the most important product features of The Cave Of Caerbannog will be described in order to meet those needs. After that, we will examine the place of The Cave of Caerbannog in the current marketplace of games that use the Oculus Rift and distinguish the unique features of the game. Finally, the budget will be discussed and a brief roadmap of the product creation process will be given.

1. Stakeholders and customers

1.1 Stakeholders

There are many stakeholders that are invested in this project. The project is done as part of the b.Sc study Computer Science at TU Delft during the school year of 2015-2016.

Specifically for the course TI2806 “Contextproject” (Study guide, 2015). This means that majority of stakeholders are the people that grade the deliverables of this project. The following list holds the most important stakeholders and provides explanation of their involvement.

1. *prof. dr. A. Hanjalic* and *dr. A. Bacchelli*. The responsible instructors for the course TI2806. They will have the final say in everything and are responsible for running the course smoothly. They will mostly have an administrative and judging role.
2. *dr. ir. R. Bidarra*. The context coordinator. He is responsible for creating, maintaining and judging the context of the project. This product is a virtual reality computer game and the context coordinator is responsible for assessing how well this game meets the context criteria.
3. The Student Assistants (SAs) *S. van den Oever* and *J. van Schagen*. The SAs will assist *prof. dr. A. Hanjalic*, *dr. A. Bacchelli* and *dr. ir. R. Bidarra* in assessing the performance of the project and the group. *S. van den Oever* will act as context SA and will judge if the game meets the context criteria. *J. van Schagen* will act as software engineering SA and judge the software quality.
4. The developers (us). While the developers hold no claim over the grading of the project they are the ones most interested in succeeding and passing the course. In order to pass, it is essential they work together and study the material thoroughly. It could be said that, in the end, the stakes of the developers are the highest.

1.2 Potential customers

Virtual reality peripherals have only been officially on the market for a few months and are expensive to purchase, as an example, the Oculus Rift is available from 699 euros (NU.nl, 2016). To add to that, in order to use an Oculus Rift a powerful PC is required, which costs an additional one thousand euros, as stated on the Oculus website (Oculus ready PCs, 2016). To be able to afford such a purchase the consumer should either be a hardware enthusiast or should consist of a group of people who all pitch in.

Another avenue of revenue could be companies or hosts of events that want to either show off the technology or use it in team building exercises. These customers could buy multiple copies of the game.

In short there are three groups of potential customers: **hardware enthusiasts** that game, **groups of people** who game and **companies** that have some benefit in displaying or using the game as a team building exercise.

2. The player wishes

John Carmack said in 1993: “The game designer shouldn't be making a world in which the player is just a small part. The player's the boss; it's your duty to entertain him or her”.

Carmack was lead developer of Doom (A. Antoniadis, 1994), a game which was so successful that it's getting another sequel this year, 23 years after it's initial release (Doom, 2016). In other words the player is king and we have to fulfill their wishes in order to make this game a success. In addition, the game must also adhere to the context that is made in (Computer games, 2016).

2.1 The game

The most important feature of almost any game is the amount of **fun** that the players have. Fun is an arbitrary concept, but it's something that everyone can experience (C. Todd, 2011). To add to that, **originality** is sparse in the world of gaming where thousands of different games exist in a 22 billion dollar industry (Entertainment Software Association, 2016). In order to combat these two necessities, a new hardware platform will be used: the Oculus Rift.

The player will be required to be in possession of an Oculus Rift and the Xbox 360 controller that comes with a Rift. The player should also have a computer powerful enough to support the virtual reality headset. It cannot be expected that the customer buys more peripherals in order to play the game, since the acquisition of an Oculus Rift is quite an investment. Therefore, the game should use existing input and output devices or additional low-budget technology so the non-rift users can interact and experience the virtual world.

Any game needs some kind of marketing strategy. If nobody knows about your product, then nobody will buy your product. This is common sense. Games can use gametrailers to give an impression of the game. As such, a **gametrailer** will be a great way to advertise the game. The trailer will be used to inform potential players and convince them to try and buy the game.

Caution should be used in any VR game. Moving in a virtual world, while sitting still, can induce nausea effects to the user of the Oculus Rift. Higher visual fidelity can make this issue worse as found by P. M. van Leeuwen, C. G. i Subils, A. R. Jimenez, R. Happee & J.C.F. de Winter (2015). They suggest to combat this effect by lowering visual fidelity. An option would be to use a **low-poly environment**. Low-poly is an art style where simple forms and simple colors are used in order to give a simplistic feel to the game. This scenery should prevent the player from feeling sick while playing the game.

2.2 Asymmetric elements

The main difference from other games in the industry is that the game should use **asymmetrical multiplayer**. The Rift user needs to have a different role than the rest of the players. Only around 10 out of the hundred plus Oculus Rift games have asymmetrical multiplayer (List of games with Oculus Rift support, 2016). It is important that this role

actively requires the use of a VR headset, otherwise the game could just be played without one, defeating the purpose of creating a unique asymmetrical multiplayer experience.

3. The product: The Cave of Caerbannog

To fill the spot of the perfect game to be bought and enjoyed people as possible, our development team MIGI 2 presents the Cave of Caerbannog. The Cave of Caerbannog, or CoC in short, is an adventure game where the Oculus Rift user has to navigate a maze in order to get to the treasure. The maze is filled with traps and evil players trying to stop the Rift player. Luckily the Rift user is not alone as there are helper players who guide the Rift player through the maze and protect him against the dangers. In this section the most important attributes of the game are defined and a reflection is made on the customer needs for each attribute.

3.1 The Maze

The Cave of Caerbannog is, you guessed it, a cave. This cave is a dungeon like space that can be described as follows: the cave is split into many rooms, each room is connected by one or several doors to other rooms, the rooms are concatenated and together they form the maze. The configuration of the rooms is different every time a game is started and only a maximum number of rooms will exist. Each maze will always have a start room and a treasure room. The Rift user starts at the start room and has to find his way through the remaining rooms to get to the treasure room.

Each room presents a different challenge. Rooms will have static objects such as breakable walls, gates, keys and locked doors, as well as interactive objects like switches and bombs. The rooms are 3d spaces. In order to progress through the room, the player must avoid damage and get through the next door. After beating all the rooms to the treasure the Rift player and the helpers win. If the Rift player fails to get to the treasure room in time, the Rift player loses, but the players who were against him win.

The Rift player will only have a limited amount of time to find the end of the maze. This is to create hectic situations and increase the chance of the player making a mistake. So player also loses if timer runs out. The time will be dependent on the size and difficulty of the maze and will have to be balanced.

The ever changing maze and random configuration of rooms should keep the players entertained and keep the gameplay fresh. This ensures that the Cave of Caerbannog stays a **fun** and **original** experience.

3.2 Angels and Demons

The other players have an important role as well. They are split into two groups: a helper team and an antagonist team. The two teams work against each other: one team attempts to get the Rift player to the treasure, while the other tries to prevent that. Non-Rift users will only see a 2d representation of the rooms, while the Rift player sees a 3d space of the rooms. The helpers will need to aid the Rift player, while the antagonist team wants to murder the Rift player (in virtual reality only). The two teams will have separate skills. This

creates the **asymmetrical multiplayer** and uses group dynamics to create amusing situations and competitiveness among the players of the game.

The helpers will be able to interact with room the player is currently in. They will be able to interact with certain object in the room, such as moveable platforms and gates. They can see additional details on the map such as locations of keys and doors. They can distract enemies with bait to save the player. More aiding options can be explored. The helpers win when the Rift player wins the game.

The antagonists are able to interact with room where the player currently is, but they are also able to interact with future rooms in order to set up traps. The antagonists can spawn a variety of monsters, set-up traps, place fake or real bombs and fake walls. Again additional options can be explored during the project. The antagonists win when the Rift player dies or loses the game.

3.3 Game set-up

The peripherals of the game consist out of two main elements and an optional one. Firstly, the Rift user will use an Oculus Rift and an Xbox 360 controller to see the 3d space and move around in it. The Rift player will be able to pick up items and drop bombs. Secondly, the helpers and the antagonists use their smartphones to interact with the 2d presentation of the maze. This will be done by a website on a server of some sorts. The helpers and antagonists connect to the website which will display a part of the map, interactions points and activatable skills. Optionally, a screen could be used to show the explored map as a 2d representation, this will give the players the feeling that they are all in the game. This screen could be a monitor or a projector pointed to the ground.

Notice that apart from the Oculus Rift and a computer that is able to support an Oculus, no other extra peripherals are needed. Even though mobile phones are used, it can be expected that almost anyone with an Oculus Rift will have mobile phone and some kind of display screen (D. Chaffey, 2015). Only a projector can be consider as an additional cost, but one isn't necessary to play the game. Thus, only **low-budget technology** is required to play.

3.4 Theme

The theme of Cave of Caerbannog will be a mix of retro-style arcade dungeon crawlers and cave exploration games. The art style will be simplistic as there is no art team available for assets. A **low-poly** art style will be used in order to prevent motion sickness and will enable the player to quickly recognize objects in the world. The enemies will have simple animations. Explosions and falling rocks will also be present. The **gametrailer** will present the theme and gameplay elements.

3.5 Game Testing

Finally, no game is perfect from the start. This means that a lot of gameplay testing must done as soon as possible and as often as possible so that we can react on player feedback. There will be at least one playtest round per week with people other than the developers as soon as a playable prototype is created.

4. Environment

The environment in which our game will live is the area of party games. These games are generally short, fast paced, encourage cooperation and have highly entertaining gameplay. This genre is very broad and there are many games that are marketed in this area. As a result, we have competition from other games and therefore we have to offer some unique gameplay elements and make the game more immersive than other existing games.

4.1 Competition

The combination of a main player, a team of helpers and a team of antagonists is a rare concept in the game industry. As a result there is no direct competition with games that have the same gameplay. Some games do however share some key features with the game. Two of those games are '*Black Hat Cooperative*' (Team Future, 2015) (Formerly known as '*Black Hat Oculus*') and '*BFF or Die*' (Honey Tribe Studios, 2016).

The game that is the closest to our concept is the game '*Black Hat Cooperative*'. In this game one player, wearing a VR headset, is placed in a maze and has to navigate to the exit. A second player assists the first player in his journey by reading the map and giving instructions to the first player. The first player has to find keys, memorize passwords and avoid enemies to be able to reach the exit of the maze and the second player has to warn for enemies and traps while navigating the first player through the maze.

A key difference with our game and this game is the absence of another team that is trying to prevent you from reaching the exit. Another difference is that there is no exploration mechanic, as the entire map is known from the start. Additionally there is no mechanic that exploits the difference in viewpoints by using altitude changes throughout the levels. These altitude changes (quite literally) add a different dimension to the navigating task of the other team.

Another game that makes use of supporting players to solve a maze is '*BFF or Die*'. This game also focuses on the cooperative aspects of the game, but again lacks the competitive elements.

Each supporting player has a different way to help the main player reach the end of a maze; There is one player that can light up dark places and various other players can for example teleport the player, 'zap' mummies or use a laser to break walls. Besides the absence of a defending team there is one big difference between this and our game. In this game all players have a shared view on the maze and therefore all players have the same information. In our game there does not exist a player with all information, which forces to communicate more and in a better way to link all the information together.

Various other games share small aspects of gameplay with our game, but they never touch a significant portion of it. These games share for example the treasure capture/defense mechanic but do not have teamwork and dungeon/maze exploration aspects. There are also games like '*Keep Talking and Nobody Explodes*' (Steel Crate Games, 2015) that are heavily based on the divided knowledge that different players have, but have nothing in common with our game in all the other aspects of the game.

4.2 Unique product points

What makes our game stand out from other games on the market is that it combines different types of gameplay in a unique way. This resulted in a fun communication and teamwork based cave exploration/protection game with highly asynchronous gameplay. In our game there are three distinct roles with completely different gameplay, instead of multiple teams with weak asynchronous gameplay. Therefore each role is a different experience and essentially a different game. The roles also enforces good communication and teamwork to be able to win from the other team.

Furthermore, the levels in our game are randomly generated to keep the challenges different each time and to make sure the game does not become repetitive after you have played it a couple of times.

Another area that our game focuses on is creating an immersive experience for all players. On the one hand this is done by placing a player in a virtual cave using a VR head mounted display and on the other hand by using a big map (on the wall or on a table) to improve the experience and communication capabilities for the players outside the maze. Many games involving a VR headset often forget to increase the immersion for the other players without the head mounted display.

Our game is also one of the few games that use the difference between a 3D and 2D view to create some extra challenges in the navigation on a map. Were other games that show a door on a map guarantee that the door is accessible, our game does not and therefore there can be doors high on walls that look useful on the map but in reality are not. This reinforces teamwork to find the treasure.

5. Project specifications

In this chapter we give a short list of the specifications of the project. A more detailed description of the project can be found in the product planning. As stated earlier, the project is done as part of the study Computer Science at TU Delft during the school year of 2015 to 2016 for the course TI2806 “Contextproject”.

5.1 Budget

There is no real money to be spent as we are just a pretend development team creating a product for a project. However, peripherals can be acquired through the help of the context team. We will borrow an Oculus rift and a controller during the project. Additional peripherals can be requested to the context team as long as the peripherals don't require a budget of “several hundreds of euros” as stated by the context TAs.

There is one budget to consider though and that is the time budget. Each team member is required to work at least **280 hours** during the whole project. Due to the nature of game development this amount will likely be exceeded at the end of the project by each member. Nonetheless, we should try and divide the development time that we have evenly among the weeks of the project.

5.2 Timeline

The project will be split into multiple stages. Each stage will have different factors that change in priority. The project lasts for 10 weeks. The stages are: the Concept phase, the Prototype phase (alpha), the Beta phase and the Release phase. The Concept phase and Prototype phase will both last 2 weeks each, the Beta phase will last 4 weeks and finally the release Phase will last 2 weeks.

During the Concept phase all ideas and specifications of the game will be made. A project vision and planning are made and the first draft of the game design document will be created. These weeks will be full of discussion and many meetings in order to shape the perfect idea of the game. The codebase and libraries will be set up on github, but no real code will be written.

Following in the Prototype phase, the framework of the game will be created. It should be possible to create a barebones level at the end of the prototype phase, in which the Rift player is able to navigate and it should be possible to interact from the level from outside of the Rift environment.

Then, in the Beta phase, as many features that are stated in the planning and architecture should be implemented as possible. Also the website server that creates the website and interacts with smartphones should be able to be used as soon as possible.

Finally, in the Release phase, all promotional material, including the gametrailer, should be created. The last bugs and feedback should be processed. The final report must be written. The demo has to be scripted. And the final presentation and demonstration will be held on the last day.

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