Game Design Document: "TU Escape"

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GAME DESIGN OVERVIEW

You are waking up in a room, which seems strange as it has extra ordinary items and pictures in it. Do these hieroglyphs mean something? The only thing you know: Get out!

Core idea

Via the HTC Vive, the player is placed in an virtual environment from which he tries to escape by solving puzzles. The player can freely walk around a room, grab items and otherwise interact with objects. The player must escape in time to "win".

Key-features

Following this is a list of all main features creating the USPs (=Unique Selling Points) for this game.

The player can freely walk around within the virtual room, which was built approximately the same size as the play area this game was tested in. Therefore, no other transportation mechanics are needed to maneuver throughout this game, leading to a more immerse experience.

The two HTC Vive Controllers hereby represent the hands of the player in the game. Whenever a hand is nearby an specific object, the player can grab the object, making it "stick" to that hand until releasing it. At other objects, the player can interact with them, for example typing in a code into a numpad.

"TU Escape" is full of riddles. The player has to learn certain mechanics with found hints, which lead to other puzzles. Over the course of the game, the player learns to translate hieroglyphs one by one, which represents the general theme.

Genre

This game can very simply been put into the "Escape Room Game" category, enhanced with VR functionalities.

Target player base

Our target players are 20 to 29 years old, love to think creatively and therefore solve puzzles. They should also not be pure beginners in the whole "puzzle" category in order to fully enjoy "TU Escape" .

DETAILED DESIGN DOCUMENT

Summary according to MOZELL, Wil (2015): Simple Game Design Methodology - The "Core Diagram",

- Core Mechanic: Grabbing and interacting with objects

- Secondary Mechanic: Solving Puzzles

- Progression: Gaining new items and knowledge

- Narrative: Escape from the room

Rules

After starting the game, the players attention is directed to a timer running down from 25 minutes. When the timer reaches zero, the player simply looses and has to restart the game in order to retry.

When the timer is halfway to zero, all lights shortly shine in red lights to give feedback to players.

In order to win the game, the player has to leave the room through the only door, which is locked in the beginning.

Players will be forced out of object when moving "into" them with the head-mounted-device.

Items, that a player is able to grab, react naturally to physics such as gravity and friction. Other objects are static and unmovable.

One hand can only grab one item at a time. Both hands cannot grab the same item at the same time.

Mechanics

The player is able to grab different items with the controllers. Each controller (representing a hand in the game) separately can get hold of up to one item.

Whenever the player would move into an object, the screen fades to black and signals the player to move back. This prevents player seeing through walls and therefore cheating puzzle mechanics.

By releasing the "grab"-Button while swinging the hand, the player can throw items around.

All other mechanics are based on the ten puzzles. Figure 4, 2 and figure 3 show sketches about some puzzles:

Start

In the beginning of the game, all regular ceiling-lights are turned off. The player only sees two glowing red objects: A cube lying on the ground and one being stuck in a pipe-like object.
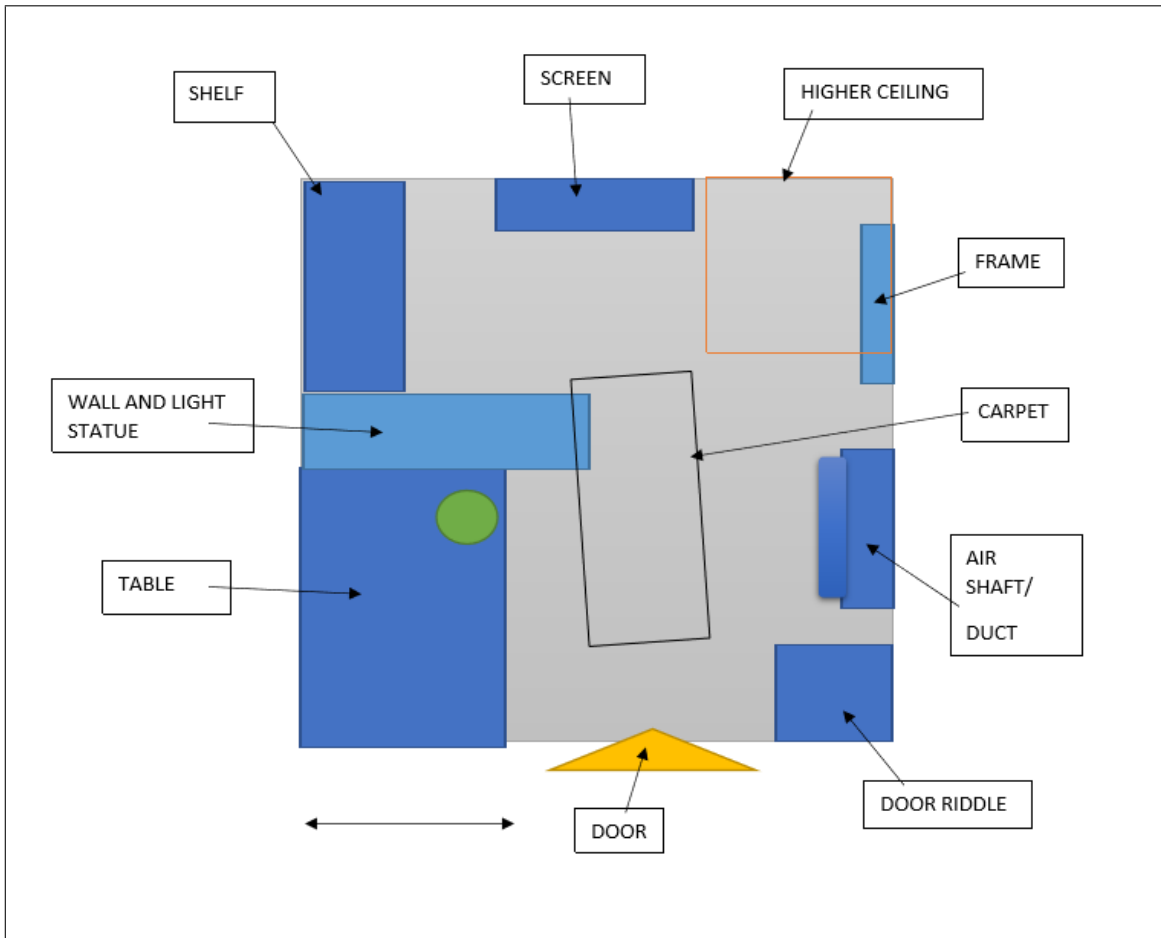
Figure 1. The layout of the room the game plays in

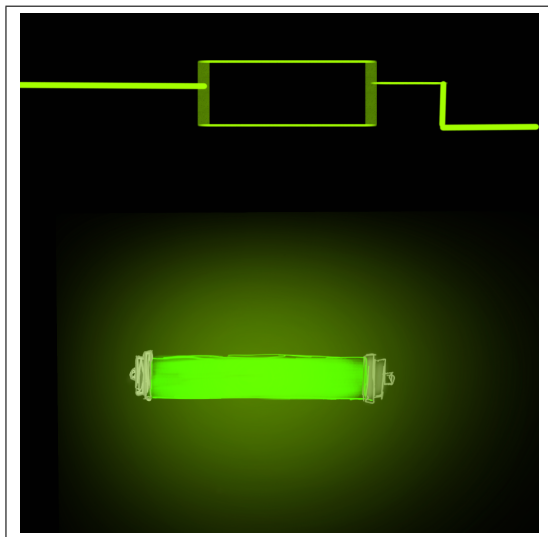When the player grabs the cube and places it into the pipe, all lights turn on.

Figure 2. First riddle of the game: A glowing object has to be placed at the right position to turn on all lights in the room

Shelf
There is a shelf located in the room. A flower pot is placed onto the shelf, hiding a scroll inside. A player can grab the pot and then the scroll to get a hint.

Shaft vibration puzzle
There is a weird-looking desk with a shaft attached on top of it. The player is unable to look up the shaft, as it is to small for the players head. When a hand reaches up the shaft, that controller starts to vibrate the pattern "short, short, long, long, short, long, short, long, short".

With a modified Morse code being written on a note the player can find at the ceiling, this pattern translates to the numbers 2-6-3.

After entering 2-6-3 into the keypad located next to the shaft, this puzzle is considered to be solved.

A note with another hint and a plate shaped like a heart falls out the shaft when solved.

Suit puzzle
The ceiling is higher in one corner of the room. The player can see plates shaped like three of the four suits of a playing card game: a diamond, club and spade.

When the player throws the plate shaped like a heart up there, it flicks to a fixed location, marking this puzzle as solved.

It activates all four lasers in the room.

Table
One table leg has a slightly different color than the rest of the legs. That is the only leg the player can grab. When using the "interact" Button onto one end of that leg, a note with a hint falls out.
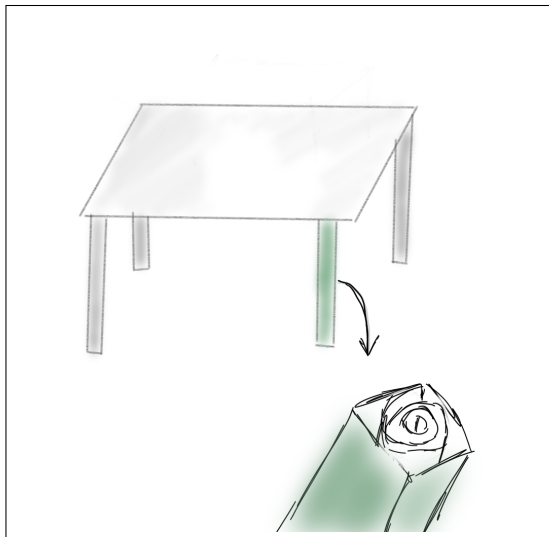

Figure 3. There is a table in the game, where one table-leg has a different colors than the rest. That is the only leg the player can grab. Inside that leg, there is a new clue

Laser riddle
After activation, four lasers in the colors green, yellow, blue and red appear throughout the room.

When the player interrupts the yellow and red lasers with the controllers and/or the head and not one of the rest, the screen puzzle unlocks and the lasers shut down. There is also another clue falling on the ground.

Frame
On the frame, there are four sliders the player can move horizontally.

When aligning the sliders corresponding to the information given by the picture on the carpet in the room, a note with another clue drops to the ground before the player.
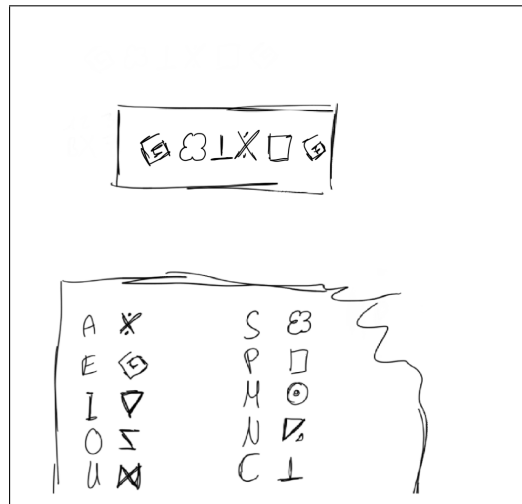

Figure 4. General thing to be learned over the course of this escape room: Understanding what certain hieroglyphs mean

Color-code
The player will find multiple colored plates. Some of them have a hieroglyph on them, some don't. Through these plates, the player finds out that a colored plate is always connected to the third letter of that color. For example, the red plate stands for a "d". Through this system, the player can translate three hieroglyphs being written on some colored plates. For example, a yellow plate with a hieroglyph on it means, that this hieroglyph stands for an "l".
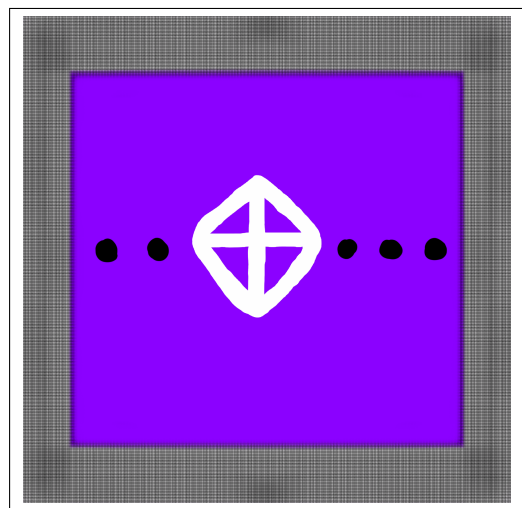

Figure 5. One colored plate with a hieroglyph on it (would translate the symbol to an "r")

Screen puzzle
After unlocking this puzzle, the player needs to input a specific sequence deriving through a left and right button. The Frame-puzzle gives the solution, it is "left, right, right, right". When pushing the buttons in that sequence, the screen shows the final hint for the door-puzzle.

Door puzzle

Directly to the left of the door, there is an input-desk. On it, there is a six by six grid-like playing board with a marked position, representing a figure on that field. With four buttons on the desk, the player can move the figure up, down, left and right.

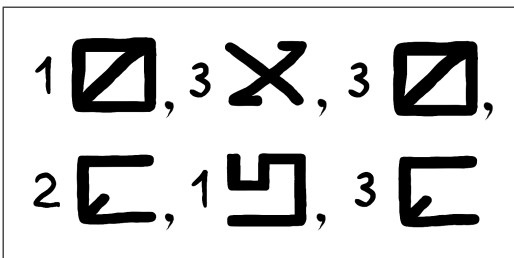Solving the screen puzzle unlocks a combination of hieroglyphs.

Figure 6. What the screen shows after unlocking it

With other clues found within the room, the player can translate the hieroglyphs into N, E, S, W commands, representing the cardinal directions north, east, south and west. With the compass found at the shaft, the player can translate the sequence into a combination of up-, down-, left- and right-moves.

After inputting the right sequence, the door unlocks and the player wins the game.

TECHNICAL DESIGN DOCUMENT

To play this game, a HTC Vive, two Vive controllers and approximately three by four meters of free space is required. There is no need of a computer mouse or keyboard. (except for starting the game) and has the following technical requirements:

- Processor: Intel™ Core™ i5-4590 or AMD FX™ 8350, equivalent or better

- Graphics: NVIDIA GeForce™ GTX 1060 or AMD Radeon™ RX 480, equivalent or better

- Memory: 4 GB RAM or more

- Video output: 1x HDMI 1.4 port, or DisplayPort 1.2 or newer

- USB: 1x USB 2.0 port or newer

- Operating system: Windows™ 7 SP1, Windows™ 8.1 or later or Windows™ 10

Controls

The player only controls and interacts with the game via the HTC Vive Controllers and head-mounted device.

The trigger button of an controller is used for the "Grab" function. It is used via the "Hold & Release" principle.

The touch-pad button on the controllers is used for all other interactions between objects. Pointing onto a number on an keypad and pressing the button might result in the number being written onto the display of the keypad.

Other

There is a situation where Vive controllers start their rumble motors to signal specific feedback to the player.

All other controls consist of the real movement of the player.

AESTHETICS

The games models are low-poly and in 3D. With the "hard-edge" and rather colorful, heavy-contrast style, we communicate a science-fiction, abstract environment to the player. With rather simplistic other graphics and the importance of nearly every object, "TU Escape" does not visually distract the player from the gameplay elements.

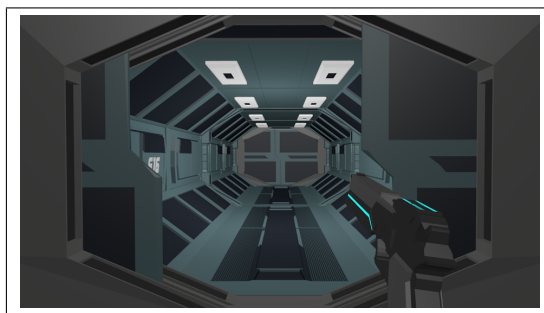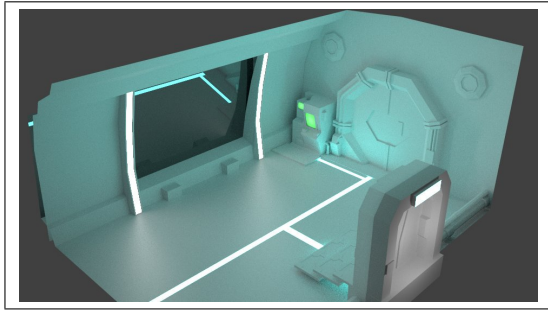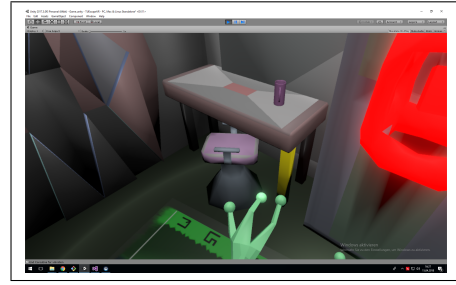Figures 7, 8 and 9 showcases the inspiration for our aesthetics:

Figure 7. Simplistic models with hard edges

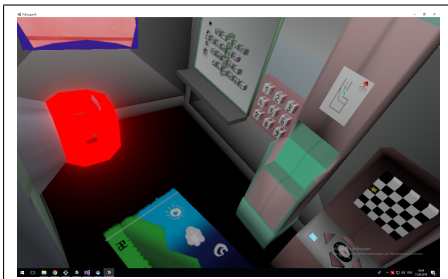**Figure 8. Colors are standing out**

Figure 11. The table, futuristic chair and one player hand

Figure 9. Hard edge coloring

Figure 10 and 11 shows, how these inspiration turned out.

Figure 10. Camera-like shot from the escape room