Design Document for:

The Sewer

Research Horror Game

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1. Overview

This game (or experience) is designed to be used in a research experiment, looking at the differences in the player experience (PX) between traditional and virtual reality (VR) displays and controls. However, this game may also be playable outside a research environment.

1.1 Concept

After falling down into the sewers, the player finds themselves in a dark network of pipes, aimed with only their phone. To navigate to the exit, they can use the phone as either a light source or compass to guide them, but never both. However, the player might not be alone.

1.2 Genre

Horror/thriller style game to create an impactful psychophysiological response for research purposes, in addition to entertainment.

1.3 Game Flow Summary

Gameplay should take between 5 to 10 minutes.

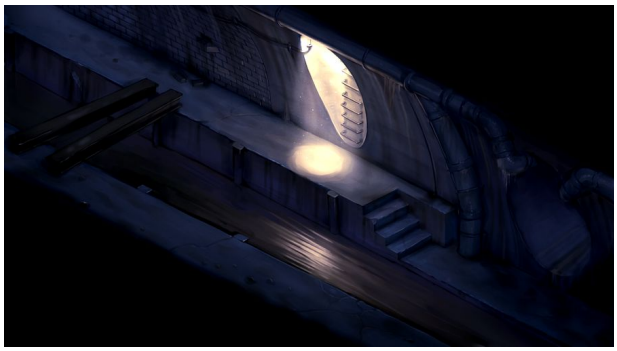
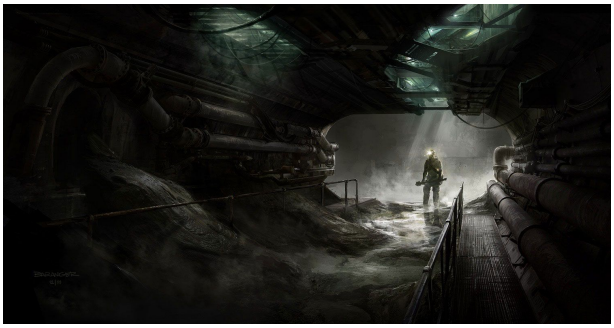
The player starts off just under an open manhole, having just fallen down. They're equipped with a smartphone that can be used for either a light or navigation through the sewers. Writing on the wall reads "*Keep quiet!*" Shortly afterwards, a message appears on the player's phone with a notification noise, followed by an ambiguous noise in the distance. This should provide players with enough to make the connections between the writing, phone noise, and whatever is reacting to the noise, to try not make sounds. However, the player never sees the stalker, leaving it up to their imagination.

Having no other option, the player must progress through the sewers towards an exit. The phone's screen assists them with a direction to head towards. However, to more successfully navigate the pipes, they can also turn the phone screen around to dimly light up the way ahead.

Throughout the various sections of the game, the player will encounter trigger events to either build tension or cause a jump scare (outlined in the '*Triggered Events*' section). These events are intended to assist or elicit psychophysiological responses for research purposes.

1.4 Look and Feel

Dark and eerie underground sewer pipes:



Sources:

1. https://img00.deviantart.net/9c9b/i/2012/100/2/b/2d_survival_horror_game_mockup___sewers_by_pyroxene-d4vqtvu.png
2. https://media.alienwarearena.com/media/Concept-art-for-video-game-The-deep-7-a.jpg
3. https://gamingshogun.com/wp-content/uploads/2013/09/Outlast_03.jpg
4. https://media.indiedb.com/images/games/1/39/38439/screenshot11.jpg
5. http://i.neoseeker.com/n/2/sewer_1.jpg
6. https://cdn.80.lv/80.lv/uploads/2015/09/some-environments-80lv-gamedev-_2.jpg

2. Gameplay and Mechanics

2.1 Gameplay

2.1.1 Objectives

The primary objective is to reach the exit by navigating the sewer tunnels. However, the toggleable option of 'collectables' (explain in the '*Experimental Research Options*' section) allows the player the option to find a number of items throughout the level. This is intended for experiments requiring a secondary objective or type of reward.

Players are not aware the collectable items exist until they find them. Additionally, they are not told how many are possible to collect. This is so they don't feel they are performing poorly, yet gain a sense of accomplishment when they do find an item.

2.1.2 Progression

From the starting point of the game, the player has access to a compass, which guides them along the tunnel towards the exit. The distance to the exit is unknown to the player, however, they will get a sense of progression as the triggered events occur (explained in the '*Triggered Events*' and '*Game Flow*' sections).

Additionally, if the option for collectable items is enabled, players will gain a further sense of progression if any items are found (explained in the 'Objectives' and '*Experimental Research Options*' section).

2.1.3 Triggered Events

Throughout the level, players will encounter triggered events of either sound, phone or game environment. These events are set along the level and triggered upon the player reaching these points.

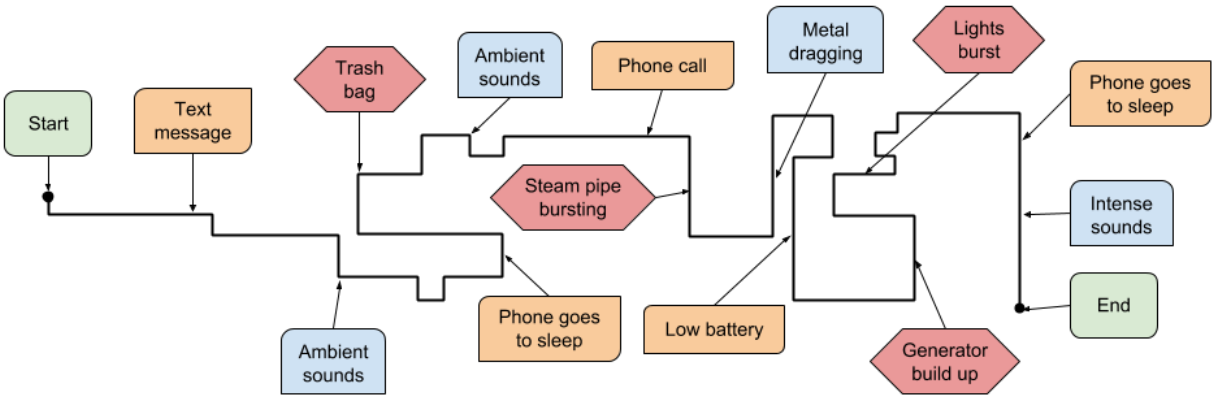
- Sounds may be ambient, ambiguous, and/or eerie to set and maintain the creepy feel of the game.
- Phone events provide narrative and potential jump scares for the player. These events often force the player to look at their phone, turning it away from acting as a light and increasing tension.
- Environment events are often intended jump scares, such as a steam pipe or lights bursting.

2.1.4 Game Flow

The following outlines the trigger events, as well as the estimated time they occur:

2.1.5 Level Layout

The following outlines the approximate location of the above trigger events in the level:



2.2 Mechanics

2.2.1 Movement

The player moves around the world at a natural pace without clipping through walls or railings. Controls are the player movement are dependant on the control and display setup selected before the game starts (outlined in the '*Control System*' section).

2.2.2 Phone (Light Source & Navigation)

Besides movement, the phone is the only other aspect of the game the player can control (outlined in the '*Control System*' section). When the phone screen faces away from the player, it acts as a light and dimly illuminates the way ahead. When the screen faces them, they'll be able to see any notifications or alerts, as well as a directional compass guiding them towards the exit. While the player views the phone screen, they will be unable to see what's ahead of them, creating possible tension and opportunities for jump scares.

As early playtesting found players losing a sense of direction and moving away from the exit, the directional compass points players towards each proceeding corner of the tunnels. Guiding towards each corner is important since the tunnel may loop backwards and cause confusion to some players if the compass points directly towards the exit.

2.3 Experimental Research Options

To provide researchers with some control over the game, there are a number of options to set up a game to suit their experiment. These options include lighting, control scheme, togglable game aspects and other input fields to assist with data collection (explained in the '*Research Data Output*' section).

- **Phone light harshness** adjusts the brightness emitted by the phone screen.
- **Ambient light harshness** adjusts the brightness of ambient light in the game world.
- The **control scheme** sets the control and display setup of the game (outlined in the '*Control System*' section).
    - Traditional display with traditional controls (keyboard and mouse)
    - Traditional display with VR controllers
    - VR display with traditional controls (keyboard and mouse)
    - VR display with VR controllers
- The '**collectables**' option toggles the existence of optional collectable items within the game world. This is intended for experiments which require a secondary objective or reward type. (By default, this option is toggled off.)
- The '**physical monster presence**' option toggles the presence of a monster, seen briefly throughout the game and more definitely towards the end. (By default, this option is toggled off.)
- **Participant number** and **additional notes** are input fields to assist researchers with tracking participants and experiment sessions.

3. Story, Setting and Characters

3.1 Story and Narrative

While being distracted by their phone, the player falls down a manhole into the sewers. Unable to get out, they have to find their way to an exit. However, they soon think they're be being followed by someone or something.

3.2 Game World

The game world keeps relatively true to the real world. Set in an underground sewer system, the environment is dark and wet with a cold and eerie feeling. The sewer system gives the impression that people very rarely, work down there since it's fairly maintenance-free. The idea behind this is to give the player the sense that no one will find them down there.

3.3 Characters

The only known character in the game is the player themselves, viewed in first-person with a visible phone. There is a suggestion of something else in the sewers other than the player, however, this is never addressed.

4. Interface

4.1 Display & Control Schemes

The controls are dependant on the settings selected before the game starts. The options cover four possible combinations of traditional computer and virtual reality gaming.

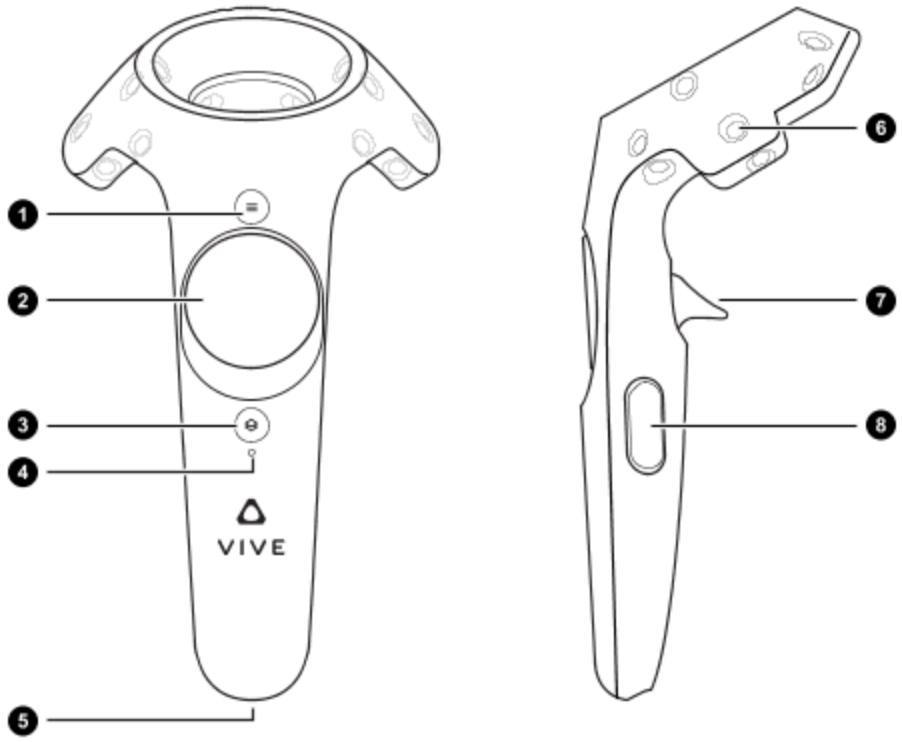
4.1.1 Traditional display and controls

This display and control scheme uses the standard computer controls with a monitor or TV display. The player moves in the world using WASD on a keyboard and mouse movement to look around. The left mouse button is used to flip the phone between looking at the screen and using it as a light.

#	Key	In-Game Action
1	A	Move left
2	W	Move forwards
3	S	Move right
4	D	Move backwards
-	Mouse movement	Look movement
5	Left mouse button	Flip the phone

4.1.2 Traditional display and VR controllers

Uses a monitor or TV display with VR controllers. The player moves in the world using the controller's trackpad, looks around by moving the controller (phone) to the edges of the screen. Rotating the controller rotates the phone accordingly.



#	Motion Controller Action	In-Game Action
2	Trackpad	Movement
-	Movement to edge of screen	Look movement
-	Rotating	Rotating the phone

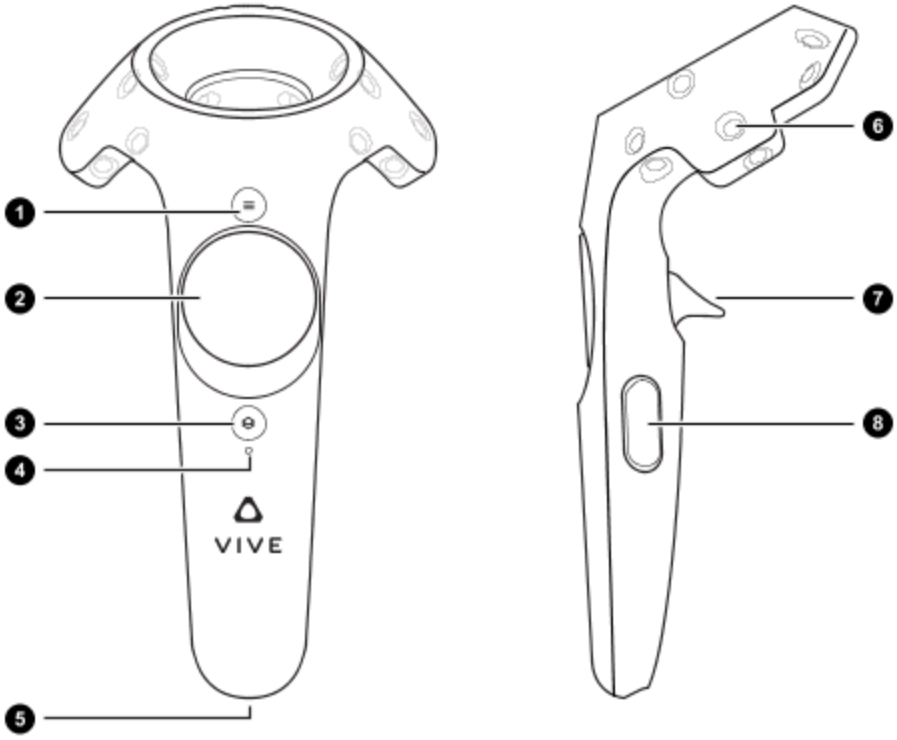
4.1.3 VR display and traditional controls

Uses a VR headset in addition to a keyboard and mouse. The player moves in the world using WASD on a keyboard and mouse movement to look around. The left mouse button is used to flip the phone between looking at the screen and using it as a light.

#	Key	In-Game Action
1	A	Move left
2	W	Move forwards
3	S	Move right
4	D	Move backwards
-	Mouse movement	Look movement
5	Left mouse button	Flip the phone

4.1.4 VR display and controllers

Uses a VR headset to view and look around in the game. In addition to room-scale VR movement, the player moves in the world using the controller's trackpad. Rotating the controller rotates the phone accordingly.



#	Motion Controller Action	In-Game Action
2	Trackpad	Movement
-	Room-scale movement	Additional movement
-	Headset movement	Look movement
-	Rotating	Rotating the phone

4.2 Audio

The audio is played throughout the game to create and maintain an eerie feeling. Sounds may include dripping water, ambiguous sounds in the distance, or obvious sounds such as a pipe bursting.

5. Research Data Output

During an experiment playthrough, the game will output data into a spreadsheet to be used by the researcher. This data includes the participant number, game settings used, total play length, timestamps of triggered events, and additional notes made by the researcher.

- The **participant number** is set by the researcher in the appropriate input field before the start of a game.
- **Game settings**, including control/display, light, and gameplay toggles are recorded on the spreadsheet for future reference.
- The **total length of time** the research participant plays through the level.
- As the player activates triggered events, **timestamps** are recorded on the spreadsheet for future reference, particularly when aligning these events with psychophysiological data.
- Any **additional notes** made by the researcher in the appropriate input field before the start of a game.