2023

Game Design Document

BATHOPHOBIA

MATTHEW GUMPRECHT

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Matthew Gumprecht

This is the game design document for virtual reality game Bathophobia. It serves as a first description and visualization of the game, its content, and gameplay. Everything within this document is subject to change as development progresses. All materials shown are the intellectual property of the writer unless specifically stated.

Contents

Game Outline

Genre/ Platform	Single player virtual reality (VR) survival game for the Valve Index on PC. This game, and any future developments of it, will be PC exclusive. Non-VR ports of the game will not be produced. Support for other headsets may vary.
Basic Idea	Bathophobia is a short, single player VR survival game where the player, with the help of a friendly artificial intelligence and voice recognition, must escape an abandoned vessel while avoid a hostile creature roaming the ship.
Setting	In the year 2450, humanity entered the "Lightning Age". A period of innovation that saw great advancements in the generation, storage, and discharge of electrical energy. These advancements were used to propel humanity into the stars in search of new lands and resources. Now, in the year 2730, mankind lays claim to just under two dozen planets. Bathophobia takes place somewhere in deep space between Earth and the planet Archterras, formerly Kepler-452b, aboard an aging Tianjin-class cargo vessel.
Plot	Awakening from a tranquilizer induced incapacitation, Operations Specialist Everest finds themselves behind bars in the ship's brig. They are immediately released by the vessel's onboard AI who informs them about an order to abandon ship issued hours prior. Learning that they are alone aboard the ship, Everest must find their way to an escape pod where they can leave both the ship and its hostile boarder behind.
Controls	Using joystick inputs from VR controllers, Bathophobia will use smooth traversing and variable snap turning as the players' means of locomotion. Direct interaction with the game world will be done through the Index's handheld controllers. Additional environmental manipulation will be conducted with the player's voice, which will be facilitated via the Index's built-in microphone.
Gameplay	At its core, Bathophobia is a simple enemy avoidance game. The player must reach a series of locations and interact with certain objects before they escape the ship. However, survival will require the player to use the game's voice recognition system to speak directly to the ship's AI who can manage the various doors, lights, and speakers throughout the vessel. Proper management of these systems will help the player avoid detection or aid the player in escaping the pursuing threat, but this relies on the player clearly stating commands that the AI can understand. To make matters worse, the hostile creature is invisible to the naked eye and can only be seen through infrared devices.

Game Elements	There are various mechanics, items, and features expected to be present in the game. Major gameplay elements include, but are not limited to: - Voice recognition system that can detect and understand the player's statements. - Voice-based world manipulation that allows the player to change the world with their voice. Examples of changes include opening doors and turning off lights. - Enemy detection system that allows the hostile creature to both see and hear the player. - Enemy chase system that allows the creature to dynamically search for and chase the player. In addition to basic patrolling and chasing, the creature will also know if the player is trapped in a room with one point of entry and know how it can use ventilation to bypass obstacles. - Player handheld camera which will allow them to see the creature. - Navigation system that depicts a model of the ship with highlighted areas showing player and objective locations.
Aesthetics	This game will be made with realism in mind. The use of realistic models, textures, and lighting will all be used to give the player a sense of immersion with the environment. Aesthetically, the game will take on a dingy industrial look akin to games like Deadspace and Marauders. Science fiction elements in the game will be made to seem as believable as possible. Although we cannot tell what life will look like over 500 years from now, the universe of Bathophobia should make the player think, "Yea, I could see this being a thing."
Audience	This game is for a mature audience who enjoy slower paced, higher tension games with complex AI systems. Audience members should also understand the game's purpose as defined below.
Purpose	This game is a portfolio piece that allows me to practice VR development and experiment with voice recognition. Due to limitations in time, budget, and manpower, the game created from this document will likely be a vertical slice depicting the game's core mechanics, feeling, and challenges.
Pillars	Hallways are Scary: Long hallways are a place of exposure and limitations with one course of action available: To go forward, or back. Alone with Company: Most of the times, it is easy to feel alone. However, at certain times, you are reminded that you are not entirely alone in your struggles. Uneasy Reliance on Others: In stressful situations, you sometimes feel that you are the only one you can rely on. It brings you comfort when you can see the fruits of your own actions securing your safety. However, it becomes disconcerting when your survival rests in the hands of another.

Gameplay Scheme

As mentioned above, the overall objective of Bathophobia is straight forward: escape. This is made more complex through the game's voice recognition system that the player must use to survive against a dynamic enemy that cannot be directly viewed. The game is intended to generate anxiety in the player as they cannot directly combat the threat and their survival rests in the hands of the ship's AI. This game is also intended to flesh out the world and lore behind the Archterras universe.

Player Progression

1: The game begins with the player awakening in the ship's brig with little knowledge of the ship's status. They are introduced to the ship's AI who is watching the player from a camera in the room. The AI informs the player of the order to abandon ship and that a hostile party has boarded the vessel. The AI agrees to help the player escape and introduces the player to two core gameplay mechanics: the hand-held camera and the voice recognition system.

2: Leaving the brig and entering a hallway, the player is instructed to use an elevator so they can access the rest of the ship. However, the elevator is occupied by the hostile creature that then pursues the player to the other end of the hallway. The AI opens a room for the player to hide in and secures the door once the player is inside. This then introduces the player to the cornered mechanic, where the creature recognizes when a player is trapped. Hiding in a locker in the room, the player directs the AI to open the door, allowing the creature in. The player then escapes from the room when the creature's back is turned, and the ship's AI closes the door behind them. The player is then safe to use the elevator and access the main play area.

3: Once in the main play area, the player is instructed by the AI to navigate their way to the escape pods located in that section. Access to the entire play area is restricted at this time, and only doors leading to the pods are openable. Once at the pods, the player learns that access to the pods has been disabled and the hangar door is hermetically sealed. Gaining access to the pods and opening the seals are both done at separate locations elsewhere in the ship. They also learn that the creature has used the vents to escape the room in the lower level and is now actively lurking around the play area. The player must make their way to both separate locations while avoiding the hostile creature.

4: The player has a choice as to which objective they want to complete first. They can either go to the floor's security station to reenable access to the pods or a maintenance room where they can manually open the hangar doors. The order in which objectives are completed does not matter.

5: Once both objectives are completed, the player will then head to the escape pod to end the game

Creature Behavior and Logic

States

The creature will have six states. They are as follows:
1: **Roaming** – The creature roams the ship, randomly heading to points of interest.
2: **Investigating** – If the creature hears a noise, it will travel to the location of that noise, unless it is actively hunting the player.
3: **Hunting** – The creature is actively pursuing the player.
4: **Patrolling** – The creature was chasing the player, but has now lost sight of them. It will roam within the nearby area for a period.
5: **Trapping** – The creature recognizes that the player is in a room with only one entrance. The creature patiently waits at the door hoping the player opens it thinking the coast is clear.
5: **Trapped** – The is in a room with one door that is now shut, preventing them from accessing the rest of the ship. The creature utilizes nearby vents to escape back into the hallway.

Roaming

Upon spawning, the creature will enter the *Roaming* state. This will be based on random location selection. Location selection will be conducted by one of two methods depending on navmesh performance:

1: A random radius is specified around the creature. On start, a random location within this radius is selected, and the AI will attempt to get as close to this point as possible.
2: Various roaming points are predetermined and added to a list. The AI will select a point from this list at random and travel to it.

With both methods, it is possible for the AI to only select areas close to its start area, resulting in minimal travel throughout the ship. To fix this, and to increase likelihood of player encounter, key locations around the map will be identified. When the AI is choosing a new location to roam to, there is a possibility that it will be prompted to go to one of these key locations, even if it is not within the immediate area.

Hunting

LOSBreakTimer = *(undetermined)*

If the AI sees the player, they will enter the *Hunting* state. In this state, the AI will simply move to the player's current location as quickly as possible. If the creature reaches the player, the game ends. If the creature losses sight of the player, it will be told the player's location for an additional LOSBreakTimer seconds. This is to help simulate the AI seeing the player round a corner. If the creature losses sight of the player and visual contact is not reestablished after LOSBreakTimer seconds, the creature will enter the *Patrolling* state.

Patrolling

PatrolDurationTimer = *(undetermined)*

If the AI enters the *Patrolling* state, the player's last known location is saved, and a small patrol area is established around it. For the next PatrolDurationTimer seconds, the AI will only travel to points randomly selected within this range. If the player is seen during this time, the creature will reenter the *Hunting* state. If the player is not seen during this time, the creature will reenter the *Roaming* state.

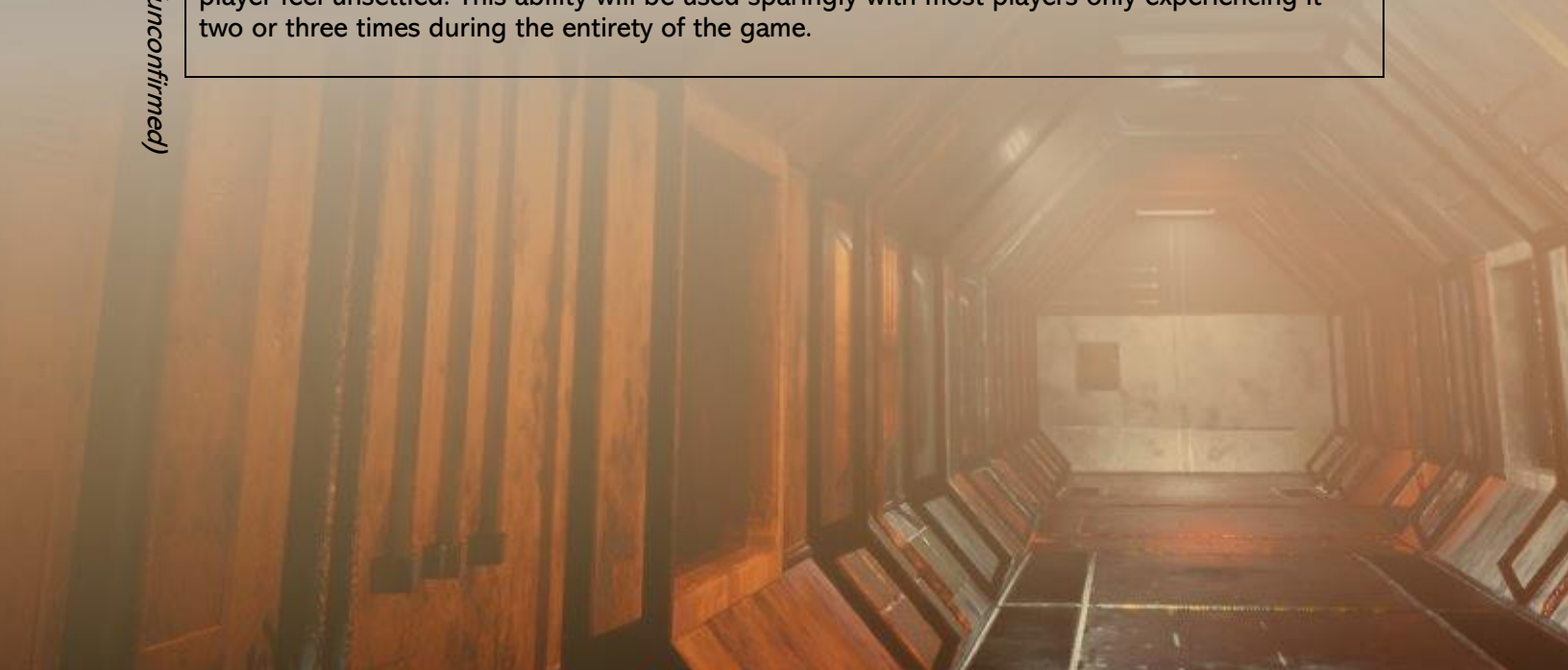|	
Trapping	TrappingDurationTimer = *(undetermined)* Four conditions must be met in order for the AI to enter this state. 1: The creature is in the *Hunting* state. 2: The player is in a room tagged as having only one point of entry/exit. 3: The door for that room is closed. 4: The creature is NOT in the same room as the player. If all four conditions are met, then the creature enters the *Trapping* state. In this state, they will move to a predetermined point outside the door to the player's room. They will remain here for TrappingDurationTimer seconds until one of two things happens: 1- If the player remains in the room for the whole TrappingDurationTimer seconds with the door shut, the creature will enter the *Patrolling* state. 2-If the door to the player's room opens, the creature will enter the room and enter a modified *Patrolling* state. In this state, the patrol radius is adjusted to the size of the room to help prevent the creature from patrolling outside the room. If the player is not found within the room, the creature reenters the *Roaming* state.
Trapped	If the AI is inside a room with one entrance/exit, and that entrance/exit is shut, the AI will enter the *Trapped* state. In this state, the AI will stop whatever it is doing and focus on leaving the room. To do this, the AI randomly selects a vent in the ship's hallways and respawns outside that vent. If the vent chosen is too close to the player, a new vent is selected.
Hearing	During all states, the creature will be listening for the player or signs of the player's whereabouts. The following are audio triggers that will prompt a response from the creature: 1: The player talking 2: The player running near the creature 3: The AI speaking through the public address systems throughout the map
Mimicking *(unconfirmed)*	During gameplay, the creature may randomly mimic the sounds or statements uttered by the player or the ship's AI. Because most of the ship AI's audio is conducted through the player character's earpiece, the creature will only hear and mimic what comes through the public address system. This ability serves no mechanical purpose for gameplay other than to make the player feel unsettled. This ability will be used sparingly with most players only experiencing it two or three times during the entirety of the game.

Ship AI Abilities and Logic

The ship's AI is unable to see the creature's whereabouts. The only actionable information the AI can provide is informing the player when an alarm system has been taken offline.
See the Distractions below.

Information

The primary function of the ship's AI is to provide instructions for the player. At the beginning of the game, the AI will provide the player with a short introduction that highlights the setting, situation, and threat. From there, the AI will continue to provide the player with information on where to go and how some game mechanics work. Communication with the player is done through the player character's earpiece and is not heard by the creature.

Doors

Due to the ship's limited power and security overrides, the player cannot directly open or close many of the doors throughout the ship and must direct the AI to manipulate them. When asked to open or close a door, the AI will try to distinguish between doors close to the player or further away. For example:

- If the player says "Open THIS door", the AI will open the door closest to the player.
- If the player says "Open THAT door", a raycast from the player camera will be created and any door hit by the cast will be opened. This is to account for players wanting doors open before they reach them. This will be useful for players being chased down hallways with closed doors.

Lighting

Due to the ship's limited power, lighting will be disabled in some areas of the ship. The player can request the AI to turn the lights on in their area at the cost of turning the lights off elsewhere.
Lighting is purely for player navigation. The lack of lighting will not hinder the creature's ability to find the player.

Alarms

Built into each doorway in the ship's halls is a warning system. This is to notify the crew that the area beyond the door is dangerous/inaccessible due to fire, gas leak, or breach in the hull. At the player's request, the AI can use these alarms to create a distraction that will attract the creature so long as it is not in the *Hunting* state.
This distraction is only played at one of the alarms throughout the ship. The distraction will last for as long as the system remains operational. Once the creature reaches the system, it will destroy the device, rendering it unusable to the AI for future distractions. This means the number of distractions available to the player is limited.

PA System

At any time, the player can request the AI to toggle the ship's "Abandon Ship" announcement being played over the public address system. When on, the following applies:

1- The player has a harder time hearing the creature.
2- The creature has a harder time hearing the player. The creature will spend more time in the *Patrolling* stage while spending less time in the *Trapping* stage.
3- The ship's AI will have a harder time hearing the player. If the player gives a direction to the AI, there is a 10% chance that the AI will not understand the player resulting in no action being taken.

Player's Scope

At the start of the game, the player will be directed to pick up an infrared scope that will allow them to see the creature. To view the creature, the player must physically look through the device. The scope will not have a durability limit or depleting battery allowing it to run indefinitely through the play session. However, it is the only one available to the player. If it is dropped, the player will have to find it or play through the game without it.

Physics Objects

Scattered throughout the map are physics-enabled objects that the player can interact with through their VR controllers. A byproduct of the physics system and not a deliberate gameplay mechanic, the players could place these objects on the ground where the creature can run into them. This may help the player "see" where the creature is or serve as an indicator that the creature moved through the area.

Player Map

Game World

Bathophobia takes place in deep space aboard the HN Tieshan, a Tianjin-class heavy cargo hauler in the Hegemony of the Easter Dragon navy. Entering active service in 2608, the Tieshan is now 122 years old and showing her age despite many attempts at refurbishing and upgrading the vessel. The ship is heavily compartmentalized, with most of its internal volume coming from the cargo modules attached to its midsection.

The entirety of the game will take place in two of the ship's sections; the auxiliary cargo holds, and the brig wing located below it. The game will begin in the brig wing with only an interview room and jail room being accessible to the player. Both rooms are lightly furnished and lack any décor. The auxiliary cargo holds section is a grid like series of similarly furnished hallways and large storage bays. Since most of the ship's cargo is stored within the cargo modules attached to the vessel, many of these cargo bays are empty.

Listed below are some of the reasons for placing this game in this setting and how this location can improve the gameplay experience.

1: Bathophobia is defined as the fear of volumes with large depths. The use of long hallways and empty storage areas, combined with the added sense of scale offered by VR, will allow this fear to manifest in players who are already fearful of what lurks aboard the ship.

2: By placing the game in deep space, the player will have an added sense of isolation.

3: The confined nature of the ship and the lack of windows to the outside will help make the environment feel more oppressive.

4: A grid like ship layout will simplify development and AI navigation.

5: The decrepit appearance of the vessel helps produce a depressing mood.
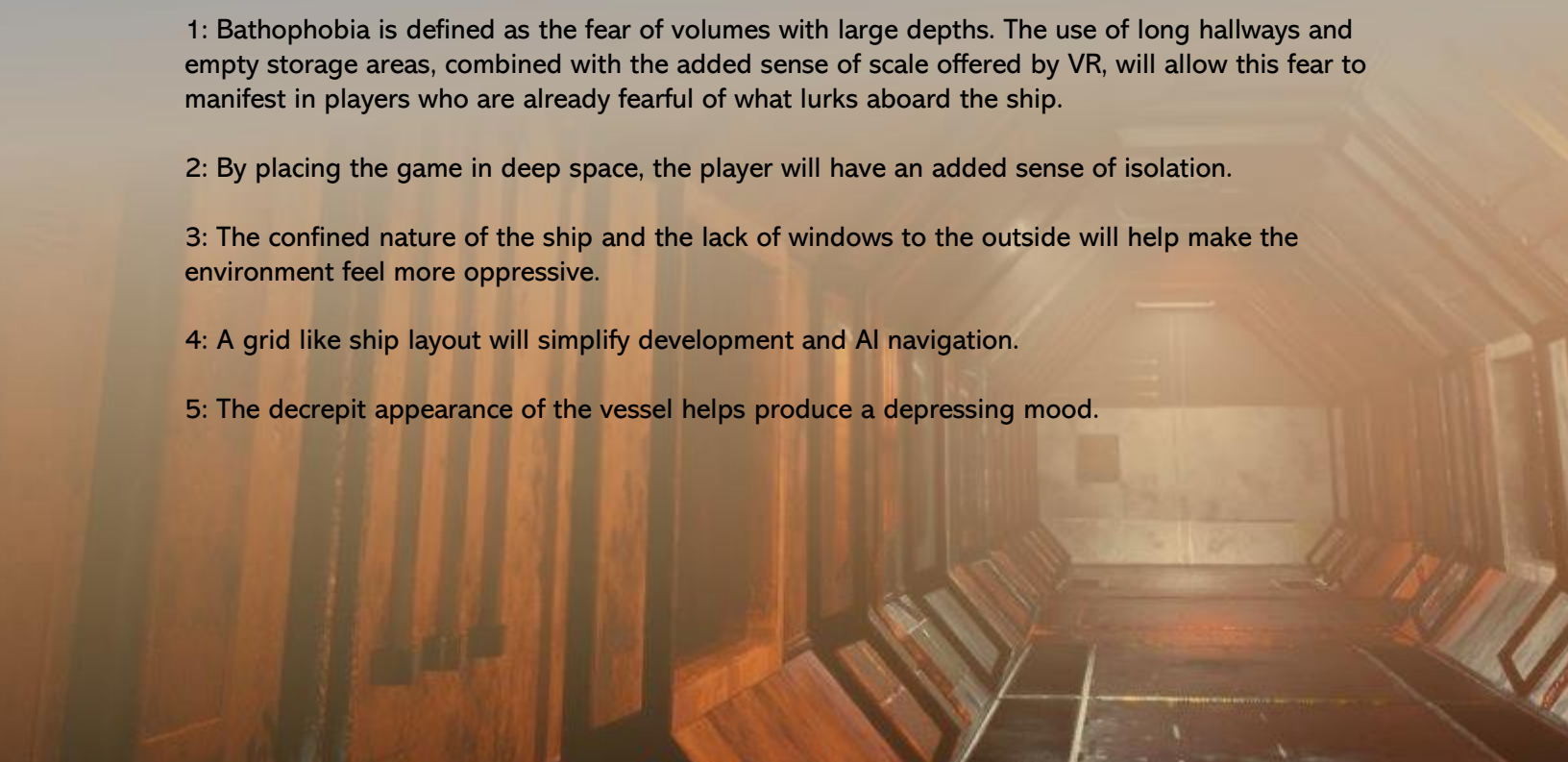
Game Art

The game will use realistic graphics and lighting to help deliver a more immersive experience. Aesthetically, the game will take on a futuristic industrial look with dark colors and poor lighting.

Art and assets for Bathophobia will primarily come from third party sources. At present, the Sci Fi Observation Station Kit by Steel Arts Software will be used for a majority of the map and set dressings. Additional decorations and furnishing may come from other kits. Specific items, such as the player scope, will be produced in Blender.

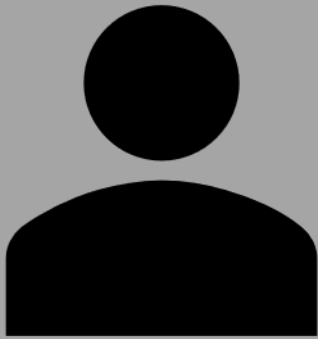See project Trello board for updates on third party assets used.

Trello:
https://trello.com/b/GPV1FRa1/bathophobia

Map Kit:
https://www.unrealengine.com/marketplace/en-US/item/97d54cbc4d3f43bc8525c425781197bc

Characters

Operations Specialist Everest

Everest is the main character in Bathophobia and is the character the player will be controlling throughout the game.

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	Everest is an agent of the Dark Shark Division within the North American Coalition's Department of Foreign Affairs. On paper, their mission is to lead a team of four agents on a liaison mission to a distant planet called Archterras. Accompanying a Hegemony of the Eastern Dragon (HED) task force, the team is to observe and report on relations between the HED and the Democratic Republic of Archterras (DRA). In actuality, the team's primary objective is to help coordinate a joint Coalition and DRA response to potential military actions by the HED on Archterras.

Ship Onboard Network Interface (SONI)

Soni is the ship's onboard AI that will accompany the player throughout the game. The player will be able to speak with and direct Soni as they try to escape the ship. Voice recognition will be used to allow the player to interact with Soni.

	Soni is an indigenously built, ship based, artificial intelligence created by the Hegemony of the Eastern Dragon. Created about ten years prior to the event aboard the Tieshan, Soni was integrated into the aging vessel as part of an upgrade program that sought to keep the HED's fleet of military cargo vessels operational. Soni is believed to be the product of the HED reverse engineering third party AI systems. Although not as advanced as other AI, Soni is still classified as a Full Scope System that can manage data, execute tasks, and interact with people at a near human level.

The Creature

The Creature is the sole antagonist in Bathophobia that the player will be trying to survive against. Details about the creature are unknown aside from what has been witnessed since it came aboard.
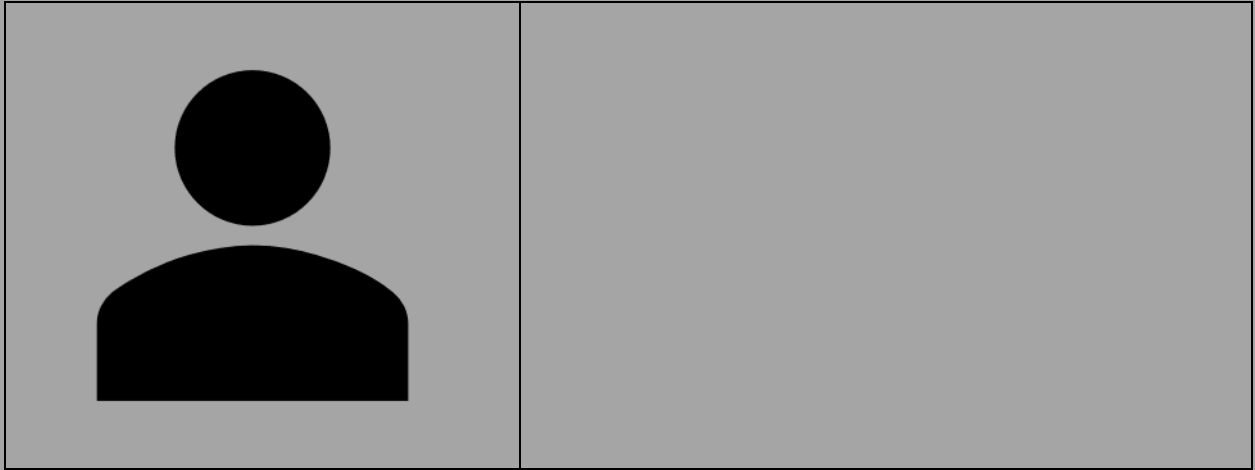
Factions and Organizations

The greater Bathophobia setting is home to many different factions that each affect the geopolitical and social atmosphere of the universe. However, not all of them are present in this game. Below are some of the major factions or organizations relevant to the game.

Hegemony of the Eastern Dragon

The Hegemony of the Eastern Dragon (HED) is an Earth based, multinational empire lead by the Great Chinese Republic. It is the largest of the four multinational empires, expanding from the Laptev Sea to the Philippines. Making up nearly a quarter of the planet's GDP, the HED is a major powerhouse and political entity that has a great deal of influence over Earth-based affairs and interplanetary politics.

Having the largest population on Earth has allowed the HED to stand up the largest military out of any human civilization in history. To equip this massive force, the HED maintains an expansive nationalized military industry that can produce weapons, vehicles, and components in mass. However, the quality of the equipment produced has traditionally been rather poor. Additionally, strict conscription laws and politicized rank structures has resulted in poor troop retention and a weak noncommissioned officer corpse. Troop numbers aside, the HED is considered to be on par with many of the other smaller non empire nations on Earth.

Dark Shark Division
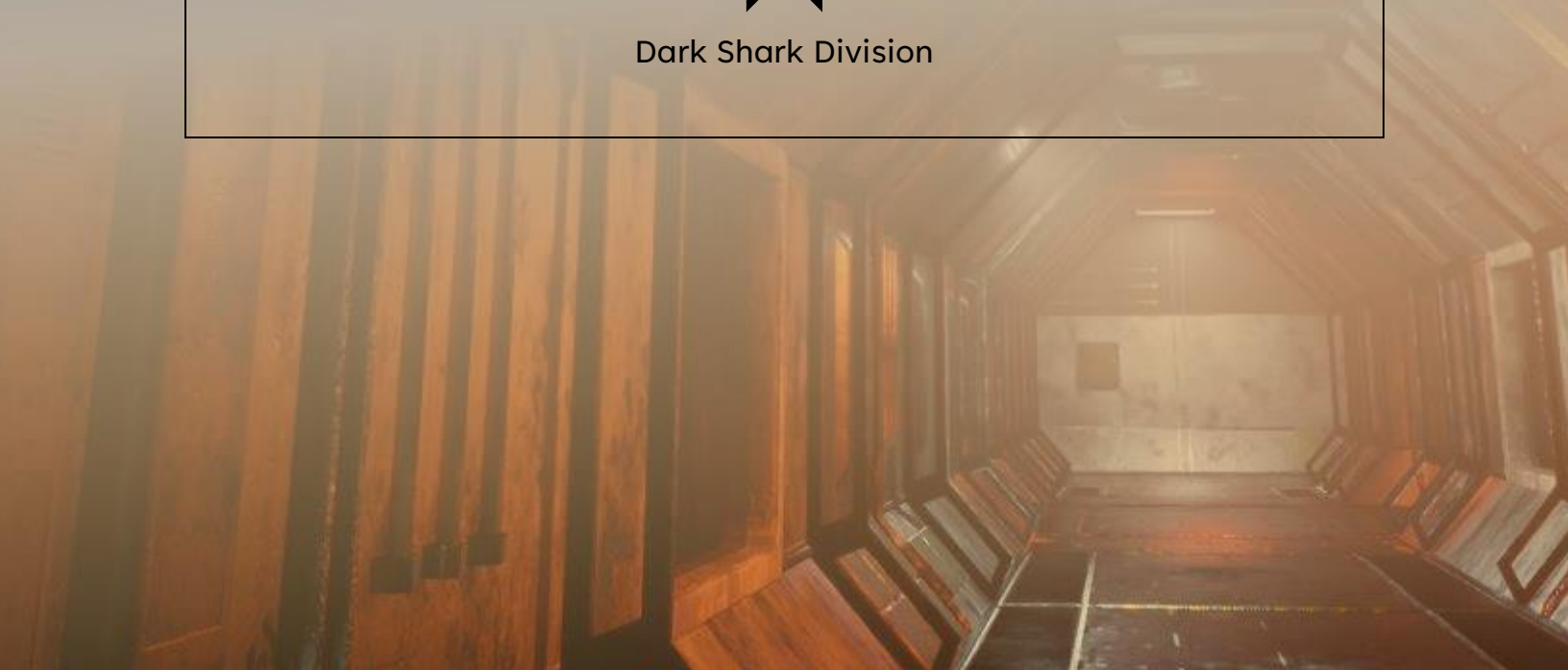
Inspiration and Research

What Makes This Unique?

Horror and thriller games that utilize the player's voice are not uncommon, with some examples including Phasmophobia and Welcome to the Game. However, the use of voice in these games is often used to simply direct enemies to the player, resulting in a game mechanic requiring the player to stay silent. Unfortunately, this mechanic is often bypassed by disconnecting/disabling the microphone or by playing alone where there is no need to speak. For games that do require some talking, like Phasmophobia, speaking is a small part of gameplay that has little effect on the world space. Bathophobia is unique in that it will require the player to both stay quiet and use their voice. The use of voice will be necessary throughout the entirety of the game and will have a direct effect on the world around the player. For moments where the player needs to stay quiet, the use of the Valve Index and its built-in microphone means staying quiet is not as easy and disabling the microphone is not an option.

Player Controls

Game World

Thumbnail images from games' Steam store page

Concept Art

MVP Process

The first MVP for this project will revolve around three things:

1- Voice Recognition
Voice recognition is the primary mechanic in the game that drives gameplay and non-player character actions. It is important to showcase how this will work in the game and what the player needs to due to fully use it. The MVP will have the player using the Sphinx Voice recognition system to open and close doors throughout a test map and toggle overhead lights.

2- AI Map Navigation
The MVP will have to showcase the creature's navigation of the map to show that the feature works and how the voice recognition system can affect the creature's movements.

3- Map Design
The map's design and layout will mostly be done for the first MVP. This will allow for early feedback on map size and ease of navigation. This will also help set the stage for future AI navigation work.

After the first MVP is completed, I will work on the introduction to the game which will utilize the showcase MVP mechanics and introduce voice lines for the AI.

Relevant Setting Lore

This section is not as important to the game development process since the setting's lore is not a focal point to the game. At most, this section is here to inspire ideas for this project and to help me keep dates in order. If more projects are made using this setting, this part of the document can help ensure cohesion between the projects.

In 2450, humanity entered the "Lightning Age" when collaboration efforts between NATO members resulted in major advancements in nuclear fusion and energy storage. This began a domino effect of innovations that improved upon mankind's ability to wield nuclear power and, by extension, the generation, storage, and discharging of electricity. While many industries and institutions benefitted from these developments, one of the greatest applications for these technologies was in space travel. At the time, space travel was very common and had been since the establishment of the first permanent colony on Mars in 2297. However, this travel was localized to only about half of our solar system due to limitations in space craft speed and range. The Lightning Age solved this by allowing space craft to travel farther and faster while reducing the overall weight of space-faring vessels. In 2484, Mäkinen Aerospace Industries in the United Republic of Scandinavia developed the Mass Motion Induction System (MMIS) which served as the first step for travel and exploration outside the solar system. However, before the technology could be adopted, out of system travel and its associated technologies was nationalized and fell under extreme regulation. It soon became one of the world's most monitored commodities second only to weapons of mass destruction.

In 2591, the Joint Space and Aeronautics Bureau of the North American Coalition (NAC) and the National Space Agency of the Hegemony of the Eastern Dragon (HED) commenced Colony Mission: Frontier, a crewed expedition to Kepler-452b with the primary goal of sending to establish an outpost on the confirmed to be habitable exoplanet. The mission was to be funded primarily by the HED with the initial crew and equipment, comprised of around 14,000 personnel aboard two deep space colony ships, being supplied by the NAC. Despite losing contact with the vessels for two months, Frontier was an incredible success. For the next 7 years, regular trips to and from the planet would be made with the HED eventually assuming full control of operations related to the planet. In 2598, the War for Martian Succession began, cutting the fledgling colony off from the rest of the solar system and any other planet.

In 2610, a military fleet of the Federation of Greater European Republics (FER) arrived to the Kepler-452b intending to conduct rescue and recovery operations of what remained of the abandoned colony. To the fleet commanders' surprise, the colony had not only survived, but expanded. For three years, the FER would keep this discovery a secret until announcing it to the public along with the colony's declaration of independence. This sparked a major geopolitical conflict, later called the Cold War of Possession, between the NAC, HED, and FER. The NAC claimed possession of the colony siting the origin of the crew and most of the original equipment. The HED claimed possession siting their financial investment and previous control over operations. The FER supported the colony's move for independence in exchange for exclusive trade rights. After four years of debate, negotiating, and military posturing, the colony, having asserted its independence regardless of outcome, had its nationhood recognized. Naming the exoplanet Archterras, the People's Republic of Archterras (PRA) was formed.

In 2732, three HED warships arrive at Archterras in need of repair and resupply. However, given the planet nation's status as a neutral nation and the ongoing war between the HED and FER, the PRA deny all requests for aid except for medical assistance. The HED warships make several more requests for aid stating that one of the vessels in the group is nearly inoperable due to catastrophic system malfunctions. Due to the ships' continued loitering in the planet's orbital space, some press for military intervention. Four weeks after the ships' arrival, the damaged vessel, a military transporter weighing roughly 6 million short tons, enters the planet's gravity well with command staff stating it is unable to pull away. In the dead of night, the space vessel turned meteor makes land fall striking the city of New Port. The kinetic energy alone was enough to turn the bustling port city of just under 500,000 souls to nothing more than a crater. After weeks of humanitarian work, false flag allegations, controversial HED trips to the crash site, and military mobilization, the People's Republic of Archterras enters open conflict with the warships claiming self defense against rogue combatants operating outside the scope of the HED.

Notes