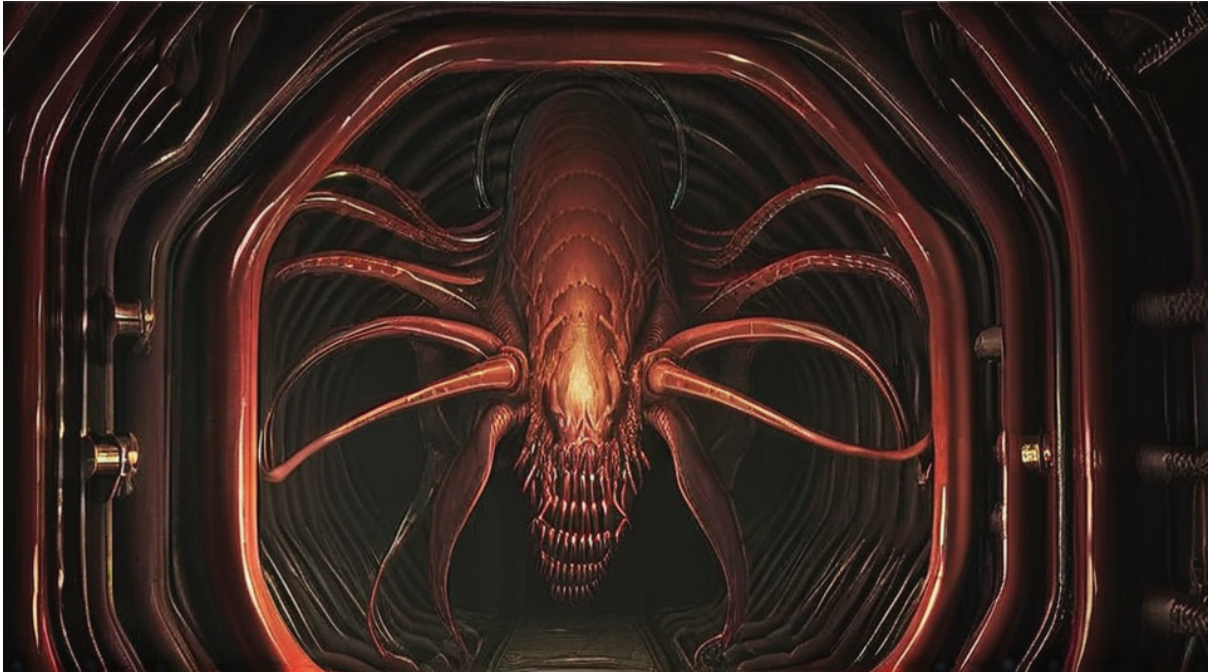


# Game Idea Proposal



## Project Abyssal Isolation

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### **Submechanophobia**

Kim Niclas Simon

Leonard Keil

Pascal Neubert

Ruben Pfeiffer

# Game Description

## Story & Setting

In a mission to explore the floor of arctic oceans in the year of 2015 you are a member of a crew that was sent on the special nuclear-driven military research submarine ADSS-001 (Arctic Deep Sea Submarine). It's a host submarine with shooting capabilities that can host smaller submersibles. The exploration team returns with an unidentified dead life form looking similar to an octopus. After attempting to surface to contact headquarters multiple crew members have mysteriously disappeared one by one. As one of the last if not the last person on the submarine it is your job to maintain your and the submarine's sanity while solving the mystery.

While you explore the submarine, it turns out that the creature is in fact not dead but becomes more active when getting closer to the water surface. It was able to use this to its advantage to kill the crew. However, you are not on your own as the notes of the crew mates inform you of your maintenance jobs and the creature's behaviors. Furthermore, getting in contact with the headquarters allows them to guide you, helping you to get out of your situation, for better or worse.

Depending on the choices, at the end of the journey you can either reach land with the creature being able to escape, get blown up with the creature and submarine by the military of defense at the target location, or dive into the depths running out of oxygen with the creature at the bottom of the sea.

## Gameplay

Abyssal Isolation will be a survival horror game with puzzle elements, aiming to create tension for the player by balancing exploration and maintenance of the nuclear submarine with evasion and escape from the creature stalking the player through the ship. To keep this tension consistently throughout the game the player must be incentivized to move around the submarine constantly; therefore, a number of different rooms each hosting one to a few different game elements will be generated in the submarine for the player to explore and interact with. The generation of the submarine's layout will be random to provide some replayability, but with heavy restrictions to make sure a playthrough is not too hard or frustrating. Also, various equipment items and information pieces (voice memos, written notes, ...) from other crew members can be found in some of the rooms and allow the player to solve some situations or access some rooms more efficiently or even at all. The distribution of these items is also random with restrictions.

The following rooms will always be present on the submarine:

- Reactor room: This room houses the ship's nuclear reactor and will be the centrepiece of the submarine, as the player will have to return to this room to maintain the reactor regularly during their playthrough. Reactor power is used to power specific rooms as well as the submarine's general operation, including oxygen generators and driving systems. The player will also start in the reactor room during every playthrough and have the option to go through a tutorial sequence that explains the basic game controls and also the reactor mechanics. The Player has to manage its various aspects at different control points throughout the submarine, with certain controls only available at certain locations. This provides an incentive for the player to move through the vessel as well as backtrack and clear previously explored regions.

Modelled after a real nuclear reactor, the system is quite complicated and finicky to control and keep balanced.

Nuclear reactors work by inducing nuclear fission by placing radioactive elements like refined uranium close to each other. This produces heat, which is used in combination with purified seawater to produce steam, which in turn drives a turbine and generator assembly. At its core is the central metric of the reactor's power output, which depends on multiple sub-aspects or values. Due to the longevity of nuclear fuel cells, fuel level is NOT an aspect in this game.

1. Reactivity: Almost equivalent to the power metric, Reactivity describes how often atoms are splitting within a reactor and how much heat is produced. It can be directly controlled by the level of insertion of reactor control rods in the reactor chamber.

However other aspects can also slightly influence it like the amount of Steam, the heat of the reactor or the buildup of reactor poisoning (ie Xenon or other decay products).

2. Heat: Heat rises with the reactivity and governs how much steam is created.

3. Water: The influx of clean water for being turned into steam.

4. Steam: Steam, or steam pressure is a result of heat when any water is present and governs the output of electricity.

5. Reactor Poisoning: Whenever the reactor is on low levels, waste elements like Xenon build up and decrease reactivity, which makes it harder to start everything up or increase power output. Waste elements burn off in higher temperatures after some time.

All of these aspects have to be tightly watched and managed, to keep the reactor functioning. If it is mismanaged, it could malfunction and shut off or cause more critical accidents in parts of the submarine like radiation leaks or even a meltdown.

- Electronics room: This room houses electrical circuits and fuses controlling the power supply of the various parts of the ship. Therefore the player can manage

here what other rooms are supplied with power and therefore have their electricity-dependent game mechanics active at any given time. The player will have to manage their power supply carefully, however, as each powered room will shorten the reactor's lifespan and therefore the time until the player has to manage the reactor again. This room will be generated very close to the reactor room as power management will also be an important task for the player throughout the entire game.

- Research room: This room houses the scientific supplies of the submarine and is also where the found creature was studied and later broke free. Therefore, the player can find a good amount of information about the creature and its behaviour here, as well as a bit of equipment.
- Bridge: The bridge houses the submarine's steering controls as well as the radio and is a key room for the player to find and access in order to complete their playthrough. The radio can be used by the player to contact the base the submarine originally departed from and notify them of the situation and the creature on board. After this the base will reply to the player with three sets of coordinates to steer the ship to. After obtaining these coordinates the player must choose to input one set into the steering controls, which determines the ending that will be shown if the game ends successfully. For the rest of the playthrough the steering controls can additionally be used to control the depth of the submarine which influences how active the creature is (lower depth -> less activity), but also how fast power and oxygen is used by the ship's systems (lower depth -> more usage).
- Walkways/Ladders: Between all other rooms connecting walkways and ladders will be generated. These will mostly be used for traversal by the player, but some of them will contain oxygen terminals that allow the player to monitor the submarine's oxygen levels. These terminals sometimes also notify the player of a leak in an oxygen pipe which the player then needs to find and fix using a device found at each terminal, else the oxygen levels in the ship will slowly start to drop. Additionally one random walkway will contain the submarine's exit hatch that the player needs to reach to successfully escape the submarine during the research base or military endings.

Additionally these rooms might or might not be generated on the map for any given playthrough:

- Sleeping quarters: These rooms house beds for the (now dead) crew. Here the player can find notes from the other crew members about the submarine's operation and various systems on board as well as the previously observed behaviour of the creature. Additionally equipment formerly belonging to other crew members might be generated in these rooms. After exploring these rooms

and finding the described game elements these rooms will not house further functionality, so the player will not be incentivized to come back here.

- Missile room: This room houses the submarine's supply of missiles. As the game focuses on the inside of the submarine, the missiles themselves will not be a usable game element. However, as with real-life submarines, this room will be relatively large and open and therefore crossing it is a significant risk of being found and attacked by the creature. Possibly a little bit of equipment can be generated in this room, as well.
- Kitchen/Cafeteria: This room houses the submarine's food supplies and has space for eating. In the kitchen's storage the player can find some equipment, otherwise this room has little functionality during the game.
- Toilets: A rather self-explanatory room that does not have much relevance for the gameplay except for traversal between other rooms.
- Living quarters: This room is the main living space of the crew. During the game the player might find a good amount of equipment and information from other crew members here.

The following pieces of equipment can be found by the player during their exploration:

- Flashlight: Allows the player limited vision in an unpowered and therefore otherwise unlit room. Will also flicker when the creature is near and therefore alert the player to the danger.
- Lamp: Allows the player good vision in an otherwise unlit room. Will, however, not flicker when the creature is near like other light sources do, requiring the player to rely on their vision and hearing to detect the danger.
- Oxygen candle: Increases oxygen levels in the submarine for a limited time even if there is no reactor power.
- Emergency battery: Can be brought to the electrical room to temporarily power rooms and the oxygen system without draining the reactor. Will also deplete faster the more rooms are powered, just like the reactor.
- Fuse: Used to fix a broken fuse in the electrical room (randomly occurring event).
- Map: A map of the submarine layout to guide the player during their further exploration.
- Leak finder: Used to detect leaks in oxygen pipes via sound cue increasing in volume and frequency. Only present and used near oxygen terminals.

A successful playthrough will see the player explore the submarine starting from the reactor, incrementally discovering and accessing new rooms while maintaining the ship's reactor power and diverting it where they want to explore next. Many rooms will initially have their doors locked or jammed, requiring the player to solve some small puzzles or use some equipment to access them. The player's goal for the first phase of the game (intended to take ~15-25 minutes) is to find and access the bridge, communicate with the base and choose a set of coordinates to steer the ship to. After

this the timed (~7 minutes of reactor power(!), up to testing) second phase of the game starts where the player has to survive and keep the submarine operational until the destination is reached. After successfully completing both phases of the game an ending will show the final consequences of the player's choices and gameplay. During the playthrough randomly occurring events like specific systems breaking or doors being jammed can occur. The player will be notified of this by a sound cue //(and maybe a tablet functioning like a "quest log"?) and will have to solve small puzzles or use specific equipment (e. g. a replacement fuse in the electrical room) to solve the situation and access the broken game element again. This adds additional incentives for the player to move around in the submarine, in turn adding tension as the creature roams as well.

Finally, and most importantly, the player's exploration will be hindered by the creature also roaming around on the ship. The creature will start in the research room and from there move randomly between rooms. Rooms the creature passes through will have an increased chance of random breakage events occurring to simulate the creature wrecking parts of the ship. This can, however, give the player a little bit of information about the creature's path. Should the player get close to the creature (~in the same room, up to testing), it will detect the player's presence and start roughly following the player around. If the player manages to move away from the creature again, it will resume random traversal. If, however, the player moves even closer towards the creature (~half a room, up to testing), it will fully detect the player and rapidly charge at them, leading to death and therefore ending the playthrough.

## Up&Down Theme

We've chosen to embrace the "up and down" theme quite literally and integrate it deeply into the game.

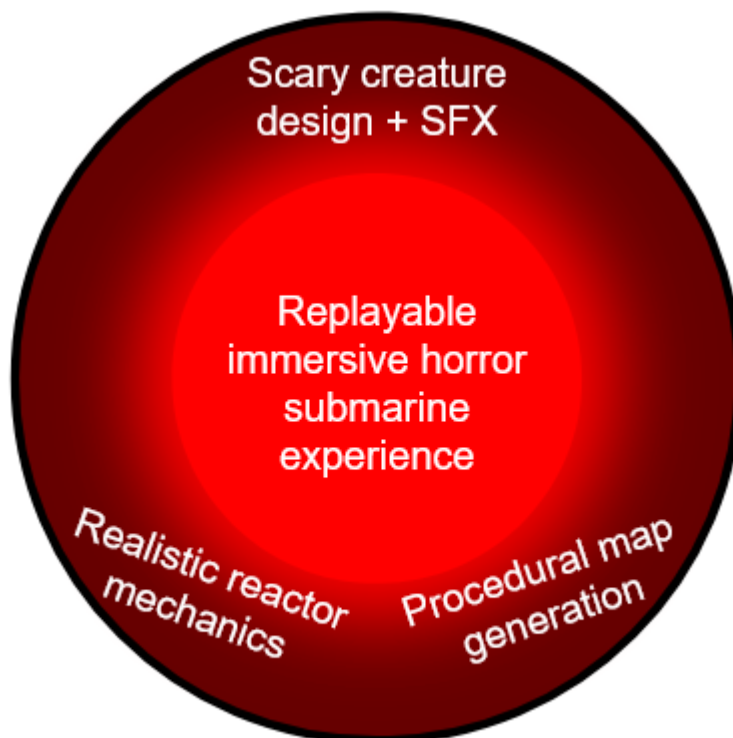
This begins with our setting, a submarine capable of both ascending and descending, and extends to the game mechanics. For instance, the reactor gradually descends during gameplay, challenging players to navigate through the different levels of the submarine – effectively prompting them to move up and down within the game space – and ultimately raise it back up. Even the mechanic for stabilising the reactor stays true to the theme, as players must raise or lower minerals to maintain its stability.

It's also important to emphasise the horror genre aspect as well, as players will experience varying levels of stress throughout the game. One moment, the player may feel safe because there's no sign of the creature, but within minutes, they'll find themselves urgently seeking refuge in a hiding spot to avoid a gruesome end.

## Technical Achievement

One of the significant technical challenges will involve randomly generating the layout of the submarine for each playthrough, along with generating the corresponding in-game map that depicts this layout. Designing an algorithm for this that keeps the game fresh every time, but still balanced and beatable, will be a focus point for our work on the game. This must also be supported by assets and room designs that are flexible enough to be used for automatic map generation without visual oddities or artefacts occurring. Another important point in the game's implementation will be the design of the creature, especially with regards to visuals and sound. To make the creature scary and fit the theme of deep sea exploration, we plan to incorporate many tentacles into its design that it uses to move and interact with the environment. These tentacles will be animated using inverse kinematics; implementing this will also be a key technical challenge.

## “Big Idea” Bullseye



# Development Schedule and Tasks

## Layered Tasks Overview

### Functional Minimum

- Reactor Mechanics
- First Person Controller
- Basic Submarine Layout (Reactor, Electrical, Bridge, Walkways)

### Low Target

- Basic Creature Movements
- Creature Design with Spring System
- Lights
- Oxygen
- SFX

### Desired Target

- Puzzles
- Procedural Map Generation (incl. more rooms)
- Equipment
- Improved Creature Mechanics + Hiding Spots

### High Target

- Story, NPCs
- Alternate Endings
- Submarine Up & Down Mechanics
- Atmospheric Soundtrack
- More Details on the Submarine

### Extras

- Submarine Dive Up and Short Landtrips
- Creature AI
- Cutscenes



# Timeline

	Brainstorming	Game Idea		Prototype	Interim Demo		
	18.10 - 24.10	25.10 - 31.10	01.11 - 07.11	08.11 - 14.11	15.11 - 21.11	22.11 - 28.11	29.11 - 05.12
All	Game Idea Presentation	Game Design Document		Erstellung des Prototypen			Project document & presentation
Kim Niclas Simon					Player Controls		
					Basic Room Design		
Leonard Keil					Reactor mechanics		
						Creature Controls	
Pascal Neubert					Modelling		SFX
Ruben Pfeiffer					Environment functionality		Map generation

Alpha Release					Playtesting		Final Release	
06.12 - 12.12	13.12 - 19.12	20.12 - 26.12	27.12 - 02.01	03.01 - 09.01	10.01 - 16.01	17.01 - 23.01	24.01 - 30.01	31.01 - 06.02
			Project document & presentation		Find testers and let them play			
					Bugfixing			
Item / Equipment functionality			UI		Write playtesting survey		Trailer	
SFX								
Creature design with Strings			Ending		Evaluation		Trailer	
			Advanced creature controls					
			UI					
Modelling					Playtesting		Modelling	
Shader		Shader					Shader	
SFX		SFX						
Puzzles					Evaluation		Feedback implementation	
			Item / Equipment functionality					

## Task Distribution

### 1. Game idea pitch

Task	Assigned to	Actual hours
Game idea	all	8
Project document & presentation	all	6

### 2. Game prototype

Task	Description	Assigned to	Planned hours	Actual hours
Planning	Discuss prototype idea	all	5	
Physical prototype	Get materials and craft	all	8	
Project document & presentation		all	6	

### 3. Interim report

Task	Description	Assigned to	Planned hours	Actual hours
Creature assets	3D modeling, find or create SFX	Pascal	12	
General Submarine assets	3D modeling, find or create SFX	Pascal	30	
Room generation	import + combine assets	Kim	20	
Player controls	coding (inputs, movement)	Kim	10	
Creature controls	coding (pathfinding, player death), animations	Leo	15	
Reactor mechanics	coding (reactor)	Leo	12	
Environment controls	coding (events, resources, game end)	Ruben	20	
Map generation	coding (random layout)	Ruben	14	
Project document & presentation		all	6	

#### 4. Alpha release

Task	Description	Assigned to	Planned hours	Actual hours
Puzzles	coding (puzzles), assets	Ruben	8	
Items	coding (inventory, item effects), assets	Kim, Ruben	15	
Ending(s)	text/cutscenes, trigger conditions	Leo	6	
General bugfixes	Playtesting, coding fixes	all	yes	
Graphical Programming	Shaders & Post-processing	Pascal	8	
UI		Leo, Kim	5	
SFX		Kim, Pascal	40	
Project document & presentation		all	6	

## 5. Playtesting

Task	Description	Assigned to	Planned hours	Actual hours
Playtesting Survey	Create a survey	Kim, Pascal	8	
Playtesting	Find testers & let them play	all	24+	
Evaluation of feedback	Go through the feedback & summarise key points	Ruben, Leo	2	
Project document & presentation		all	6	

## 6. Final Release

Task	Description	Assigned to	Planned hours	Actual hours
Polishing		Pascal	12	
Bug fixing		all	Yes	
Implement feedback		Ruben	10	
Trailer		Kim, Leo, Pascal	16	
Project document & presentation		all	6	

## Assessment

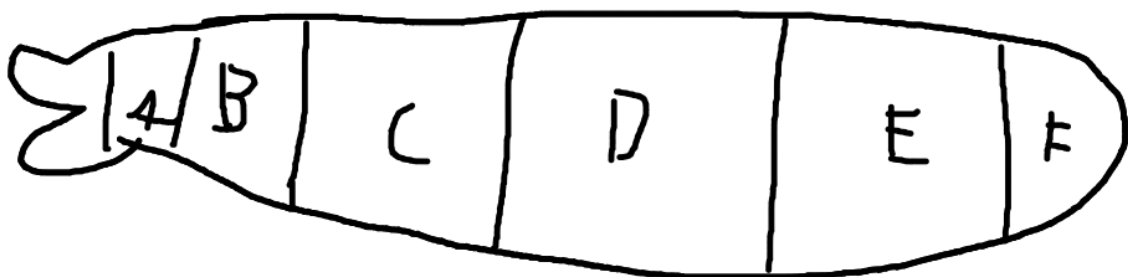
Our goal is to create an immersive submarine horror adventure. We aim to make the player feel trapped with the creature and pressured to complete their tasks quickly and

efficiently for fear of a bloody demise.

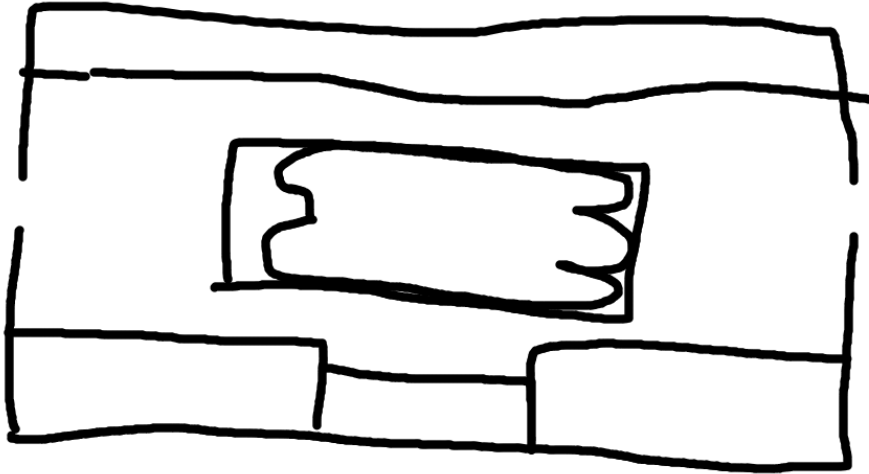
Our players have to navigate through a suspenseful submarine horror scenario while also solving puzzles and managing a realistic reactor with intricate mechanics to ensure their survival.

The game is aimed at fans of immersive horror experiences, as well as players that like a certain degree of realism.

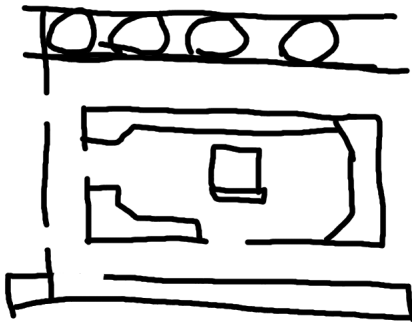
## Sketches



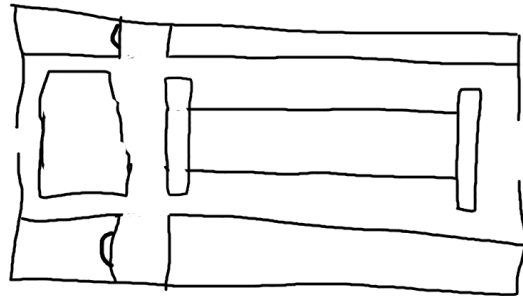
# Host Room



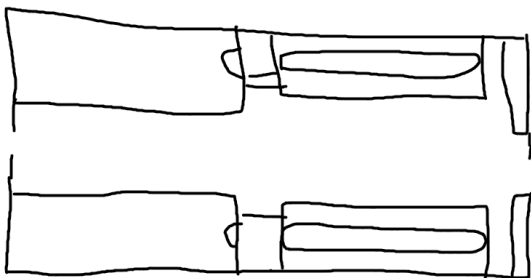
## Bridge



## Missile room B



## Missile room



## Crewquarters

