

# Ourea

*A game by*



**Rewrite Games Studios**

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*A report submitted in partial fulfillment of the requirements for the degree of  
Bachelor of Arts (Honours) in Game Design*

*May 2020*

## DECLARATION

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## ACKNOWLEDGEMENTS

We would like to wholeheartedly thank our lecturers in TU Dublin for all the knowledge and support they supplied us within our four years in Aungier Street. We would like to thank John, our supervisor, for always being available to talk and give advice, and for pushing us to work to our fullest capacity. Without his guidance, *Ourea* would have never reached the level that it did.

We would not have been able to create *Ourea* without the immense support from our families who had to deal with our crazy work schedules and provided valuable feedback whenever we needed it.

Finally, we would like to thank Jakov who created the beautiful soundtrack used in *Ourea* which allowed us to devote more time to other areas of the game.

# CONTENTS

<b>Introduction .....</b>	<b>7</b>
<b>Background.....</b>	<b>8</b>
High-Level Summary.....	8
Inspirations.....	8
Intent/Player Experience .....	9
Mechanics .....	9
Goals .....	9
Competitor Analysis .....	9
Technologies.....	10
Engine and Platform .....	10
Software .....	11
Distribution .....	11
Promotion .....	11
Research.....	12
<b>Methodology and Approach.....</b>	<b>13</b>
Game Design.....	13
Aim .....	13
Process.....	13
Mechanics.....	14
Evolution .....	14
Level Design.....	15
Tools Used .....	15
Architecture .....	15
Analysis .....	16
Camera Design .....	17
Gameplay Camera Design and Implementation .....	17
Example of Cameras Types .....	17
Target Group.....	19
Cinematic Design and Implementation.....	19
Narrative .....	20
Aim .....	20
Background .....	21
Storytelling .....	21
Art .....	22
Art Style .....	22

Animation .....	24
Asset List .....	24
Art Pipelines .....	25
Production .....	27
Roadmap .....	27
Master Task List .....	27
Weekly Sprints .....	28
Working Hours .....	28
Moving from Trello to Google Sheets .....	28
Steam Page .....	29
Games Fleadh .....	29
Outsourcing Music .....	29
Audio .....	29
Style .....	29
Process .....	30
Analysis .....	31
Tech & Code .....	31
Designing Process .....	31
Implementation .....	31
Architecture .....	32
Functionality .....	32
<b>Testing and Analysis .....</b>	<b>33</b>
Introduction .....	33
Report .....	33
In Class Playtest .....	33
December Showcase .....	34
Games Fleadh .....	34
Games Co-Op .....	35
Discord Playtest .....	36
Public Beta .....	36
Paintings Showcase .....	37
In-house Playtesting .....	38
Conclusion .....	38
<b>Evaluation .....</b>	<b>39</b>
Design Critique .....	39
Camera Critique .....	39
Technical Critique .....	40
Unity 2019.3 .....	40

Source Control .....	40
Audio Software .....	40
Art Software .....	40
Code Critique .....	41
Art Critique .....	41
Audio Critique.....	43
Narrative Critique .....	43
Production Critique .....	44
Future Work .....	44
<b>Conclusion.....</b>	<b>46</b>
<b>Appendix.....</b>	<b>47</b>
Additional Documents .....	47
Playtest Forms .....	48
Game References.....	48
Software References: .....	48

## INTRODUCTION

This document has been written to detail the process of creating and developing *Ourea* and follows the process from conception in September 2019 to submission in May 2020. It also discusses plans for the games intended release in July 2020.

To begin, this document will give a brief background on the development of the game by discussing inspirations, mechanics, goals and competitors. This section will also look at the technologies used to create *Ourea* by outlining research into both target platforms and software used as well as methods used for distribution and promotion.

The document will then look at the methodology and approach used by team members to develop the game. This section shows how the team tackled areas such as design, art, audio and tech. As our game is a cinematic narrative game, we've also included subsections detailing cameras and cinematic design as well as the narrative of the game.

Moving on, the document will then outline how we tested the game both internally and externally during the Vertical Slice, Alpha and Beta stages of development. This section will also discuss any issues found during playtesting and how we resolved these challenges.

After this, we then critically evaluate the work carried out for this project over the 8-month development cycle. We will also discuss potential future work relating to the project.

Finally, we will summarize and conclude this document.

## BACKGROUND

### High-Level Summary

Elevator Pitch: *Ourea* is a cinematic narrative game where you discover the harrowing past of a long-forgotten world. Overcome environmental puzzles as you ascend an ancient and mysterious mountain.

Player motivation: Discover the world's ancient past and solve puzzles that help you ascend the mysterious mountain.

Genre: Narrative game with an emphasis on cinematic storytelling with puzzle elements.

Target Audience: People that enjoy narrative-driven games with puzzle elements such as *What Remains of Edith Finch*, *Journey* and *Inside*.

Unique Selling Point: Cinematic storytelling in a narrative puzzle game.

Summary Overview: In a quiet, abandoned world we meet our protagonist Glyf whose journey of discovery leads him toward the summit of a nearby looming mountain. Through a series of trials and tribulations, Glyf overcomes environmental challenges while escaping a mysterious force in search of his purpose and past.

### Inspirations



The way *Journey's* story unravels through the world and the pacing in which these clues are found by the player are both important design inspirations for our game. As there is no spoken dialogue in the game, *Journey* is a key inspiration on how to utilise environmental storytelling.



In *We Were Here Too*, the important parts of the puzzle are always relatively easy to find. The player is never confused despite the number of objects in each room. It will be important to frame objects cleverly in the scene so that the player's goals are clear.





*Far Lone Sails* uses simple mechanics very effectively. Stepping on buttons and picking up objects are the only inputs from the player. The story is told through an ever-changing environment. The constant feedback and beautiful aesthetics keep the player fully immersed.

## **Intent/Player Experience**

There is an emphasis on immersing the player in *Ourea*. All puzzles, challenges and their components fit seamlessly into the world. As the game goes on, the motivation for climbing the mountain increases as the player learns about its history and their place in it. This is also enforced by the character of Abaddon who is trying to prevent the player from progressing up the mountain.

The player feels like they influence this world. This is done by the reactive environment e.g. the grass parts and fireflies fly out as they move through it. The game evokes curiosity from the player as to how the world came to be like this. The narrative is slowly revealed through indirect means which fulfils players curiosity.

## **Mechanics**

The main game mechanic is bringing objects to runes to alter them. Bringing an object to a certain rune has a pre-determined effect and results in the object being altered. The player is then challenged to use these objects to overcome obstacles impeding them. The challenges presented to the player are relevant to the environment the player is currently interacting with.

## **Goals**

Our main goal for the end of the project was to develop a game with a high level of polish and publish it to Steam in the summer of 2020. More specifically, we aimed to create a narrative puzzle game which was both visually appealing and enjoyable to play. To this end, our secondary goal was to create an engaging and immersive experience which would stay with the player after they had finished playing it.

## **Competitor Analysis**

For this project, there were three games we used as a basis for our competitor analysis: *A Short Hike*, *Dawn* and *Stela*.



A *Short Hike* released in 2019 and has received over two and a half thousand reviews on Steam, 99% of which are positive. The game is at the same price as we plan to release at and averages just short of an hour and a half of gameplay to complete the main story.



*Dawn* is one of the student games that has come out of SMU Guildhall, a video game education program based in Texas. It received 90% positive reviews from over 600 users despite its 15-minute game time. Although it's free it shows a market for 3D atmospheric puzzle games.



*Stela* received 70/100 from Metacritic and 79% positive reviews on Steam. Their studio of over 200 employees was able to achieve a high level of polish and despite the two-hour-long runtime, the game released with a 16.79 euro price tag. *Stela* also released on Switch with a similar price tag.

These games were used as a reference model for how well we felt *Ourea* was progressing during development as well as giving us a way to limit our scope. These games also provided us with a range of marketing strategies and pricing models to study in order to guide us with our own strategies.

## Technologies

This section will discuss the various technologies used throughout the development process to create *Ourea*.

### Engine and Platform

*Ourea* was developed using the Unity game engine, more specifically, version 2019.3. We felt comfortable using Unity and had previous experience with it over the last 3 years. Unity also provided many built-in tools and features that enabled us to bring our artistic vision to life, without creating systems, like Unity Cinemachine for example, from scratch.

Unity version 2019.3 is also the first to offer long term support for the High Definition Render Pipeline. *Ourea* took advantage of HDRP by implementing volumetric lighting, local density volumes, post-processing volumes and VFX Graph.

*Ourea* has the possibility of releasing on both Windows and Mac Metal. The Windows version is a given and will be released on the 21<sup>st</sup> of July on Steam. However, due to the lack of possible testing for Mac builds, we are still undecided on whether to sell *Ourea* for Mac users.

## **Software**

### *Art*

Ourea's art was primarily created using 3DSMax, Substance Painter and Photoshop. 3DSMax was used to create 3D models. Substance Painter and Photoshop were used to create textures. The exact use of each software will be explained in greater detail later in this document.

### *Tech*

We used JetBrains Rider as our IDE of choice. Riders' Unity integration was a big help when debugging and optimising scripts. When comparing this to Visual Studio, Rider was less cluttered with unused features and fit our needs better. Its auto-complete functionality, in our experience, also worked better when working with Unity.

For version control, we decided on Git as it is the industry standard. We hosted our repositories on Github and primarily used Github Desktop for ease of use. However, Github Desktop's lack of tag functionality meant that Bash was needed to create backup versions of the project.

### *Audio*

The two main programs used to alter and create sound effects for Ourea were Adobe Audition and Audacity. Audacity was mainly used to cut clips to the correct length and create seamlessly looping sound effects. Audition's primary use was altering sound effects by using the effects rack and merging many altered sound effects to create new ones using multitrack sessions.

### *Production*

To begin with, production was organized using Trello. This helped layout weekly tasks for each team member. As the workload increased, task lists were moved Excel/Google Sheets to allow for tasks to be explained in greater detail with a stronger structure.

## **Distribution**

### *Steam*

Ourea will be released fully on the 21<sup>st</sup> of July on Steam. When considering Ourea's release, Steam was the best option. It provides the largest audience and is the industry standard when it comes to PC game releases.

### *Itch.io*

Itch.io has been a valuable distribution channel for Ourea. It was used to spread both the Vertical Slice demo and the Public Beta and to gain valuable playtesters. The easy and unrestricted game upload process made Itch.io ideal for the previously named releases. The final game release will also be on Itch.io, however, the potential number of sales are fewer, due to the smaller scale of Itch.io.

## **Promotion**

### *Social Media*

We used various social media channels, the primary two being Twitter and Instagram. Twitter was used to spread promotional information and prepared

content to draw attention to Ourea's website and then later, to the games Steam page. Instagram was utilised to primarily share visuals of Ourea. This included trailers, GIFs and screenshots.

#### *Games Press*

GamesPress.com was used to spread press releases about Ourea. This allowed for easy distribution of information from Games Press to other game websites. Through Games Press, Ourea was posted about on multiple different websites and helped spread awareness about the games various releases.

#### *Website*

We created a website for Ourea. The website's goal was to initially sign interested people up to a mailing list. However, this quickly pivoted to directing traffic to the Steam page instead. This helped with garnering wishlists for the game.

### **Research**

A large amount of research was put into the technical side and logistics of building Ourea in the limited time available to us. The primary worry in preproduction was Ourea's use of HDRP, due to its novelty and our inexperience of using it. This meant that a large amount of time was spent researching the pipeline and figuring out if the adjusted workflows and new systems would be manageable and the right choice for this project.

In terms of Audio, FMOD was considered as a replacement to Unity's standard audio. However, after researching it further, we stuck with Unity's default audio. This was due to FMOD's lack of online resources such as documentation and help boards and also the difficulty of integrating it with our version control.

## METHODOLOGY AND APPROACH

### Game Design

#### Aim

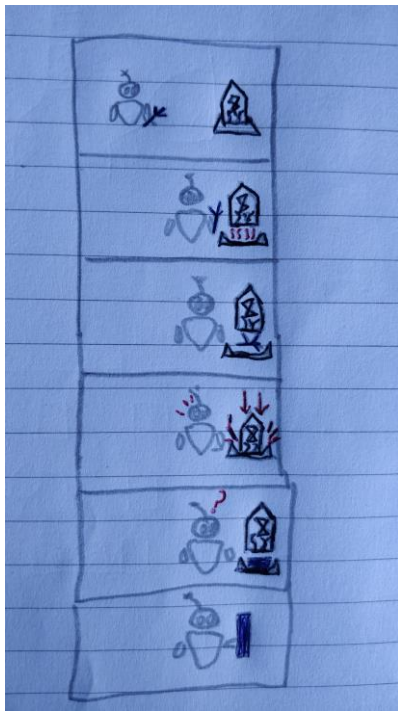
From early on in our pre-production phase, we decided on creating a game with emphases on narrative and beautiful visuals as opposed to complex mechanics. We made this choice based primarily on the composition of our team. We settled on a slow-paced cinematic game with light puzzle elements. The design aimed to utilise beautiful visuals and cinematic moments to convey an impactful narrative that would resonate with the player. We decided that one of our pillars of design should be an interactive environment as this would help ensure the player became invested in the world of Ourea.

#### Process

We purposefully spent a lot of time during the pre-production phase considering as many aspects of the game's design as we could. This was done to ensure we could begin production from a strong position of understanding amongst the team. During this time, we heavily considered the various sections of the game and the overall pacing. Our high level of pre-planning proved to be invaluable in streamlining the production of Ourea. Throughout production, the team's strong understanding of the game's pacing meant we were all well-positioned to make changes that didn't upset the game's design.

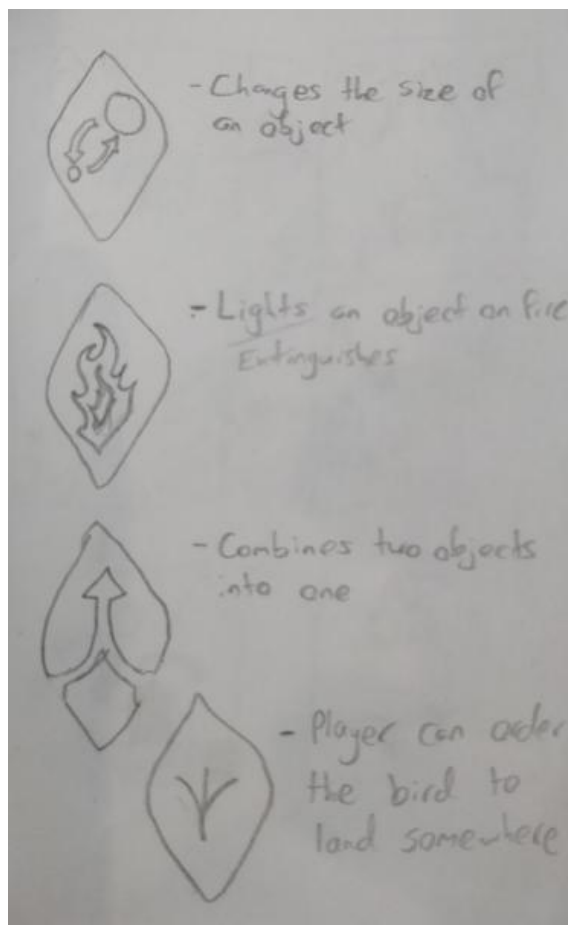


## Mechanics



The puzzle's within Ourea rely on simple mechanics as the player only has one button to interact with objects. In order to maintain a level of difficulty as well as a sense of achievement in completion, we chose to design puzzles that revolved around interacting with the environment. Despite the player using the same button to interact with each object, we were able to create a level of complexity by introducing unique interactions for each of the puzzles e.g. burning the rope in the first puzzle with the torch. We also used the player's movement as a mechanic for some of the puzzles to increase variety while maintaining simplistic controls. Both the flattening runestone and the seesaw rely on the player's movement to function.

## Evolution

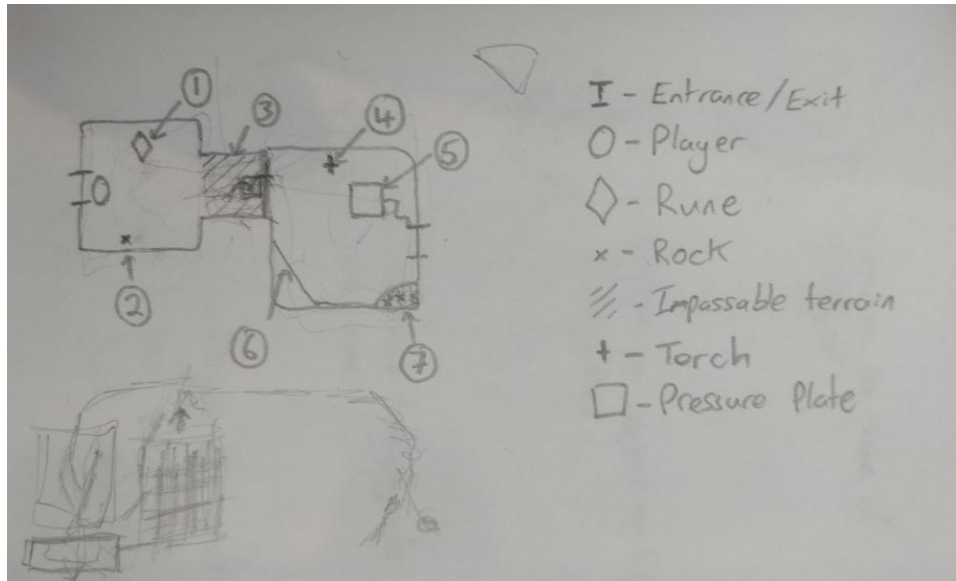


Originally, concepts for the puzzles were more complex and would require multiple controls in line with a more standard puzzle game. However, we decided to move away from mechanical complexity as we decided to focus the design on a beautiful, cinematic game.

We also realised that our target audience would not necessarily enjoy overly complex puzzles and would rather experience beautiful moments without getting frustrated or stuck on a difficult puzzle.

We began to design puzzles with minimal moving pieces while involving objects that behaved expectedly. The goal was to avoid confusion by drawing on player's pre-existing knowledge as much as possible e.g. the seesaw.





Players typically understood the functionality of the familiar objects. However, they became confused when interacting with unfamiliar runestones. In response to this, we made adjustments that showed the player more clearly what effect their actions had i.e. the adjacent fires changing colour when an object is placed on the plate. The result of this was a much higher level of understanding from players.

## Level Design

### Tools Used

The levels were conceptualised and ordered in a document based on the moods we wished to evoke. From there, each of the levels was whiteboxed with basic objects and positioned in order within Unity. Indoor levels were modelled by the art team using 3DSMax while each outside area was built using Unity's Terrain tool.

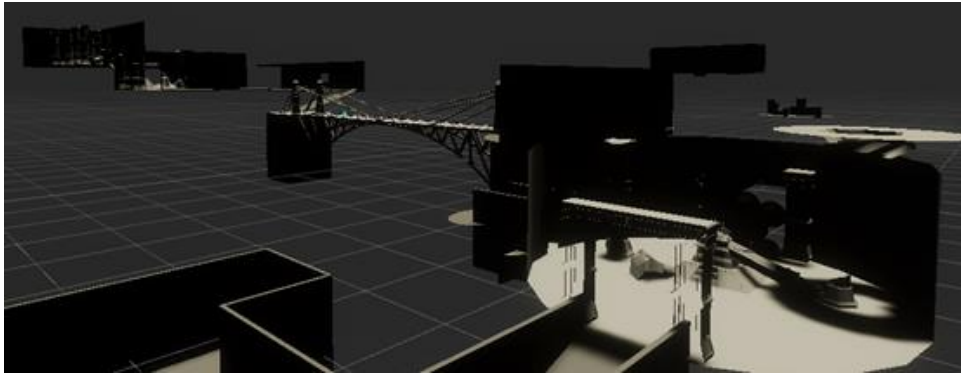
Several design documents were created for individual assets as well as puzzle mechanics and overtime the entirety of the whitebox elements were replaced with functional and textured models.

### Architecture

One of the challenges faced by the team was building the levels to plausibly bring the player to the top of the mountain. This meant we had to have the player gain a large amount of vertical height in a relatively small amount of time. The elevator section was designed to fit this purpose and doubled as a confined space where we could create a suspenseful encounter with Abaddon, the antagonist of the game.

All the rooms and objects within are built to three times the scale of the protagonist Glyph. This decision is based on the narrative, as Glyph is three times smaller than other Oreads.

A conscious effort was also put into all areas of the game, including places where Glyf could not go to e.g. in cases where he entered or exited a room through a crack in the wall.



### Analysis

The levels of Ourea were designed to help tell the story of the ancient race of Oreads to the player. From there we considered how we could use each of the rooms to convey a feeling or mood. For example, the turn in the gear corridor leads to the suspenseful walk to the engine room. Each level was enhanced by the creative reuse of assets to fill in the level as well as surround and frame the outside areas.







## Camera Design

### Gameplay Camera Design and Implementation

We decided early on that we wanted *Ourea* to have a cinematic feel and an integral part of this was to frame each scene in the game in a cinematic way. For this, we needed to first develop a way to switch between cameras when the player was in different areas. We did this by setting up 'Camera Zones' which would have a primary camera attached to them. This camera would then be activated when the player entered that zone.

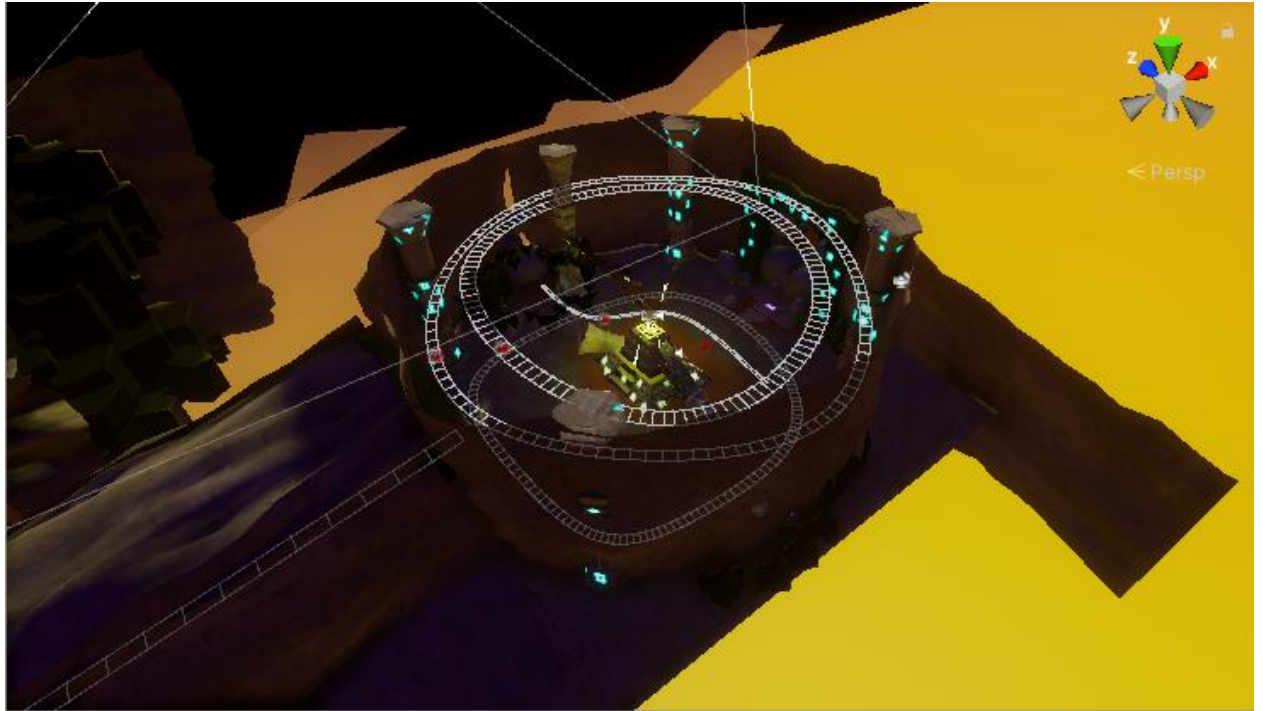
For each area, we would design the cameras and zones in tandem, as the size of the zones would be dependent on the camera which was attached to it. We use a continuous long shot in *Ourea*, which means we are never able to cut from one camera to another. It must be a seamless transition to make it appear as if only one camera is being used throughout.

We started by designing and implementing the camera zones for the key shots we wanted in the game such as the mountain reveal, bridge shot and cave painting corridor. Once we had these nailed down, we would repeat the process for the areas between where our key shots took place.

### Example of Cameras Types

Dolly:

A camera attached to a dolly track was used frequently throughout the game. In some areas, the camera would follow the player using the dolly while they moved. Some were more complicated like the circular dolly camera which is used in the first altar room.

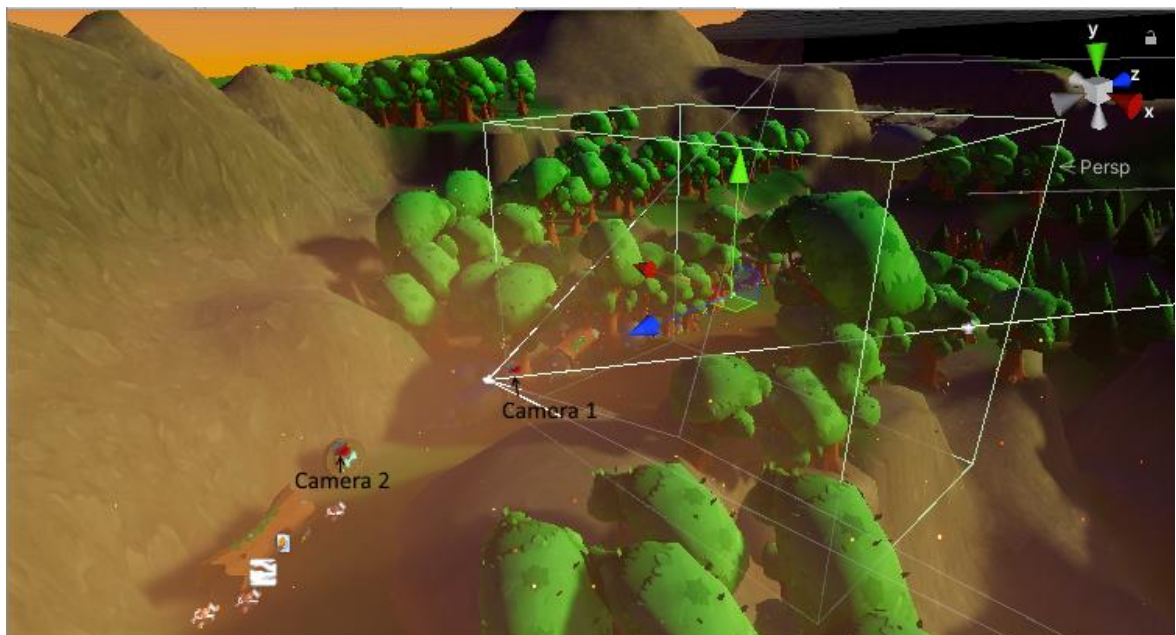


Fixed:

A fixed camera which doesn't move was mainly used in the puzzle areas. This was so we could show a fixed shot of an area, with all puzzle elements needed, without the camera moving to follow the player.

Mixing camera:

A mixing camera is a camera which moves between two childed cameras (camera 1 and 2), based on a value. We augmented this to move based on the player's position within a camera zone.



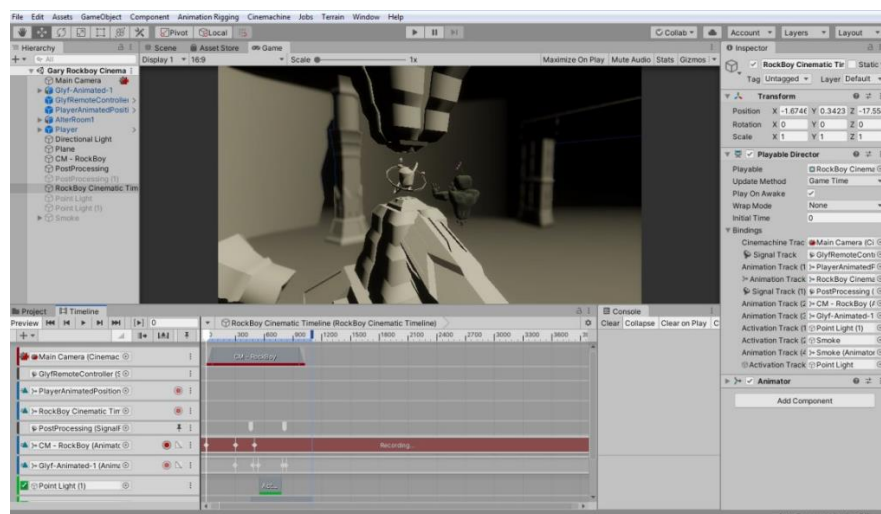
## Target Group

A target group was used when we wanted to have two subjects in the frame at the same time. An example can be seen in Altar Room 1. We used a target group with the player and the rune in the centre as subjects. The camera would then move to always keep the subjects in view.

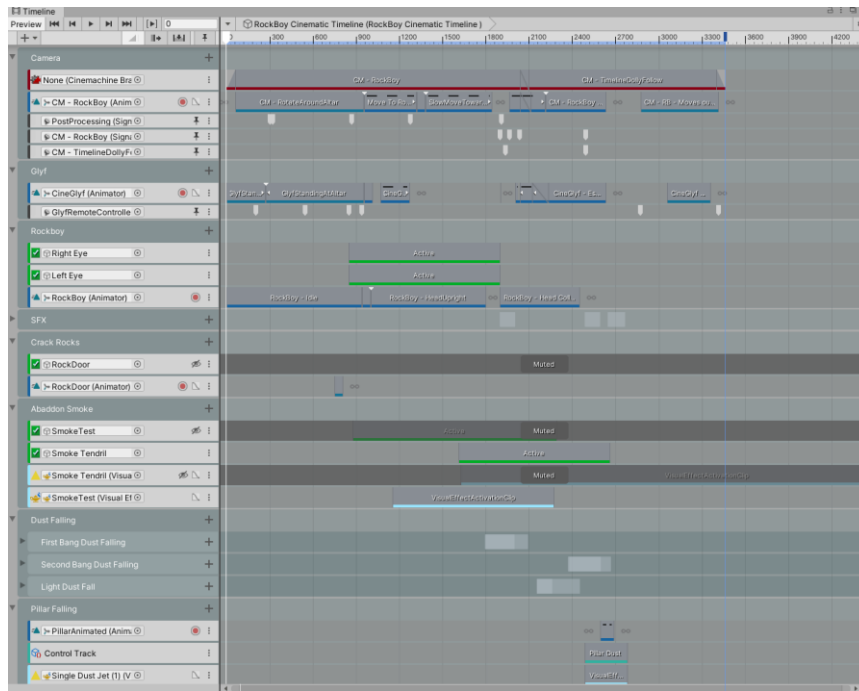
## Cinematic Design and Implementation

The design process for our cinematics began with us talking about the message and atmosphere we wanted to achieve. This would be followed by brainstorming ideas for the cinematic that conveyed the message we wanted. Once we had the general idea of the cinematic, we would start implementing it in Unity using Timeline. Timeline is a tool which allows users to create a cinematic or gameplay sequence.

Our timeline was split into sections based on the types of objects used in the cutscene. Two sections which were always included were Cameras and Glyph. Cameras contain all cameras used and the animation clips for them moving throughout the scene. It also includes a signal track to trigger scripts we wrote to augment camera properties (depth of field, camera shake). The Glyph section contains his animation track and the signal track to change his emission colour. It also contains the functionality to start and stop the animation track so the player could resume control. The rest of the sections would depend on the individual cinematic, an example being Abaddon Smoke, which controlled when the different Abaddon smoke effects that would stop and start.



*Early Altar Room Cinematic Timeline*

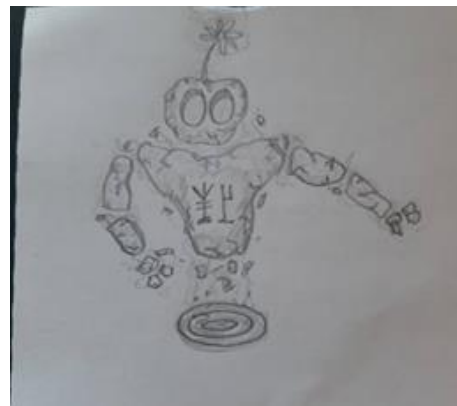


*Current Altar Room Cinematic Timeline*

## Narrative

### Aim

We had decided at an early stage we wanted to create a game with a strong narrative. A large amount of time in the early pre-production stage of development was dedicated to conceptualising different ideas and plotlines. Most of these ideas centred around a mountain, as we were intrigued by the idea of climbing a mountain or completing a journey. The storyline was also influenced by the limitations we faced as a team. We finally decided on a narrative that was inspired by an image created by one of our artists.



When we had the basic plotline of the narrative drafted, we then began discussing different themes we could introduce into our narrative to make it more impactful to the player. We then decided to incorporate tones of climate change into our game. This communicates a meaningful story about the irresponsible behaviours of a sentient species that echoes into our own world and ultimately leaves the player with a meaningful choice.



## Background

Ourea follows the protagonist Glyf, who is revived into a mystical and beautiful world. He is the last of his race, a species of ancient rock nymphs known as Oreads. Through the guidance of a bird named Blu, Glyf is led up a large mountain where he begins to discover the history of his people and how their demise came to be. Along the way, he unintentionally awakens an ancient force known as Abaddon, the antagonist of the game, by interfering with mysterious carvings. Abaddon begins to antagonize Glyf as he further ascends the sheer mountain face. By discovering many contraptions and buildings left behind by his civilization, Glyf eventually uncovers a terrible truth about his origin.

## Storytelling

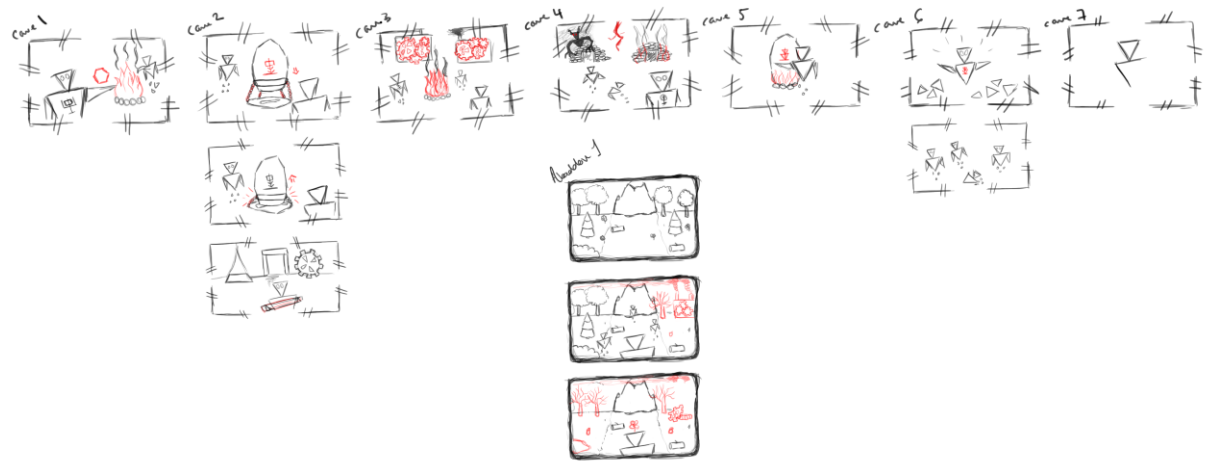


The narrative in our game loosely follows the hero's journey and is primarily told through cave paintings. This also added to the narrative as we wanted the player to see the world through the Oreads eyes. This portrays Abaddon as a monster, when in reality this isn't the case, as the player discovers at the climax of the game. A document was created detailing the

complete storyline of the game. It also detailed mechanics, elements and emotional moments within the game. This can be found in the appendices.

	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P		Q		R		S		T		U		V		W		X		Y		Z		AA		AB		AC		AD		AE		AF		AG		AH		AI		AJ		AK		AL		AM		AN		AO		AP		AQ		AR		AS		AT		AU		AV		AW		AX		AY		AZ		BA		BB		BC		BD		BE		BF		BG		BH		BI		BJ		BK		BL		BM		BN		BO		BP		BQ		BR		BS		BT		BU		BV		BW		BX		BY		BZ		CA		CB		CC		CD		CE		CF		CG		CH		CI		CJ		CK		CL		CM		CN		CO		CP		CQ		CR		CS		CT		CU		CV		CW		CX		CY		CZ		DA		DB		DC		DD		DE		DF		DG		DH		DI		DJ		DK		DL		DM		DN		DO		DP		DQ		DR		DS		DT		DU		DV		DW		DX		DY		DZ		EA		EB		EC		ED		EE		EF		EG		EH		EI		EJ		EK		EL		EM		EN		EO		EP		EQ		ER		ES		ET		EU		EV		EW		EX		EY		EZ		FA		FB		FC		FD		FE		FF		FG		FH		FI		FJ		FK		FL		FM		FN		FO		FP		FQ		FR		FS		FT		FU		FV		FW		FX		FY		FZ		GA		GB		GC		GD		GE		GF		GG		GH		GI		GJ		GK		GL		GM		GN		GO		GP		GQ		GR		GS		GT		GU		GV		GW		GX		GY		GZ		HA		HB		HC		HD		HE		HF		HG		HH		HI		HJ		HK		HL		HM		HN		HO		HP		HQ		HR		HS		HT		HU		HV		HW		HX		HY		HZ		IA		IB		IC		ID		IE		IF		IG		IH		II		IJ		IK		IL		IM		IN		IO		IP		IQ		IR		IS		IT		IU		IV		IW		IX		IY		IZ		JA		JB		JC		JD		JE		JF		JG		JH		JI		JJ		JK		JL		JM		JN		JO		JP		JQ		JR		JS		JT		JU		JV		JW		JX		JY		JZ		KA		KB		KC		KD		KE		KF		KG		KH		KI		KJ		KK		KL		KM		KN		KO		KP		KQ		KR		KS		KT		KU		KV		KW		KX		KY		KZ		LA		LB		LC		LD		LE		LF		LG		LH		LI		LJ		LK		LM		LN		LO		LP		LQ		LR		LS		LT		LU		LV		LW		LX		LY		LZ		MA		MB		MC		MD		ME		MF		MG		MH		MI		MJ		MK		ML		MM		MN		MO		MP		MQ		MR		MS		MT		MU		MV		MW		MX		MY		MZ		NA		NB		NC		ND		NE		NF		NG		NH		NI		NJ		NK		NL		NM		NN		NO		NP		NQ		NR		NS		NT		NU		NV		NW		NX		NY		NZ		OA		OB		OC		OD		OE		OF		OG		OH		OI		OJ		OK		OL		OM		ON		OO		OP		OQ		OR		OS		OT		OU		OV		OW		OX		OY		OZ		PA		PB		PC		PD		PE		PF		PG		PH		PI		PJ		PK		PL		PM		PN		PO		PP		PQ		PR		PS		PT		PU		PV		PW		PX		PY		PZ		QA		QB		QC		QD		QE		QF		QG		QH		QI		QJ		QK		QL		QM		QN		QO		QP		QQ		QR		QS		QT		QU		QV		QW		QX		QY		QZ		RA		RB		RC		RD		RE		RF		RG		RH		RI		RJ		RK		RL		RM		RN		RO		RP		RQ		RR		RS		RT		RU		RV		RW		RX		RY		RZ		SA		SB		SC		SD		SE		SF		SG		SH		SI		SJ		SK		SL		SM		SN		SO		SP		SQ		SR		SS		ST		SU		SV		SW		SX		SY		SZ		TA		TB		TC		TD		TE		TF		TG		TH		TI		TJ		TK		TL		TM		TN		TO		TP		TQ		TR		TS		TT		TU		TV		TW		TX		TY		TZ		UA		UB		UC		UD		UE		UF		UG		UH		UI		UJ		UK		UL		UM		UN		UO		UP		UQ		UR		US		UT		UU		UV		UW		UX		UY		UZ		VA		VB		VC		VD		VE		VF		VG		VH		VI		VJ		VK		VL		VM		VN		VO		VP		VQ		VR		VS		VT		VU		VV		VW		VX		VY		VZ		WA		WB		WC		WD		WE		WF		WG		WH		WI		WJ		WK		WL		WM		WN		WO		WP		WQ		WR		WS		WT		WU		WV		WW		WX		WY		WZ		XA		XB		XC		XD		XE		XF		YG		YH		YI		YJ		YK		YL		YM		YN		YO		YP		YQ		YR		YS		YT		YU		YV		YW		YX		YY		YZ		ZA		ZB		ZC		ZD		ZE		ZF		ZG		ZH		ZI		ZJ		ZK		ZL		ZM		ZN		ZO		ZP		ZQ		ZR		ZS		ZT		ZU		ZV		ZW		ZX		ZY		ZZ	
Resource	Formal		Social & Informal		Task		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual		Group		Team		Individual																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

We created a list of cave paintings which advanced the plot and aided players with puzzles (See Appendix for link). The cave paintings were drawn in Photoshop and animated within Unity.



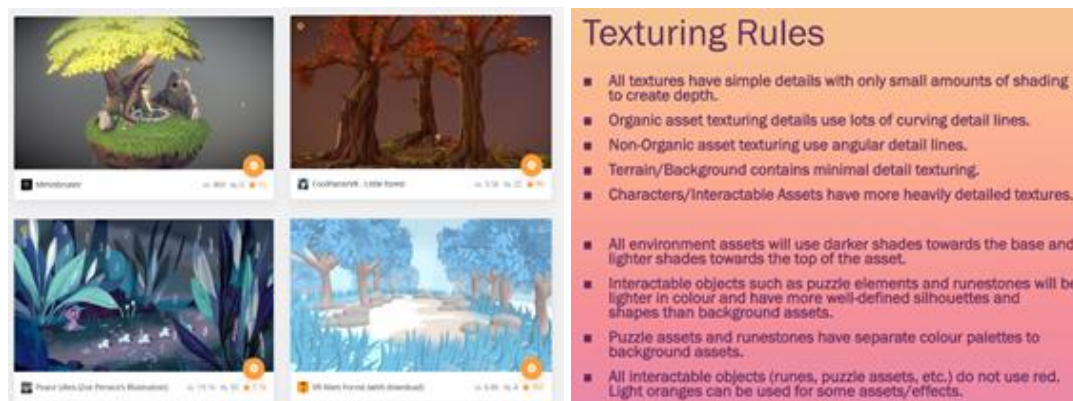
These paintings changed drastically throughout production due to the feedback we received, and we are happy with the finalised cave paintings. In total there are 11 cave paintings within the game.

The narrative is also told through cutscenes and audio within the game, which was used to advance the storyline and create tension in a way the simplistic cave paintings could not.

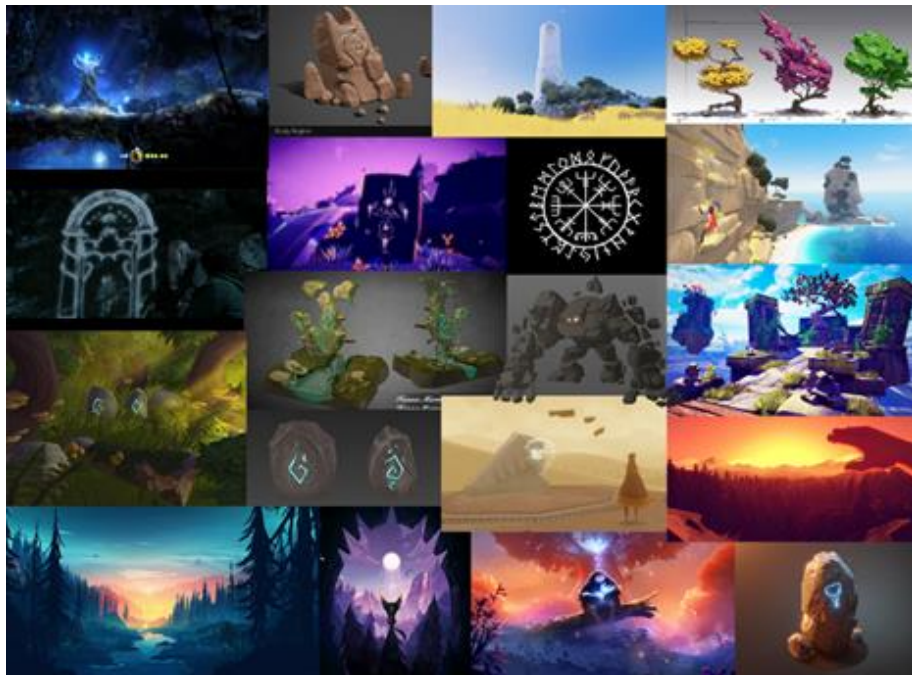
## Art

### Art Style

During Pre-Production, we developed an art style which could be created in as little time as possible while also looking as good as was feasible. We experimented with different styles before settling on a low to medium-poly, hand-painted texture style as it fit the skillset of the team.



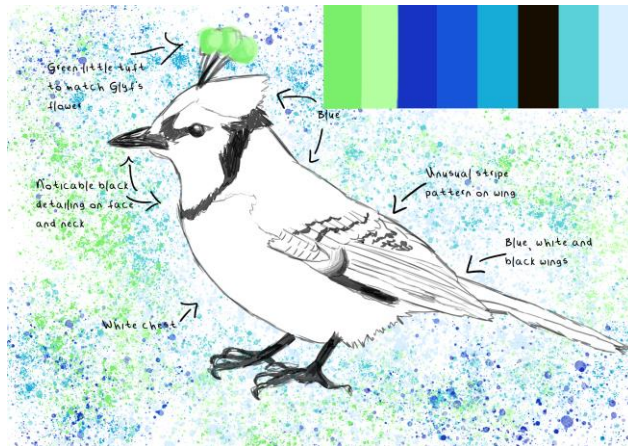
To do this, we researched games and other art and media with similar styles and themes to our game concept, creating mood boards and developing an art bible.



During this period, concept art was created in order to direct the visual appearance of the game. It was used to guide and bring to life the narrative created for the game.

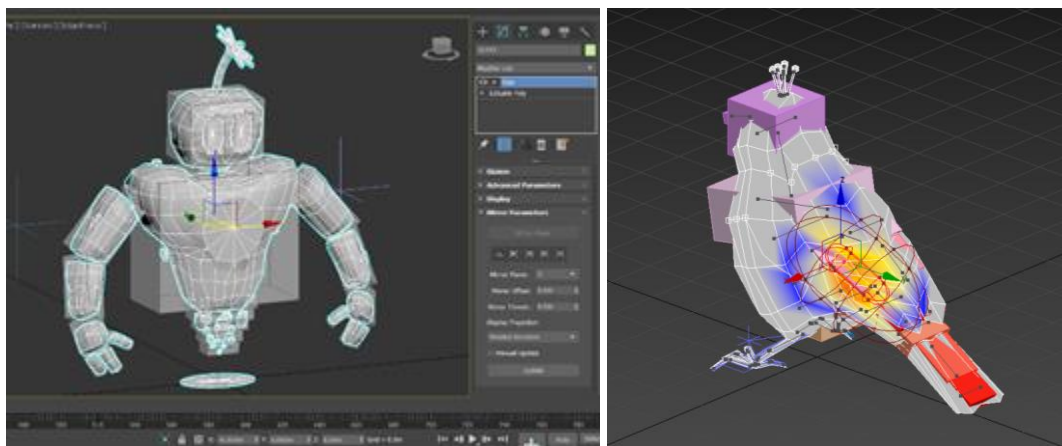






## Animation

The character models in the game were both rigged and animated in 3DS Max's animator feature. Glyf's rig was based on a humanoid upper torso. Glyf's animations tried to reflect the idea that he is made up of several different parts which can move independently while keeping the impression of him being one whole mass. Blu's rig was based around a bird perched on a ledge or branch. Her animations tried to mimic the movements of a real-life blue tit as it watches its environment, complete with quick head movements and short hops.



Each character model was skinned and rigged after being unwrapped. The model was then imported into Unity where the animation track was split up into individual animations. These animations were then applied to a character animator and adjusted for better game feel.

## Asset List

A master art tasklist, in the form of a spreadsheet, was used to manage all of the game's assets, those both in progress and to be created. This master list was created during the Alpha phase and continued to be used through Beta and into the Gold phase. Prior to this, a shorter temporary list had been employed for Vertical Slice which proved successful, so the practice was continued.

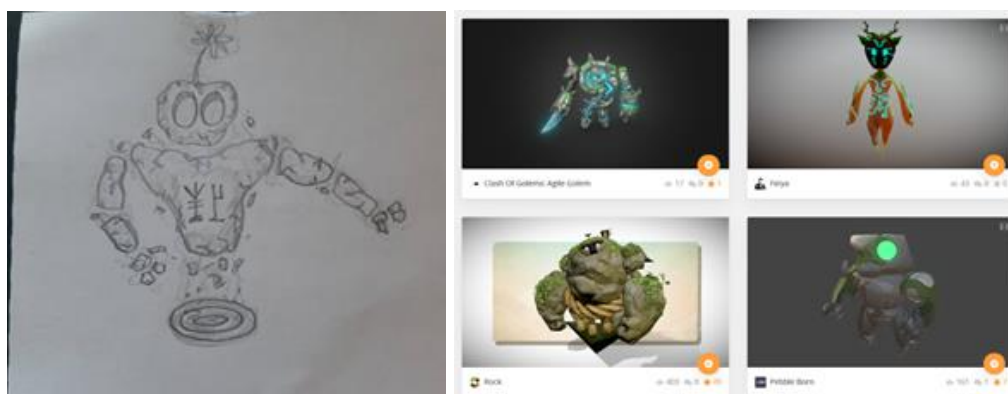


The master list tracked who was assigned to each task and both the progress and importance of each task. Tasks were split into different categories for easier management. This made it much simpler to check who had what tasks and avoid any overlap of work. This meant very little was forgotten or overlooked as the project grew in size. The art task list can be found in the appendices.

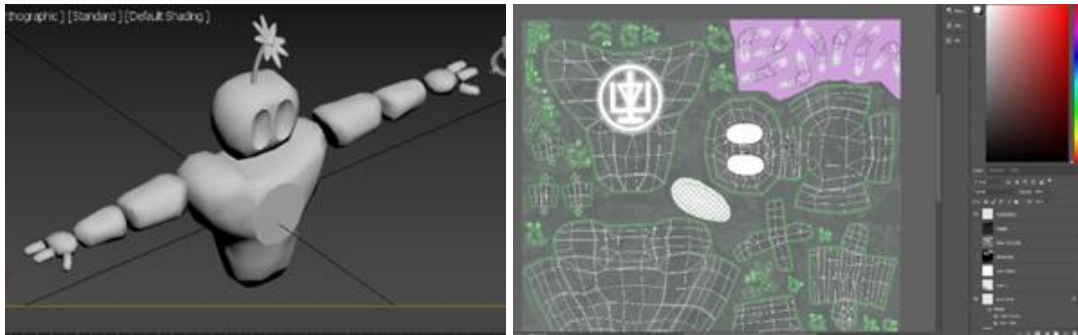
No.	Type	Asset	Team Member	Done?	Asset Description	Textured?	Priority	Time Needed
1	Character	Rig & Animate Blu	Rubyn	Done		Done	High	Long Time
2	Character	Abaddon	Conor	Done	unetap + rig	1/2 Done	High	Long Time
3	Character	Orcaid Friend (AKA Rock bot)	Conor	Done	nanemongymmer + check rig	Done	High	Long Time
4	Character	Glyf	Conor	Done	primo + texture redo	Done	High	Long Time
5	Asset	Fix platform	Rubyn	Done		Done	High	Long Time
6	Asset	Ready Cave Paintings 1, 2, 4, 5, 7	Rubyn	Done		Done	High	Long Time
7	Asset	Pipes	Rubyn	Done		Done	Medium	Long Time
8	Asset	Double Sided Wall, Cave Painting Room	Rubyn	Done		Done	Medium	Long Time
9	Asset	Layers on Cave Painting	Rubyn	Done		Done	High	Long Time
10	Asset	Move the spikes in the cave painting down	Rubyn	Done		Done	High	Long Time
11	Asset	Tree of Life	Rubyn	Done		Done	High	Long Time
12	Asset	Tree Stump	Rubyn	Done		Done	Medium	Long Time
13	Asset	Dead Tree	Rubyn	Done		Done	Medium	Long Time
14	Asset	Bushes	Rubyn	Done		Done	Low	Long Time
15	Asset	Coal - Do in Unity	Rubyn	Done		Done	Low	Long Time
16	Asset	Fix Broken Pillar	Rubyn	Done		Done	High	Long Time
17	Asset	Craters	Rubyn	Done		Done	Low	Short Time
18	Asset	Wall Around Mountain Top Area	Rubyn	Done		Done	High	Short Time
19	Asset	Double Slope up to Tree of Life	Rubyn	Done		Done	High	Short Time
20	Asset	Fix Boulder Platform Distortion	Sam	Done		Done	Medium	Short Time
21	Asset	Near Hollow Log	Conor	Done	Raise old model	Done	Low	Short Time
22	Asset	Make Platform Ripe Bigger	Conor	Done		Done	Low	Short Time
23	Asset	Rock/Dir/Groves around Assets	Conor	1/2 Done	Around base of pillars / runestones / rubble / machinery	1/2 Done	Low	Short Time
24	Asset	Ancient City Viewing Platform	Conor	1/2 Done	Raise Summit viewing platform	Done	Low	Short Time
25	Asset	Machinery	Conor	1/2 Done	Patrons	Done	Medium	Short Time
26	Asset	Ravine Machine	Conor	Done	Tree cutting machine - uses Runes - Base on all pump machine	Done	Low	Long Time
27	Asset	Elevator Stems	Conor	Done		Done	High	Short Time
28	Asset	Cave Drawing Buttons	Conor	Done	whole new model & new texture with play rune	Done	High	Medium Time
29	Asset	Alder Room Wall Designs	Conor	Done		Done	Low	Short Time
30	Asset	Fix Elevator Door Model/Frame	Conor	Done		Done	Medium	Short Time
31	Effect	Radio Stars	Sam	1/2 Done			Low	Short Time
32	Effect	Fix smoke in V9	Rubyn	Done				
33	Effect	new clouds	Rubyn	Done				
34	Effect	Leaves falling	Rubyn & Tam	Done				

## Art Pipelines

The 3D Art Pipeline used during Vertical Slice was unreliable and didn't prove able to efficiently create assets to a high quality. Therefore, from Alpha onwards, the following pipeline was used for all 3D assets. Glyf's model is used as an example in the following images. In the beginning, we sketched out ideas and researched other similar concepts and artworks.



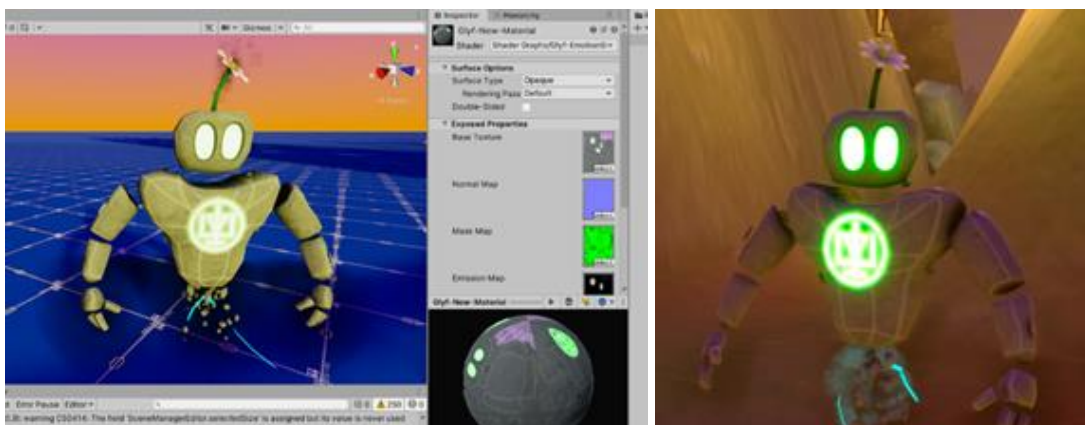
Once we had a design, we created the model in 3DS Max. After the modelling process was complete, the model was unwrapped into a UV map. The UV render was then exported to Photoshop where we handpainted the base colour texture. The hand painting stage took the most time and required the most attention to detail.



We then took the base texture and the unwrapped model to Substance Painter, where a heightmap and extra details were added to the texture. We baked ambient occlusion maps where necessary.



We then exported the textures as HDRP specific mask maps and imported them to Unity, along with the model. Textures were applied to a material for editing. The material was applied to the imported model, adjusted and tested in-game.



The Art Pipeline used for the game's 2D assets followed a similar pattern at the beginning where ideas were sketched out and other similar concepts and artworks were researched. From here a design plan or storyboard was created which was sketched out in Photoshop. The sketch was then expanded on to create the final design. The asset was then imported into Unity in the same way as the 3D assets.

## Production

### Roadmap

The first step in the production of *Ourea* was to decide on the areas we wanted in the game and gauge the scope of the game as a whole. We created a roadmap outlining what tasks we needed to complete for the Vertical Slice and a rough estimate of what we would need for the rest of the game. The roadmap can be found in the appendices.

Production Development Plan														
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Team	Effort and Order													SECTION WEEKS
Des	1													1
Art	1													1
Prog	1													1
Aud	1													1
Des		1				1								2
Art		1	1		1									3
Prog		1	1	1										3
Aud				1										1
Des			1			1								2
Art		1	1	1										3
Prog		1			1									2
Aud			1											1
Des				1		1								2
Art				1	1	1								3
Prog					1	1	1							3
Aud							1							1
Des					1		1							2
Art								1.5	1					2.5
Prog							1	1	1					3
Aud								1						1
Des						1		1	1					3
Art							0.5	1	1		1	1		4.5
Prog							1		2	1	0.5			4.5
Aud								1	1					2
Des										1				1
Art										1				1
Prog										1	1			2
Aud										1				1
Weekly TeamTotal	4	5	5	5	5	5	5	5	5	5	5	2.5	1	0
														57.5 Total Weeks

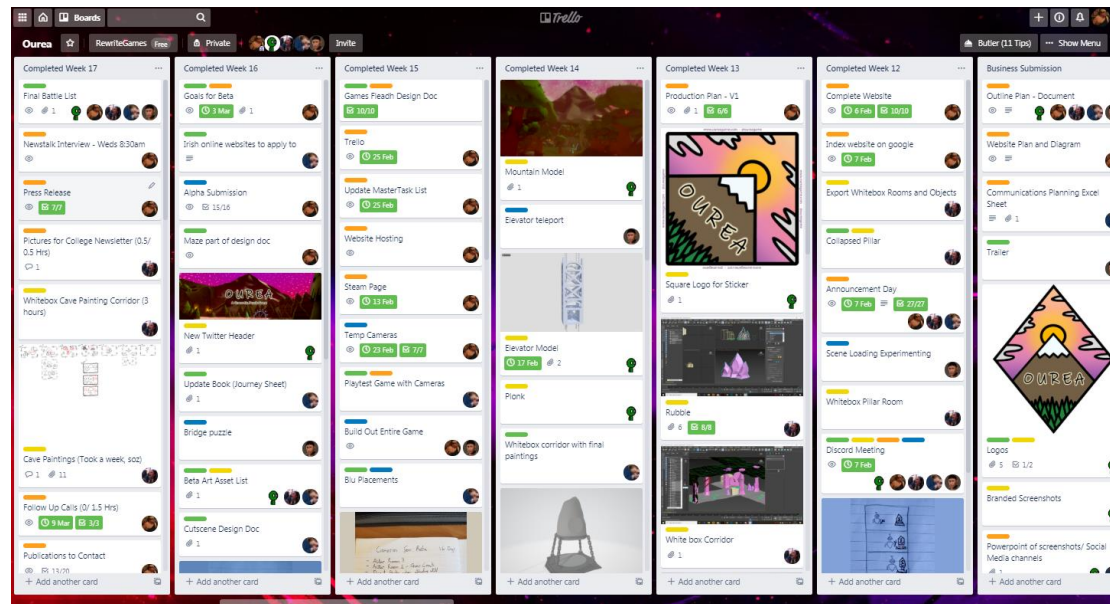
### Master Task List

The next step was to create a master task list of all tasks needed to complete the Vertical Slice and then expand on this with tasks for the entire game. This helped us manage the scope of the game and decide on areas of the game we needed to cut. Examples of this would be removing the mountain climbing section and replacing it with an elevator. We also decided to cut Blu flying to

different objects within the game and to reduce the scope of the opening cinematic. The Master Task List can be found in the appendices.

## Weekly Sprints

We used Trello to plan the project in weekly sprints. Every Monday, each team member would give an update on their progress, highlight any issues they were facing and then the tasks for the next week would be assigned. This helped us gauge whether the project was on track for the next deadline we were approaching. The full Trello can be found in the appendices.



## Working Hours

In pre-production, we would meet in college three days a week to work on the project. When we transitioned to full production we started meeting on Discord once a week in addition to the three days in college. When our college closed due to the COVID – 19 outbreak we moved all our meetings online. After alpha we would meet on Discord 5 days a week, from 10 am – 5:30 pm.

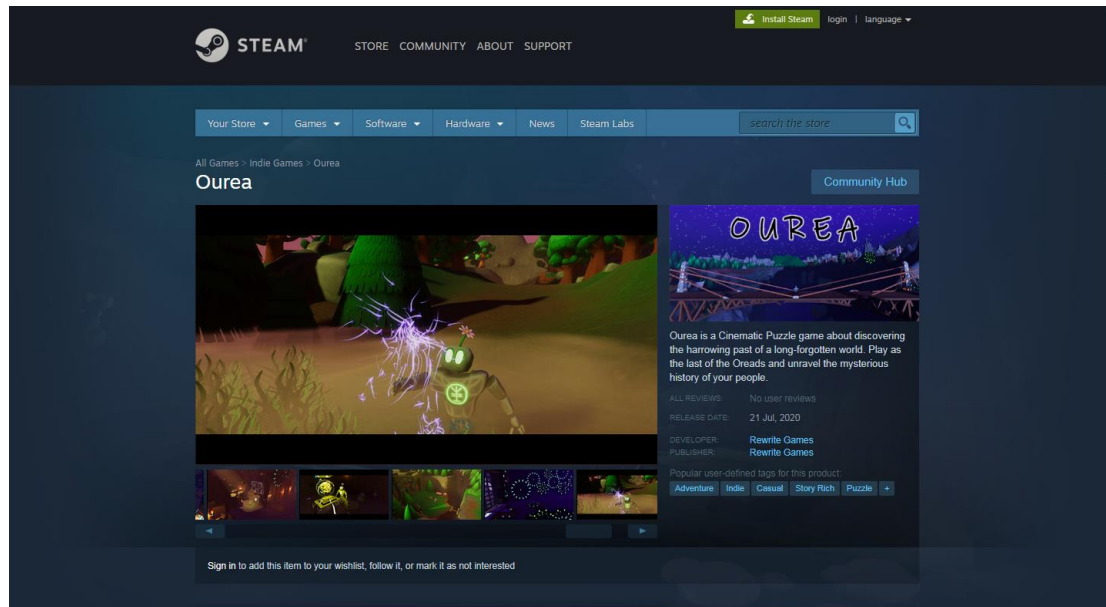
## Moving from Trello to Google Sheets

As the development of the project progressed, each team member's autonomy grew in their field. To avoid micro-managing, we began to move away from Trello to a Google sheet which had the remaining tasks needed for the completion of the project. These tasks were decided by the leads of each discipline. The order to complete the tasks was generally left up to the leads of each discipline, with meetings before deadlines to address urgent issues and move them to high priority. This would result in a spreadsheet of urgent tasks which would take priority over any other tasks. Submission Urgent Task List can be found in the appendices.



## Steam Page

We submitted an application to Steam in order to list the game. We then created the store page for the game once the application was accepted.



## Games Fleadh

We entered *Ourea* into Games Fleadh, a game design event in Limerick. We created a list of necessary tasks needed to apply for the showcase. We then split these tasks between the team.

## Outsourcing Music

As the project progressed, we realised we would not have the time to create music for *Ourea*. We felt that music was a vital element of the cinematic nature of the game, so we decided to outsource it. We searched through the website Fiverr for a composer who suited the music style we had decided on. The composers were narrowed down to 5 which were shown to the team and together we chose one based on the demo tracks they created for us.

## Audio

### Style

The style of audio that *Ourea* strived to achieve was set in stone early in pre-production and remained unchanged as the project progressed. As there wasn't a dedicated audio person on the team, the goal of the audio was to be simple, yet stay effective. The primary sound of the game should stem from the environment and music would be used to accent cinematic moments.

Sound effects were created for the most important interactions in the game. This meant all mechanics and player actions should be represented audibly. Along with player actions, big visual set pieces also had sound effects to help them feel real. An example of this can be heard in the gear corridor, the

engines room and during puzzle sections, specifically on the gears that open gates. To support the sound effects and bring the environments to life, an ambient backing track was created. Three separate environments soundscapes were also created, inside ambience, outside ambience and ambience on the top of the mountain. These soundscapes, as well as the sound effects, are all rooted in reality, with the planet *Ourea* (which the game is set on) being very earth-like. Because of the selective music within the game, the full asset list for sound effects in *Ourea* can be found in the appendix of this document.

## Process

*Ourea*'s sound effects were created in a step by step manner using both Adobe Audition and Audacity. This workflow was used for all sound effects within *Ourea*.

### *Sourcing*

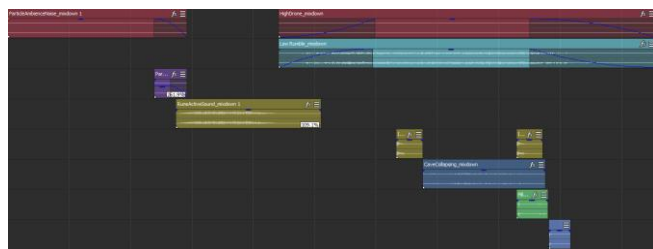
Sounds were sourced from the website FreeSounds.org. For any given sound effect multiple sounds were chosen and downloaded. This greatly reduced the time it would take to create each sound effect since the recording process is long and tedious. Only sounds under the Attribution License were used as it allows for commercial use and altering of the sound if attribution is given. The licence can be found in the appendix of this document.

### *Trimming*

Audacity was used to cut some of the sound effects to length. This was needed if files were too long or only a small section of the file was required. Trimming was done in Audacity because the workflow is faster, and the software was easier to use.

### *Alteration and Merging*

The short clips were imported into a new multi-track session in Audition. Here each clip was adjusted using Auditions effects rack. The most used effects where pitch changing, low/high pass filters, reverb and 10 band equalisation.



The clips were lined up using horizontal remixing to get correct timing on the sound. Audio levels of each clip were adjusted to get the correct ratio on the multiple clips used. Then, the multitrack session was exported and imported into Unity.

### *Seamless Looping*

Some sound effects required seamless looping. An example would be the boulder push or Glyf's walking sound effect. To achieve this, the exported multi-track clip would be reimported into Audacity. A loopable region of the track was selected and excess was cut. This was primarily done to sound effects that had added reverb from Audition since Audition reverb extends the clip length to accommodate for the tail of the reverb.

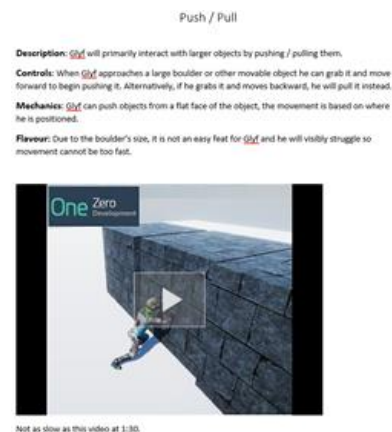
## Analysis

Audio within *Ourea* was done through Unity's Audio system. Areas of the game were fitted with reverb zones to allow audio to blend into the world. Overall, the sound design of *Ourea* is quite expansive, however, certain key elements are missing due to time constraints. Things like a dedicated growth rune sound effect, more detailed ambience and further music integration will be addressed for the July release. The sound effects work nicely together and are coherent throughout both in style and quality.

## Tech & Code

### Designing Process

The process of coding the game started by working closely with design to pinpoint the exact task requirements. A feature design document would be created for each feature within *Ourea*. Before implementation, the feature document would be discussed by tech and design team members and any foreseeable issues or unclear features would be cleared up. An example of a feature design document can be found in the appendices.



### Implementation

The required features would then be implemented into the game. The first step was to branch the version control into a separate, feature specific branch, where unfinished features would not cause issues. This separate branch would usually also contain a separate testing scene for each feature. Once the feature was playable in the external branch, it would get merged back into the general development branch, where it would get implemented into the main game. Unfinished pushes were not allowed during this phase of implementation as the risk of halting work on the project was too high. Once a feature was fully integrated into the game, a version tag would be created to mark that git commit as a safe commit to back up from.



## Architecture

The game architecture would try to follow S.O.L.I.D principles as much as possible, primarily, single-responsibility and Interface Segregation. This meant that each script should have a singular purpose and implement Interfaces when possible. Rules of coding conduct were followed if possible, as that meant that the codebase would be relatively uniform regardless of code author. As the project progressed and various deadlines and targets needed to be met, scripts started to suffer in terms of strong structure and smart implementation. For the games July release, many scripts will be overhauled and improved. This will increase performance and allow for easier reading and understanding of the source code.

```
using UnityEngine;

asset usages  usages  inheritors  Samuel Hegner +1  ext methods
public interface IInteractive
{
    asset usages  usages  implementations  Samuel Hegner  ext methods
    GameObject getGameObject();

    asset usages  usages  implementations  Samuel Hegner  ext methods
    bool isActive();

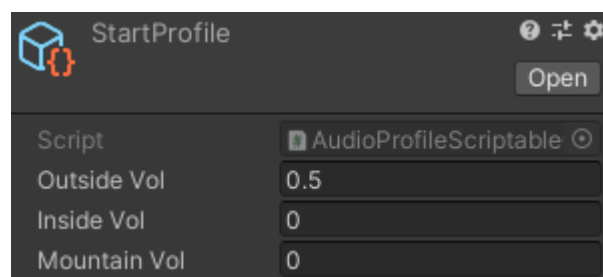
    asset usages  usages  implementations  samuelhegner  ext methods
    void StartInteraction(Transform parent);

    asset usages  usages  implementations  samuelhegner  ext methods
    void StopInteraction();
}
```

## Functionality

All code in *Ourea* works well together. Only important information from scripts is available through properties. The multi-scene nature of *Ourea* meant that static wrapper classes had to be implemented. These lazy-loaded and provide required references globally. Objects like the player and the main camera were required frequently.

The same issue also affected cutscenes, where the player could not be animated due to cross scene referencing not being available to Unity's Timeline feature. This meant that the player was remote-controlled by an empty object in the scene containing the Timeline. This empty object was then animated instead of the player. It was important to the game, that the functionality of the code was easily changeable and adjustable from the Unity editor. This meant serialising important fields to allow for easy fine-tuning of interactions. Scriptable objects were used where possible to allow for run-time editing and adjustments. An example of this would be the scene bundles and the ambient audio settings.





# TESTING AND ANALYSIS

## Introduction

This section aims to provide an overview of the general testing carried out throughout the project. This includes 6 playtesting sessions, a narrative painting showcase and our in-house testing. Each report gives a brief overview of the build version that was tested and reports on the main learnings and fixes that arose from it.

## Report:

### In Class Playtest

**Build Summary:** At this stage, the game consisted of an external area and one modelled room, all created with the terrain tool within Unity. There were few models at this early stage, and they were untextured. We were mainly focused on feedback regarding the camera system. It was important to gauge how playtesters felt about the lack of camera control and the predetermined camera movements. The main character, his movement and the first puzzle were all missing at this point.

**No. of playtesters:** 11

### People Liked:

- Grass
- Fireflies
- Camera transitions

### People Disliked:

- Restrictive camera
- Invisible walls
- Lack of engaging content
- Flashing tree texture
- Absent character model

### Changes Made:

- Mountain reveal movement smoothed and lengthened
- Interactive grass performance increased
- Glyf character model added
- Camera transitions smoothed out
- Player jump removed
- Puzzle implemented
- Many textured models added

### Link to Google Form Responses:

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=1054736249>

## December Showcase

**Build Summary:** For Vertical Slice, we further developed our initial areas and polished our previous work. At this point, the character movement and model were implemented. This build also showcased the first puzzle, firefly cutscene and the interactable fireflies. The cameras were now implemented through this version. This was also the first proper showcase of the art style, lighting and the first cave painting.

**No. of playtesters:** 10+

### People Liked:

- Visuals of the world
- Glyf character model and animations
- Puzzle design
- Firefly cutscene

### People Disliked

- Restrictive camera
- Bug with the growth rune which froze the player
- No collider on the exit gate
- Levels were too sparse

### Changes Made:

- Collider on the gate added
- Additional audio added
- Player movement smoothed out
- Temporarily fixed growth rune bug
- More assets added to levels

## Games Fleadh

**Build Summary:** At this stage, we continued to polish the areas of the game we showcased in December and fixed the important issues that were brought to our attention at that showcase. We fixed the placement of puzzle elements so they would be more visible to the player.

**No. of playtesters:** 20+

### People Liked:

- Glyf character model
- Art style
- Puzzle
- Firefly cinematic
- Cave painting effectively hinting at the story

### People Disliked:

- Restrictive camera
- Having to be told controls

- Growth rune bug continually breaking the game
- Inability to leave the room with the torch
- Lack of music

#### **Changes made:**

- Functionality to leave the cave with the torch added and character controller adjusted
- Plans for growth rune re-designed
- Adjusted torch VFX to leave a smaller trail
- UI for interacting with objects implemented

#### **Link to Google Form responses:**

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=1054736249>

### **Games Co-Op**

**Build Summary:** The games co-op build was very similar to the Games Fleadh build. Again, small bug fixes were made to improve the game's stability. This was the first point where the outside level unloaded, in preparation for the additive level loading found in the game from the Alpha and onwards.

**No. of playtesters:** 10

#### **People Liked:**

- High-quality assets
- Glyf character model
- Puzzle design
- Cinematic nature of the game

#### **People Disliked:**

- Restrictive camera
- Not knowing how to pull/push the boulder
- Unsure of how to proceed at the beginning of the game
- Instability of the boulder growing beside the rune and occasional clipping through walls
- Lack of menu

#### **Changes made:**

- Torches added to the ravine walkway
- Clearer indicator that the boulder was being pushed implemented
- Slight camera control added
- Growth rune re-designed
- Menu with basic settings and level select implemented

## Discord Playtest

**Build Summary:** The Discord playtest build was the first version of the public beta. It featured the starting section, the revamped first puzzle room and the first altar room which were now modelled externally. This build was the first to showcase one of the game's cinematic cutscenes and any areas beyond the first puzzle room.

**No. of playtesters:** 8

### People Liked:

- Visuals of the world
- Cinematic transitions
- Ambient sound

### People Disliked:

- Bug with pushing the boulder which broke the game
- Obscurity concerning growth rune's functionality
- Development tools were left in which restarted the section and made the puzzle impossible to complete
- Camera bug in the altar room
- Audio overly loud at times
- Fog layering bug
- The menu was difficult to use

### Changes Made:

- Adjusted growth rune platform to glow when an object is placed on it
- Boulder bug fixed
- Audio levels Improved
- Development tools removed
- Menu usability improved

### Link to Google Form responses:

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=2140954737>

## Public Beta

**Build Summary:** The Public Beta build was very similar to the Discord playtest. It also continued to the first altar room and cutscene. This build contained fixes and changes for most of the bugs and issues discovered by players during the previous playtest.

**No. of playtesters:** 71

### People Liked:

- Fire VFX
- Camera transitions
- Visuals

- Puzzle Design
- Final Cinematic

#### **People Disliked:**

- Restrictive camera
- Camera controls with mouse and keyboard
- Cave audio levels
- Restrictive movement when pushing the boulder
- Rune functionality was unclear
- Menu bugs
- Lack of music

#### **Changes made:**

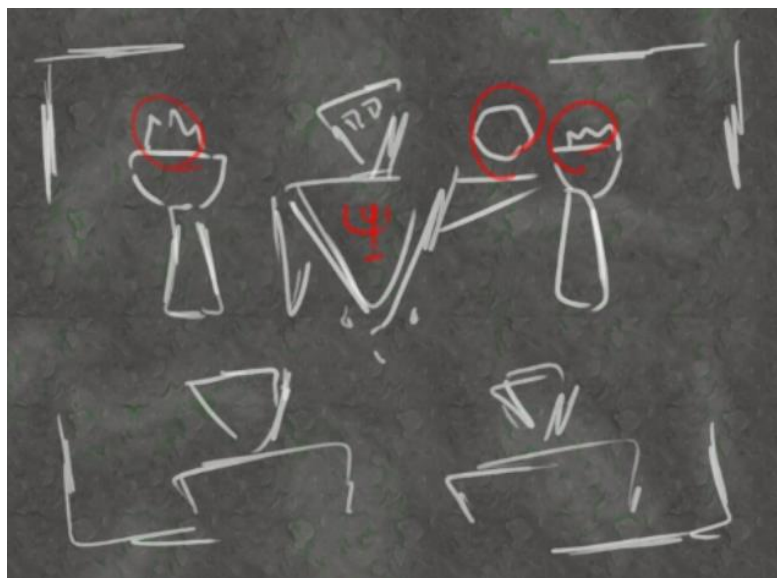
- Cave audio levels altered
- Menu improved and known bugs fixed
- Boulder pushing mechanic improved
- Music implemented

#### **Link to Google Form responses:**

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=2140954737>

### **Paintings Showcase**

For the upcoming public beta, we were concerned with players' understanding of the story elements communicated through the cave paintings. Before committing to fully animating any updated cave paintings we created template mock-ups that indicated how they would be animated.



These mock-ups were shown to people who specifically had no prior knowledge of the game's narrative. A member of the team conducted the tests both online and in-person by showing the images in order and exclusively explaining how the red elements would move in the finished product. The

participants were then asked to describe what they thought was being communicated and once all paintings had been shown they were asked again to recap the story as they understood it.

The results of this exercise were overwhelmingly positive as every participant understood what was considered vital to the narrative. The participants picked up on varying levels of minor parts of the story which led to the team's conclusion that once completed the paintings would work effectively.

### **In-house Playtesting**

All team-members played through each of the builds each time we were approaching a deadline. In these playtests the team checked for any game-breaking issues as well as rigorously testing colliders and boundaries within the game. Any issues that were encountered were compiled into a document. From there the team would work together to address all the issues before rebuilding the project. During the next playthrough, while simultaneously looking for new issues, we also tested previous issues again to ensure they had been fixed properly.

We utilised streaming software to directly communicate specific issues to relevant team members. This greatly helped in understanding problems or bugs within the game and contributed greatly to the pace at which we could address and fix issues.

### **Conclusion**

Ourea has greatly benefited from the playtests that were carried out. From the early feedback pre-vertical slice to the public beta, we have always tried to take the criticisms on board and improve Ourea. Testing became tougher as the COVID-19 quarantine began and limited our ability to test as much as we would have liked. However, considering the circumstances we still managed to display the game to as large an audience as possible.

## EVALUATION

### Design Critique

There were many challenges to face when designing *Ourea*. On top of the regular challenges of designing an intriguing and novel concept we also created hurdles for ourselves. These challenges included the avoidance of using written words, cutting the camera or complex inputs from the player. Ultimately these decisions resulted in a much more focused end product that was not cluttered by unnecessary additions.

The game could have benefited from a slightly smaller scope. Considering that if the team had not switched to working at home five days a week it is unlikely the project would have been completed to a high level as sections would have had to be removed.

It became clear that in order to communicate the end decision to the player more focus would have to be put into conveying the message of the game not only through the cave paintings but also through the design of the levels. Many changes were made to better convey parts of the story including making the paintings interactable and therefore more enticing to the player.

Moments were scattered throughout the game that could help the player piece the story together particularly the disruptive presence of artificial objects in the natural world. For example, the way the fireflies avoid the gear in the first area.

These changes addressed the potential obscurity of our game and without them, the game would likely cause players to be confused.

### Camera Critique

As development progressed, we began to realise how important the camera was to this game. We realised the amount of time it would take to have it aid the game instead of hindering it.

We managed to develop a cinematic experience in *Ourea*, and we believe the different camera types had a huge role to play here. Every section of the game had several unique cameras being used, with us now using over 100 different cameras in the game. We also created several cinematic cutscenes, 4 of which were over a minute long. We believe these cutscenes were vital in communicating the narrative of the game, especially as dialogue was never used.

While these points are valid, there are still many elements of the cameras and cinematics which are unpolished. The transitions between some cameras are jarring and take the player out of the experience. In some areas, the player can walk out of the shot without the camera changing. In the cinematics involving Glyf, his rigid movement sometimes takes away from the cinematic and can sometimes feel jarring to the player.

If we were to develop *Ourea* again we would cut the scope of the game so we could have enough time to focus on the camera and cinematics so they could reach the same level of polish as the rest of the game.

## **Technical Critique**

### **Unity 2019.3**

Unity 2019.3 and HDRP have been hugely beneficial to the project and without them, we would arguably not have a game. However, they presented unique challenges. Due to the novelty of HDRP, the pipeline had several bugs and the lack of clear documentation meant that solutions and workarounds were difficult to find. Examples include terrain decal shaders being broken, render distance of density volumes not being adjustable and scene rendering breaking after editing scripts.

As the project went on, patches and updates changed the HDRP feature set and required relearning of certain aspects. Unity Editor is also prone to frequent crashes. The crashes frequency increased with the size of the project.

### **Source Control**

The source control software Git was used by the whole team through the GUI Client Github Desktop and Atom. The tools suited us well because of their ease of use and accessibility. Atom, in particular, was useful when needing to resolve merge conflicts over Discord screen share. The workflow was fine over the project and merge conflicts were minimal. The process of branching, tagging backups and pushing down to master for safe versions dropped towards the end of the projects. Luckily, no issues arose from the drop in backups.

### **Audio Software**

Audacity and Audition proved tremendously useful to create new sound effects from other sources. There were little to no issues with the use of either software. Each software had preferable features when compared to the other.

### **Art Software**

3DS Max worked well in terms of usability and it delivered in allowing *Ourea*'s artists to create the models they envisioned. The software did suffer from infrequent crashes and corruption of certain 3D models which required some work to be redone.

Substance painter was also a reliable tool, however, in terms of exporting textures for HDRP, it was outdated for several months. This meant that mask maps had to be manually created within Photoshop, which required a lot of extra work. Thankfully, it was updated towards the end of the project.



## Code Critique

When examining the code in hindsight, a few issues stood out. S.O.L.I.D. principles are only loosely followed. Code is untidy and suffers from copy-pasting. The single-responsibility principle was followed the closest and the rest of the principles were used to lesser degrees. Interface segregation was used in a few instances and helped created the interaction system. If this system needed to be redone, it would be approached in a completely different way.

The performance of scripts was neglected. Scripts would not cache references in places, which in turn required the overuse of the slow GetComponent function. GameObject.Find() and other slow string-based lookup functions were used in places where alternatives were possible.

Nested IF Statements were frequent when a more elegant solution using case statements and better-structured code would have been preferable.

There is a lack of documentation to go along with each class. Functions, the class itself and fields could have been documented and tooltips should have been used to future proof each class.

Coroutines were also overused, which meant that debugging was made overly complicated. This was a common issue when implementing rune interactions and other player-based interactions.

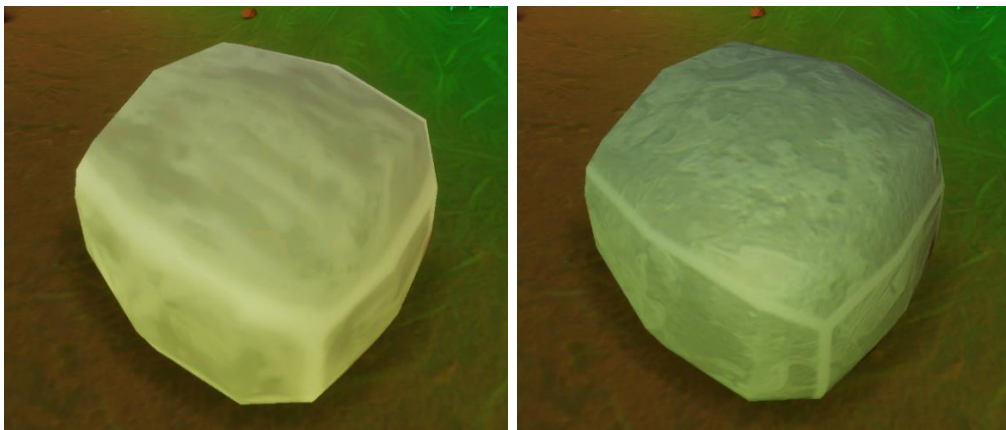
Even though the codebase had issues in retrospect, it performed well, and bugs are rare. This, however, shouldn't take away from the fact that the code requires some attention, which hopefully will be addressed for the July release.

## Art Critique

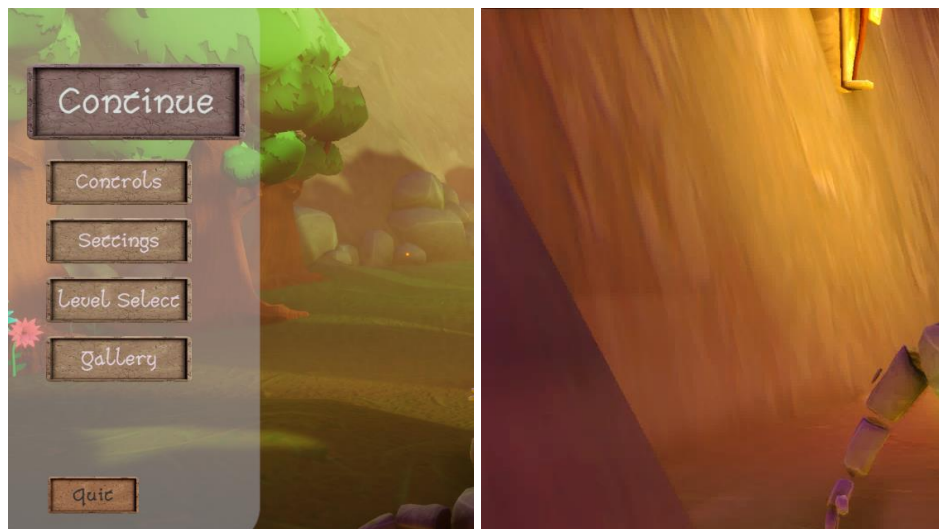
One of the major problems we encountered in the early stages of the project was with the textures for our 3D models. Early in the academic year, Substance Painter did not yet have an option to export maps for HDRP correctly. We instead had to create maps using targas in Photoshop in order to add Ambient Occlusion, metallicness and smoothness maps. This was very time consuming and added to the workload of the artists. There was also no easy or time-efficient way to generate normal maps for models. Because of this, many models from the Vertical Slice had flat textures and looked much less detailed than their Gold phase counterparts.



These problems had a domino effect which meant that we had to spend large amounts of time in the Beta and Gold stages of the project updating and redoing textures. This, in turn, took time away from other areas of the game during the latter stages of development which lead to more difficulties in keeping the art style consistent throughout the game.



Due to the game's relatively large scope, some areas, like audio and UI (below left), received less attention than other areas during the different phases of development. Therefore, certain parts of the game have a slightly higher level of polish than others.



One example of this is the texture stretching on the Unity terrain tool (above right) which impacts how polished the overall look of the game is. Unfortunately, certain artistic features and extra polish had to be cut entirely because of time constraints.

## **Audio Critique**

The audio in *Ourea*, even though it was minimal, was effective at bringing the world to life. The ambience manager especially helped compliment the visuals. The simplicity of the ambience manager meant that the three styles of background ambience could be transitioned between and even combined. *Ourea* used music sparsely, however, each piece had a very specific purpose. This was achieved by researching different composers and providing the chosen composer with a detailed document explaining each required song. This document can be found in the appendices' additional document section.

The area sound design, specifically in the cog corridor and engine room were also very effective at creating an atmosphere to accompany the visuals. We were unable to include as much audio as we initially wanted. Specifically, the cave paintings are missing accompanying audio and the interactable runestones need more polish in general. The ambience volumes are also too high during cutscenes, taking away from the prepared audio tracks playing alongside. These issues will be addressed for July with solutions already being conceptualised.

## **Narrative Critique**

Overall, the team was satisfied with the finished narrative. We had decided at an early stage of development that we wanted the narrative in our game to be told wordlessly. There were times in development where we questioned this decision, especially when playtesters didn't understand the meaning of a cave painting. Having seen the cave drawings continuously throughout the project meant we sometimes couldn't look at them objectively. This was remedied by creating alternate variations of cave paintings to show to playtesters and family members. In hindsight, we would have benefited from more external playtesting regarding the narrative.

In the end, we managed to achieve our goal of wordlessly conveying the story with only slight alterations needing to be made. Due to time constraints, certain elements of the narrative were altered. A cutscene at the beginning of the game was shortened as we were unable to model and animate all elements needed. The ending of the game gives the player a decision with extremely different outcomes. We originally wanted to show these outcomes in the form of portals showing different versions of the same area. Again, due to time constraints, we instead used cave paintings to communicate this to the player. We felt this was a suitable alternative which blended nicely with previous imagery.

## **Production Critique**

We are happy with how the production of *Ourea* went, as we believed it aided in creating a high level of quality in the game. We stuck to our scheduled work times the majority of the time and slowly increased the amount of time we spent on the project as it progressed. It was easy to communicate with each other as we would either be in the same room or the same discord call. We also utilised messenger and discord when we were not on a call.

We used Google Sheets to manage the scope of the project, and while this was effective, we now believe we initially over scoped. We didn't realise the amount of time designing and implementing cameras and cinematics would take. The solution to this problem should have been to cut the scope of the project, but instead, we solved it by increasing work hours. This was not an elegant solution and would not have been sustainable if this was a commercial project outside of college.

The project would have benefited from playtesting the later sections of the game sooner. This would have given us a better indication of what worked and didn't work in these sections, instead of encountering the problems ourselves.

Overall, we are happy with how the production went. We believe we adhered to the practices laid out at the start of production and this helped us to develop a complete, cohesive game.

## **Future Work**

We intend to continue working on the game, after the final project submission, up until July 21<sup>st</sup> when we will release the game fully on Steam and Itch. The main reason for the continued work is that we as a team feel the game would benefit from more polish. We do not feel that the game is ready to be released to the public. We plan to greatly increase the level of polish and implement features and ideas that had to be cut before submission.

Improvements to the feel of the game and player experience will be the focus of most of this final phase of development. This will be improved largely by the optimisation of the in-game frame rate and the elimination of large disruptive lag spikes.

We are unsure about how well the story elements are being communicated through the cave paintings. We believe there may need to be adjustments made to the paintings to make the narrative easier to understand. We, therefore, intend to test the paintings specifically with large numbers of third parties to ensure this.

As a whole, we have not been able to playtest the game as much as we would have expected because of the current situation regarding the lockdown due to the COVID-19 pandemic. In particular, the later sections of the game and certain puzzle mechanics have not been tested as much as we feel is necessary. Extra internal and external testing will be done between now and

July to allow for as much bug finding and fixing as possible. This will aid us in optimizing and polishing the game for release.

## CONCLUSION

We set out in September to create a cinematic narrative game where you discover the harrowing past of a long-forgotten world. After 8 months of continuous work on *Ourea*, the game has come a long way. This document aimed to shed some light onto the inner workings of the team, our thought process and our work.

The document started by giving a brief background on the project. This included a high-level summary, our inspirations for creating *Ourea*, our intended player experience and the game's mechanics. This section also outlined all of the technologies required during the development of the game. The next section outlined our methodology and approach for creating various aspects of the game. This included design, cameras, narrative, art and tech. This was followed by the section on *Ourea*'s testing. This outlined all the public and private playtesting sessions. Summaries of the game versions were given, and the playtest findings and solutions were specified. Lastly, the major areas of the game were critically discussed and future plans for *Ourea* were outlined.

When looking back at the project as a whole, we are proud of what we achieved in such a short time. The game we envisioned in September has come a long way and has changed in many ways. However, our original ideas and the restrictions we placed on ourselves have guided and helped *Ourea* become what it is today. Along our developmental journey, we learned how to better the game each step of the way. This document helped us to critically look at our creation and assess its strengths and weaknesses. This will help us tremendously as we now have a clearer vision on how to improve the game before its final release in July.

## **APPENDIX**

### **Additional Documents**

#### **Art Task List**

[https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH\\_VRDIM-G202pABh9L-nh\\_-zxnQQ/edit#gid=223062305](https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH_VRDIM-G202pABh9L-nh_-zxnQQ/edit#gid=223062305)

#### **Audio Attribution License**

<https://creativecommons.org/licenses/by/3.0/>

#### **Audio Outsource Document**

[https://docs.google.com/document/d/1pOWsbREp-QE07xqMYmZC2yY02ZgDvR\\_6EYGVONcnMX0/edit?usp=sharing](https://docs.google.com/document/d/1pOWsbREp-QE07xqMYmZC2yY02ZgDvR_6EYGVONcnMX0/edit?usp=sharing)

#### **Audio Task List**

[https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH\\_VRDIM-G202pABh9L-nh\\_-zxnQQ/edit#gid=986997035](https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH_VRDIM-G202pABh9L-nh_-zxnQQ/edit#gid=986997035)

#### **Bug Tracker**

[https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH\\_VRDIM-G202pABh9L-nh\\_-zxnQQ/edit#gid=0](https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH_VRDIM-G202pABh9L-nh_-zxnQQ/edit#gid=0)

#### **Feature Design Document**

<https://docs.google.com/document/d/173MdPUJynBHjC0stiz5anb1BqnFQWjV0/edit>

#### **Master Task List**

[https://docs.google.com/spreadsheets/d/1e\\_FEB2gOyz\\_bwAtWFx2cFPYNTnki\\_xB9AnUj7cuAk2UQ/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1e_FEB2gOyz_bwAtWFx2cFPYNTnki_xB9AnUj7cuAk2UQ/edit?usp=sharing)

#### **Narrative Document**

[https://drive.google.com/file/d/14pl-JocYSe4J9oYf7\\_YDR\\_mmNLkxvfMP/view?usp=sharing](https://drive.google.com/file/d/14pl-JocYSe4J9oYf7_YDR_mmNLkxvfMP/view?usp=sharing)

#### **Roadmap**

<https://docs.google.com/spreadsheets/d/1-HSeOT8XFcYmd0FuQQ9NG37KbqXBIm0tcl5dAt9eaWA/edit?usp=sharing>

#### **Submission Urgent Task List**

[https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH\\_VRDIM-G202pABh9L-nh\\_-zxnQQ/edit#gid=1688626950](https://docs.google.com/spreadsheets/d/1Ur9gLkngpfjkbWQH_VRDIM-G202pABh9L-nh_-zxnQQ/edit#gid=1688626950)

#### **Trello**



<https://trello.com/invite/b/Eu1TrG5M/d0417b84b8f36b4404a9bc16c51240aa/ourea>

## **Playtest Forms**

### ***In Class Playtest***

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=1054736249>

### ***Games Fleadh***

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=1054736249>

### ***Discord Playtest***

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=2140954737>

### ***Public Beta***

<https://docs.google.com/spreadsheets/d/1PXxheLPTCrF9-rDw-dLnp7glMga695nKh4tEVR5hftc/edit#gid=2140954737>

## **Game References**

*A Short Hike* – Adamgryu, 2019.

*Dawn* – Brave Rabbit Games, 2017.

*Far: Lone Sails* – Okomotive, 2018.

*Inside* – Playdead, 2016.

*Journey* – Thatgamecompany, 2012.

*Stela* – SkyBox Labs, 2019.

*We Were Here Too* – TMG Studios, 2018.

*What Remains of Edith Finch* – Giant Sparrow, 2017.

## **Software References:**

**Adobe Audition**

**Adobe Photoshop**

**Atom**

**Audacity**

**Autodesk 3ds Max**

**Git – Version Control**

**Github – Online Repository**

**Github Desktop – GUI Client**

**Google Sheets**

**JetBrains Rider**

**Microsoft Excel**

**Microsoft Word**

**Substance Painter**

**Trello**

**Unity 2019.3**

**Photoshop Brushes**

<https://www.brusheezy.com/>