

Contents:

Overview.....	1
UI.....	6
Core Mechanics.....	14
Designs.....	24
Finalising the Vertical Slice.....	60
References.....	62

Overview:

Title: Spirits Unbound

Platform: PC

Genre: Open world action-adventure

Rules and Objectives:

The game primarily focuses on narrative created by the open-world environment.

The player will also deal with relationships with neighboring tribes, acquiring resources and territorial acquisition through combat.

Synopsis/Narrative:

Narrative Tools:

- o Basic Fabula and Discourse
- o Narrative Structure
- o Environmental Storytelling
- o Enabling and Controlling Agency
- o Narrative Systems

Basic Fabula and Discourse:

Fabula – Can be seen as the chronological representations of the story, or the group of Facts that make up a narrative.

- Characters
- Animals
- Settlements
- Collectibles
- Models
- Mechanics
- Map/Terrain

Discourse – Can be seen as the order in which the fabula is seen.

- Story missions
- Playing through different characters

- Jumping in chronology
- Mirroring sequences
- Character dialogue
- Looping
- Restricting areas of the map
- Pathways that lead to specific areas
- Side quests

Narrative Structure:

Managing Player Choices

- Split-join
- Mirror Worlds
- Modular Sections

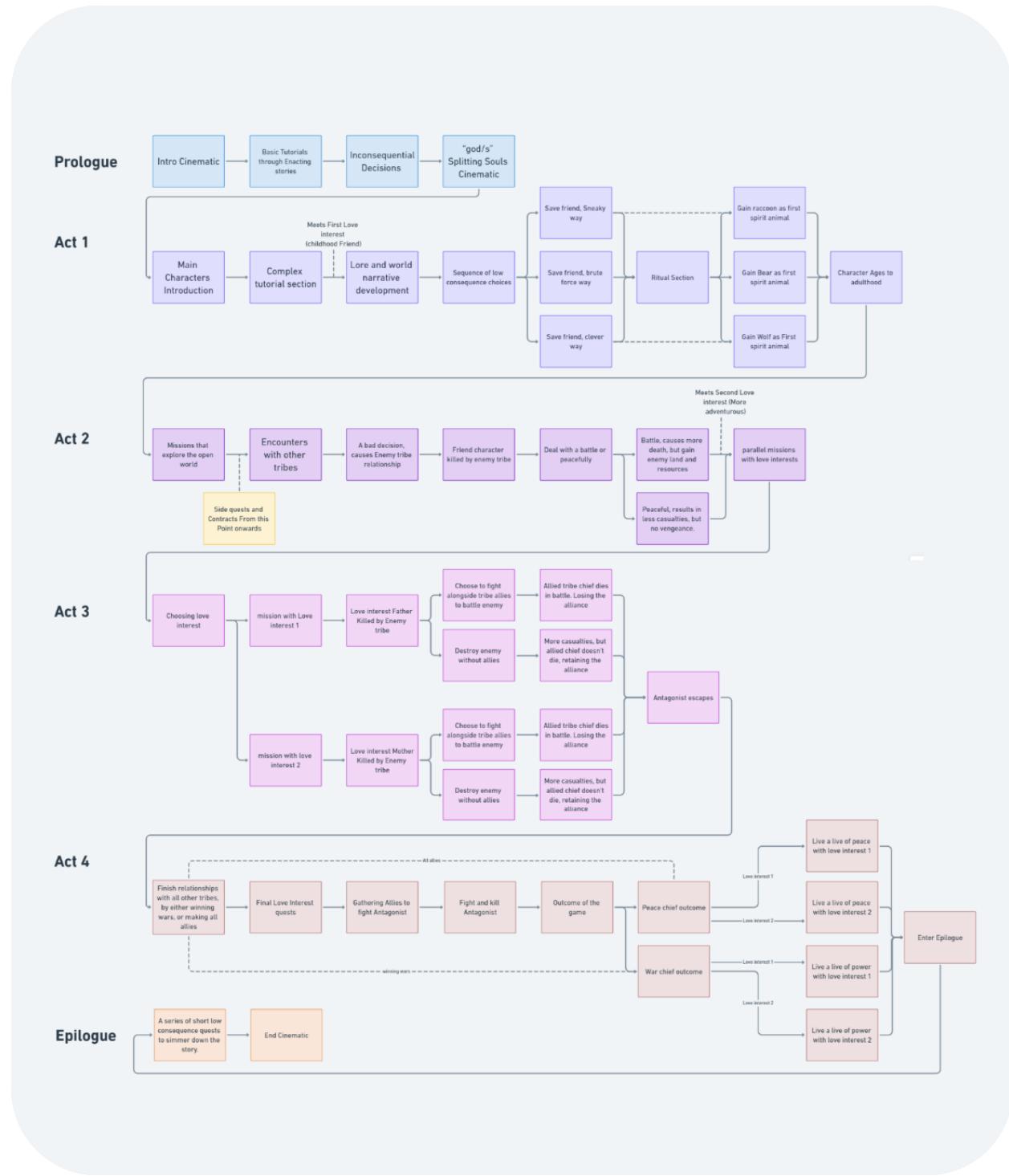
The Illusion of Choice

- Creating choices that have no effect, can still hold value. If a player believes they are making a choice, it can be just as effective as a well-integrated choice.
- Utilizing the illusion of choice can significantly reduce the workload of the designers.

Non-linear Patterns

- Looping – The use of loops can increase the playtime of a specific area, so it reduces the need to create many varied areas.
- Tribe villages and settlements can be seen as a form of complex looping narrative. Using villages as a hub for missions and resources.
- Looping creates a feeling of solidity and nostalgia. The feeling of returning to a familiar place makes the player feel safe.
- Counterpoint – Can be used to show different perspectives of play. This can be used in cut scenes or sequences as other players. Counterpoint can be used to reduce exposition dumps, showing the player instead of telling them.
- Counterpoint can be used to create narratological antagonists. You can show their perspective and reasons for their agenda.

The Narrative Structure



Environmental Storytelling: Evocative Spaces

- Using environments with pre-existing implications, can conjure a narrative.
- Villages – The warm, lively villages the player encounters evoke a narrative. The player contemplates the lives of other people. Their culture.
- Dark Forest – The player will naturally assume that a dark forest is a dangerous place. With the help of embedded narrative. The player will naturally fabricate a narrative.

Enacting Stories

- Witnessing a progression of a story/micro-narrative, makes the world feel more populated with stories.
- Watching the expansion of enemy borders or seeing a tribes-member rising the ranks, is an example of this.

Embedded Narrative

- Conversations, drawings, descriptions on items, tattoos, scars, human remains are all examples of embedded narrative.
- Embedded narrative gives the player the pieces to construct a narrative and the history of an area. The more embedded narrative, the more lived in the world seems to be.

Enabling and Controlling Agency:

Enabling Player Agency

- Dialogue Choices
- Open world – Giving the player to explore and navigate the map, gives them more agency. And creates an emergent narrative through the encounters made in the wilderness. It also establishes a non-linear narrative, as the player can experience the settlements and NPCs in any order.
- Non-linear structure
- Choice of Spirit animal – The player's ability to change spirit animal creates agency within combat. Agency can be seen as the dynamics that arise during play. The player can use a bear spirit animal, as it has a greater resistance to damage. Or use an eagle to attack from above.
- Territorial acquisition and Settlements – The player can directly affect the map by planting settlements anywhere. This changes the availability of resources and the convenience of hunting. Depending on the alliances the player has made, the availability of quests can also change.

Controlling Player Agency

- An overuse of Agency can cause a negative experience. Allowing the player to navigate wherever they want and choose whatever they want to do, can cause the narrative to break down.
- Topology – The map can be used to control agency. Soft barriers, such as dark forests and rocky areas, can be used to deter new players from traversing non-crucial areas. Pathways can be used to guide the player and increase the chances of random encounters that would otherwise be missed. Gravity can be used to stop players from back tracking. Backtracking can

confuse and waste the player's time. Missions that occur in caves or mountainous areas can have one way traversal to reduce this.

- Invulnerable NPCs – Stop the player from killing essential characters to the narrative.
- Cut Scenes – Cut scenes are the most efficient way to stop agency. They stop the player from missing crucial dialogue or other information. Tutorial sections can greatly benefit from cutscenes. Not only highlighting the mechanics but the embedded narrative too.
- Tools/Abilities – slowly expanding the number of abilities and tools the play has can reduce agency. At the beginning of the game, too much agency can be overwhelming. Limiting the number of abilities can help the player to understand the basics, before expanding.

Narrative Systems:

Uncertainty and Constraint

- Uncertainty – A conservative use of uncertainty creates drama. Having to discover the locations of the map, to know what resources are there, is an uncertainty.
- Constraint – Giving the player constraints allows for greater creativity. This may seem counter intuitive. E.g., which is easier to create a story with: A Native American tribe; or a Native American tribe that has come upon hard times and are oppressed by a nearby monster.

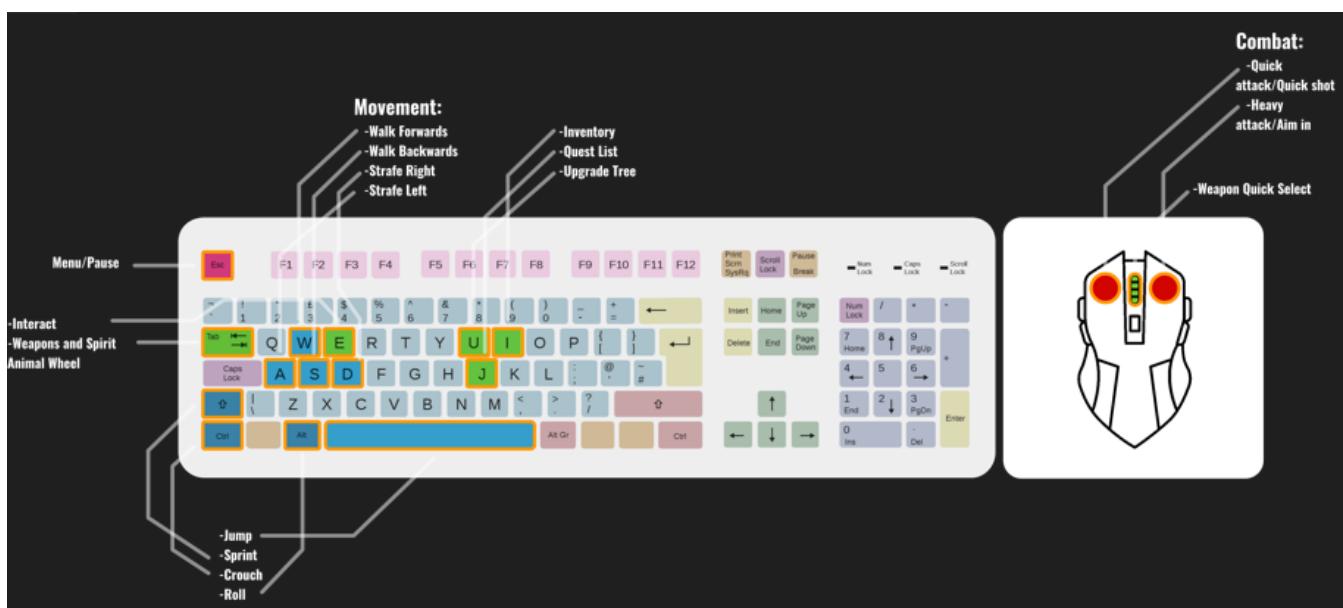
Emergent Narrative

- Innovation – The concept of combining a conventional narrative alongside an emergent narrative is a relatively unexplored idea. Finding the balance between the two, could allow for the perfect level of player agency.
 - Benefits of Emergent play – Giving the player the tools to build their own narrative. As the player can develop their own narrative, the replayability of the game increases, alongside agency. A self-controlled narrative allows for one of the most crucial aesthetics. Expression.
 - Planting Settlements/Relationships – The system that enables most of the emergent narrative is the relationships with other tribes. At any point, the player can choose to change their relationship with another tribe. This changes the resources, battles, mission availability. While still having the main story as its backbone, the emergent narrative becomes its own narrative, forged by the player.
 - Planting settlements also creates this emergence. Deciding what section of land to plant a settlement increases fast travel locations, increases hunting grounds and friendly NPCs. Your whole experience of the game changes.
 - Enabling Emergence – The simulation is the relationship system and planting settlements. The loose story is the conventional narrative that runs alongside it.
 - The use of character customization through collecting enemy feathers and teeth.
- Highlight the emerged narrative by integrating it into the environment and through expression. Integrated choices allow for player nostalgia, as they look back on the story they have created.
- In the game seeds come in the form of random occurrences in the wild, like enemy people in need or wild animals. Another example is enemy border expansion. If the enemy expands their borders over a resource, this can redirect the scope of the narrative.

Unwelcome Drama

- European colonization – Due to turbulent conflict caused by European colonization, the decision was made not to cover its content. This is the primary reason for setting the narrative before European involvement. In addition, the game focuses on native American culture and history. The culture of native American society has not been represented fully, within the game industry.
- The game is also set in a parallel universe, which accounts for discrepancies within history.
- Disclaimer – Before the game begins, there will be a disclaimer. “Whilst inspired by native American history, none of the events within this game occurred. This is not an accurate representation of Native American history or culture.”

Controls:

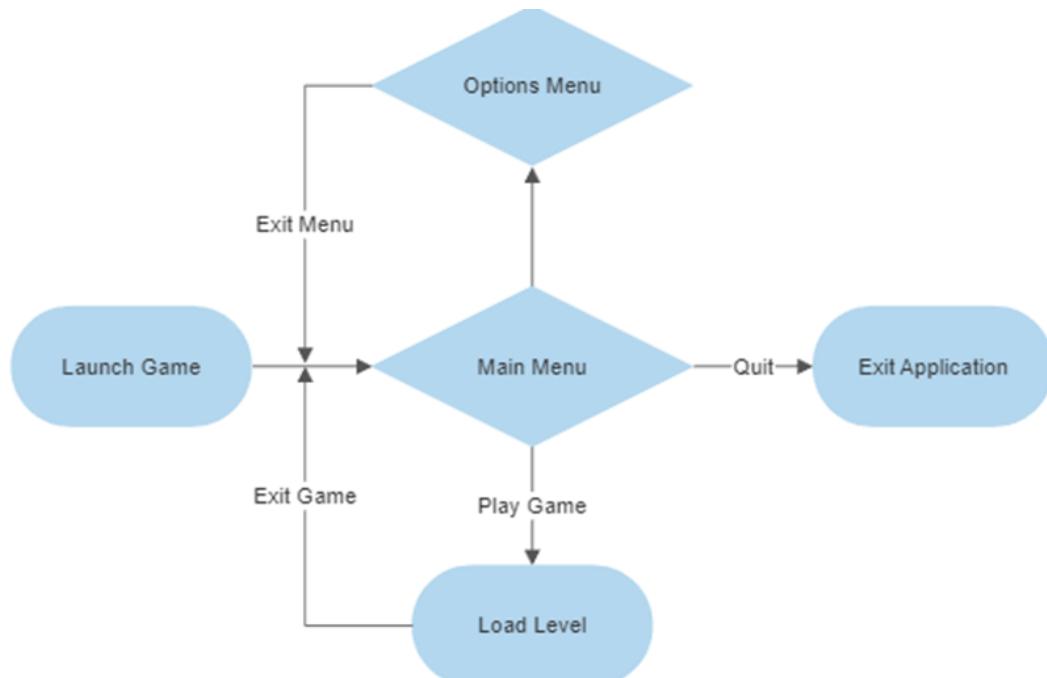


UI:

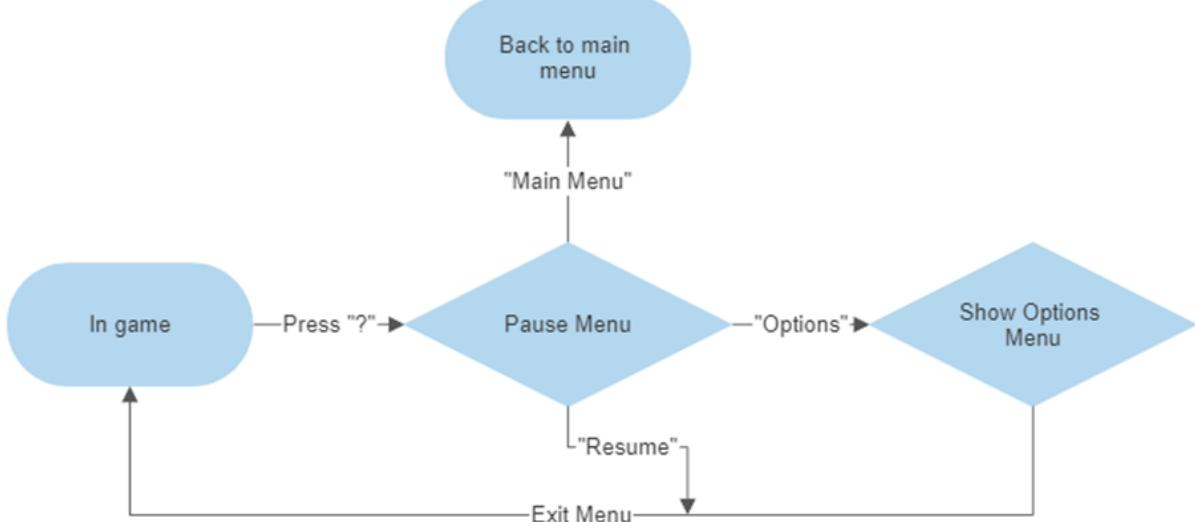
Interface

The following are flow charts that describe the players progression through the user interface. We have multiple different screens which are all important, these being the in game menus and the title screen.

Main Menu



Pause Menu



Functional Requirements

1 Start screen

To show selection on the start screen a simple highlight is used.

1.1 Load screen

The load screen is shown when you are loading into the game.

1.2 new game

This will start up a new save of the game.

1.3 Options

This will bring up all settings and allow you to customise and change them how you want.

 Video settings (Brightness/contrast, aspect ratio)

 Audio settings (Game Volume)

 Control settings (Button layout)

1.4 Loading screen

The loading screen appears when you are loading into the game.

2 In Game

Pressing escape will bring up the in-game pause menu.

2.1 Settings

Takes you to the settings menu in game, this uses the same layout as the main menu.

2.2 Main Menu

This button will take you back to the main menu of the game.

2.3 Quit

This will close the application fully.

3 Crafting

Pressing C will bring up the crafting menu. From here you choose from the range of items shown and once an item is selected you will press the "Craft" button.

4 Inventory

Pressing I will bring up the inventory menu. From here you can navigate through the different tabs to help you find any item your character has. If you click an item, the image and description will show up. This will be navigated using the mouse like the main menu.

Categories of items:

- Weapons
- Food
- Ritual
- Building/ crafting

5 Rituals

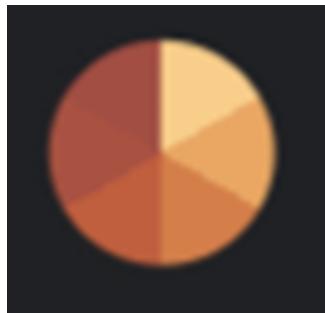
This menu will be accessible through the Ritual Bonfire in your camp. Once on this menu you will have a choice of rituals. After making your choice you would cast the ritual by pressing the respective button.

Art Style

The overall goal of the menu is to be simplistic yet attractive. For games some menus are very over the top and it can put people off if things are far too complicated or if they are just messy. Each menu is very easy to understand and navigate showing everything in front of you with a description of what it does or help on how to navigate through.

Coming up with a colour scheme was easy as we followed that of Native Americans, we found this out to be darker colours for the most part being different shades of brown which is what our menus will follow. This is the colour wheel that we have chosen for the UI.

The font chosen is one that we thought fit with the Native American theme. As the way they would write wasn't English but in symbols this is one that best fit the drawing like style whilst still being readable.

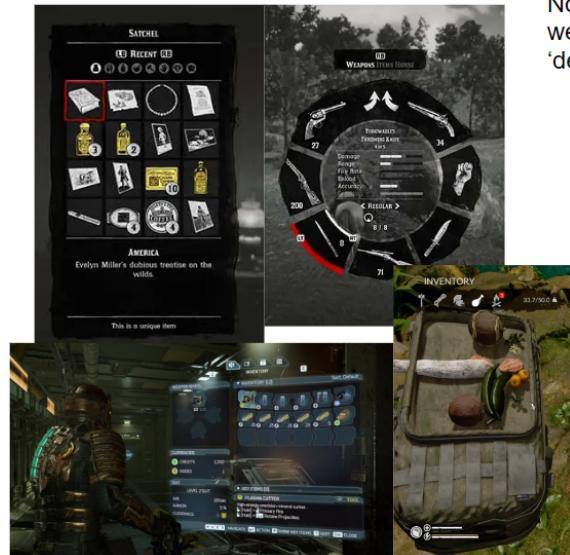


Project Tomohawk

PROJECT TOMOHAWK

Inventory Organisation Inspiration

Inventory Mood Board



List of categorised items are present in all images. It is a simple but effective visual representation that the player can understand.

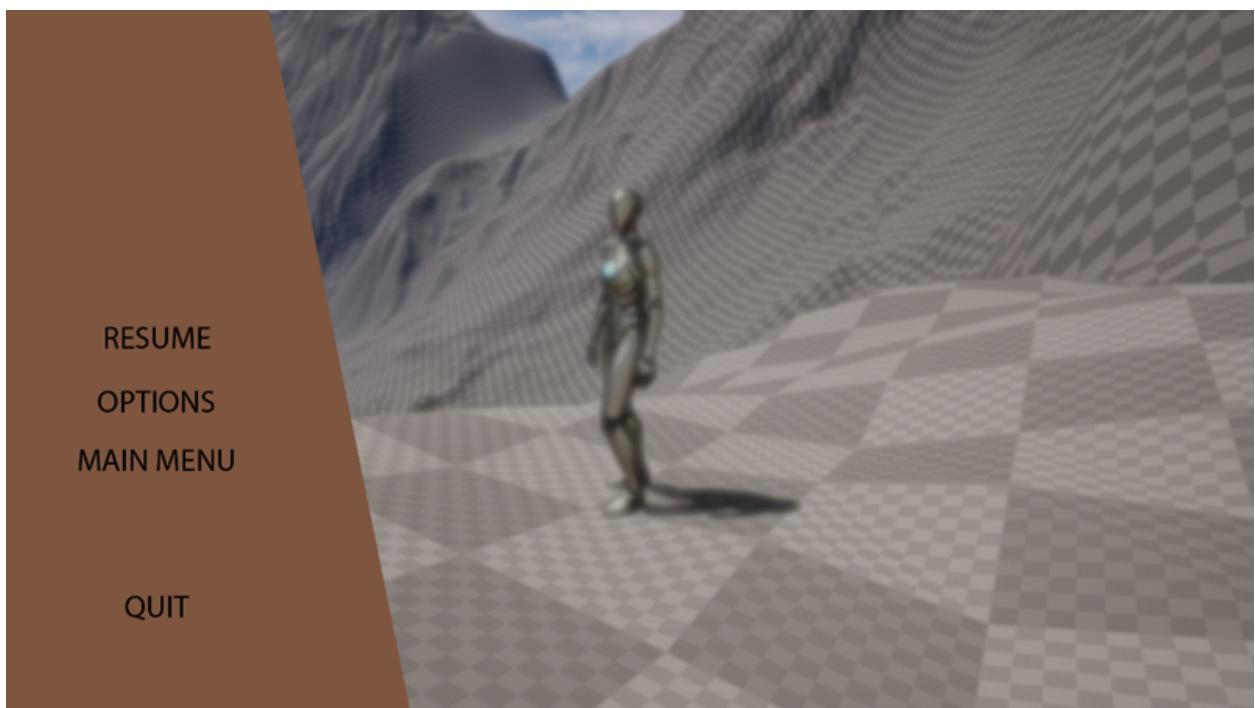
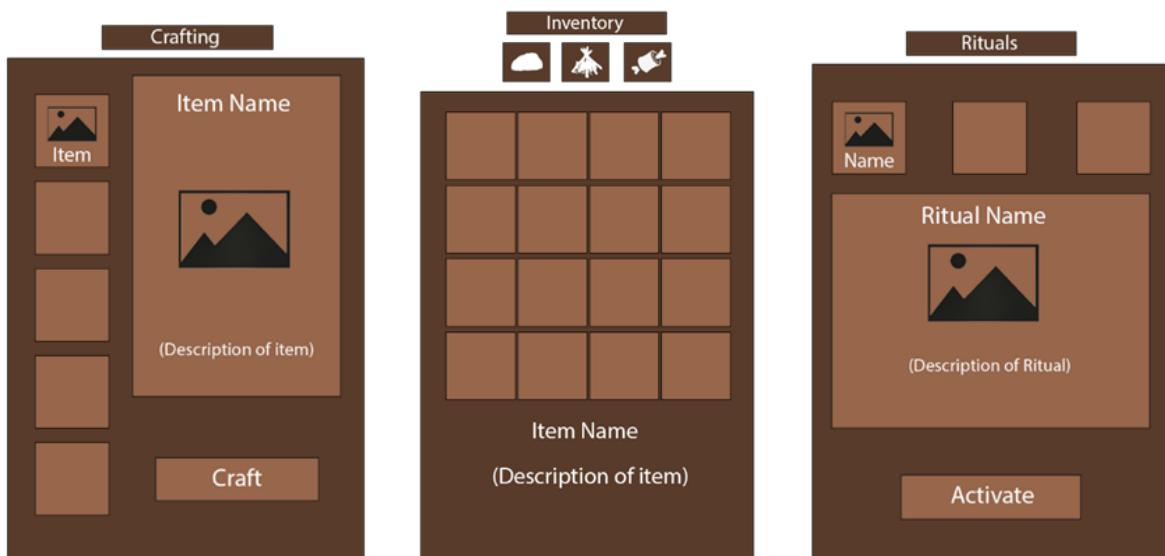
Note that with the Genshin Impact image below the weapons list is exclusive from the upgrade system with a 'details' button as a shortcut to that system.

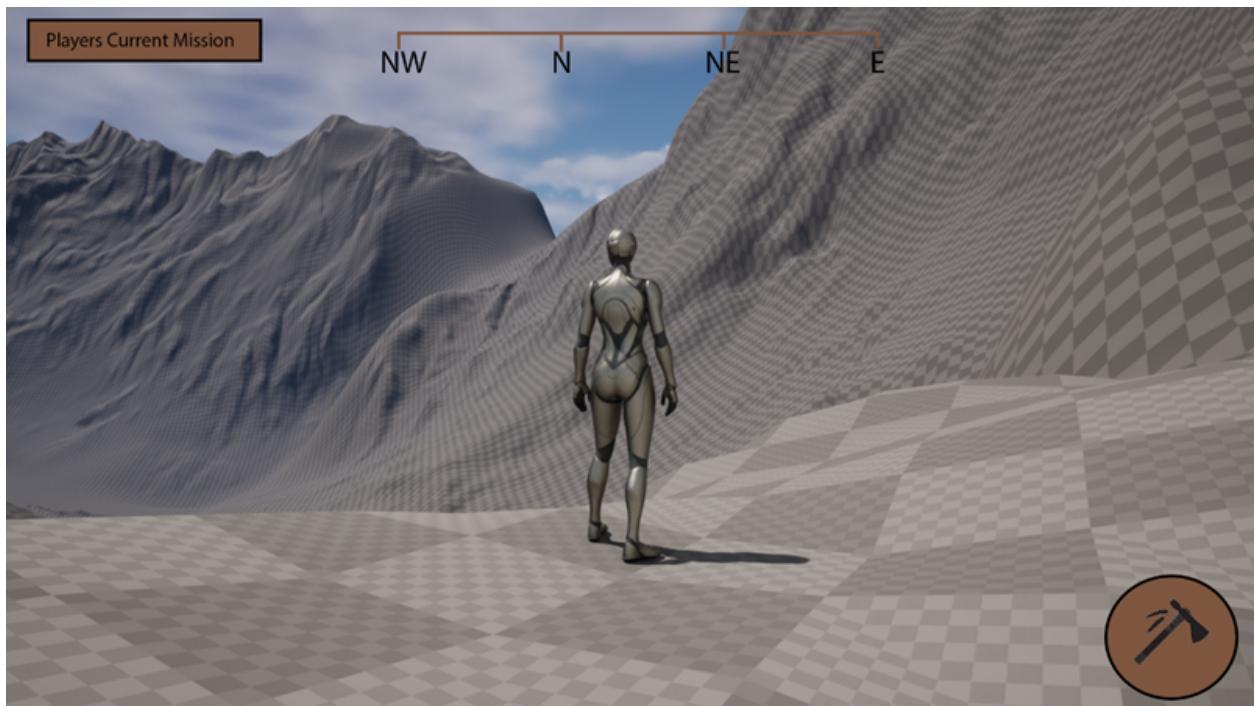
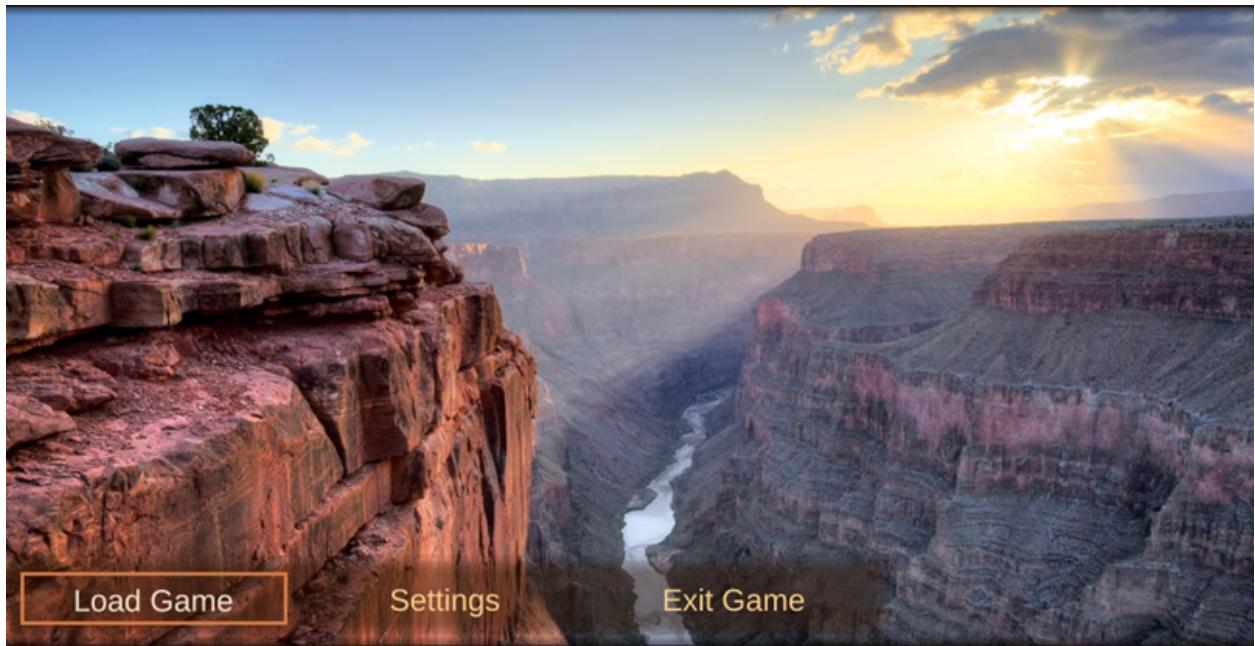


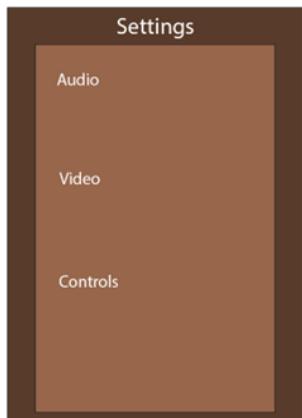
Green Hell (left) uses a more visual representation of the same concept. Items and their quantity can be easily seen and categorised.

Mock Up Screens

Here are the mock ups done for each menu that will be implemented into the game: Crafting, Inventory, Rituals, Pause Menu, Title Screen, HUD, Settings.







Final Screens

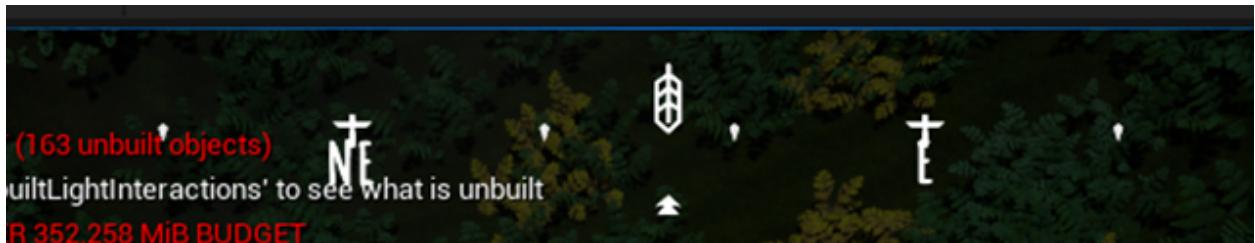
These are the final interface designs that will be included in the game; The inventory, Pause Menu, Ritual Menu, Settings menu, Main menu, Chest/looting Menu and the HUD.







Current Objective:
Reach Enemy Village



Core Mechanics:

Core Mechanics:

- Spirit Animals
- Rituals
- Hunting
- Crafting
- Combat
- Settlements and Territory

Movement

- Walk, Run, Sprint, Jump, Dodge, Crouch.

Combat

- Enemy Select/Ping Melee:
 - Tomahawk - Quick attack (faster attack that deals less damage,). - Heavy attack (Slower attack that deals more damage). - Can be thrown at enemies.
 - Bow - Quick shot (Shoots at the closest enemy) - Aimed Shot (The player can aim down on the bow to hit enemies more accurately).

Map

- Map – The Player can use a map of the world to navigate and see resources.

Interaction

- Interact: A button that allows the player to interact with objects.

Spirit Animals:

Combat:

- Eagle – Divebombs enemies, distracting them. Better at fighting other avian enemies. Has the lowest attack damage. Weakest animal, but the hardest to hit.
 - Bear – Has the largest health but is less agile than the wolf. Can fight large animals. Can't fight avian animals.
 - Wolf – Is the most agile and deals the most damage. Has less health than the bear.
- o Scouting/Stealth
- Eagle – Can spot enemies from above and mark them for the player. Can't interact with anything on the ground.
 - Racoon – A ground stealth animal. The hardest to spot by enemies. Can spy on conversation and interact with ground objects. Not very fast and has low health.

Enemies:

- Eagle - Can attack your spirit eagle in the sky. Is hard to hit but has very low health. Can divebomb you. Deals less damage.
- Bear – Takes the most damage but is less agile than the player.
- Wolf – More agile than the player but takes less damage than the bear.

Rituals:

Combat

- Sun Dance – Both enemy and player to have better visibility and mobility. Allows for more ranged combat. Pushes the player to a more boisterous play style.
- Rain Dance – Reduces the visibility of enemies and players and allows for close combat. Pushes the player to a more stealth oriented play style.

Hunting

- Sun Dance – Increases the population of animals, making them easier to find. Increases player visibility. Lack of rain increases scent profile (your scent can alert prey of your location). Persistent dry weather reduces the frequency of animal tracks.
- Rain dance – Decreases the population density of animals, making them harder to find. Decreases player visibility. Rain can decrease a player's scent profile, making it easier to get closer to prey.

Settlements

- Regular Weather – Having regular weather patterns (Having Rain and Sun), maximizes the crop and resource production of NPCs in the tribe.
- Irregular Weather – Irregular weather cycles, such as a dry spell, cause a reduction in resource production. Consistent dry weather scorches crops, and wet weather waterlogs them.

Weather Intensity

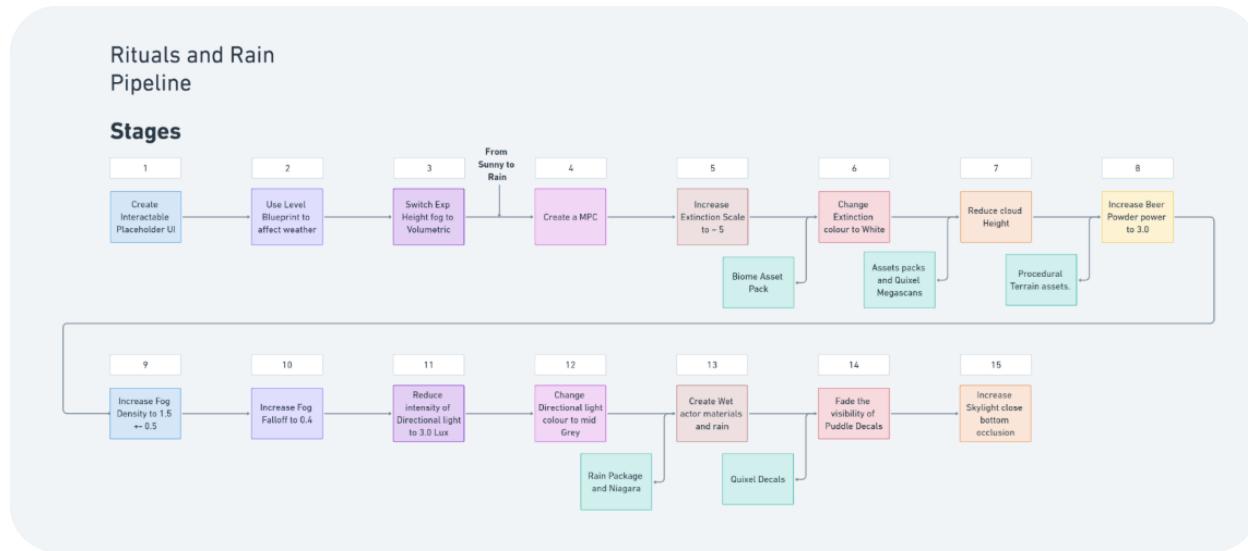
- Using rare consumables found on the map or earned through missions, you can magnify the intensity of the weather.
- Amplifying the Sun – Multiplies the effects of the sun by creating scorching heat. Can cancel out the effects of other weather rituals. Also speeds up the negative effects of the sun, such as drought.
- Amplifying the Rain – Multiplies the effects of the rain by creating a maelstrom. Can cancel out the effects of other weather rituals. Also speeds up the negative effects of the sun, such as drowning crops.

Rituals and Rain Pipeline

1. Create a placeholder UI slider that has a single variable that can be used as a multiplier in other scripts.
2. Use the level blueprint to affect the weather.
3. Set Exponential height fog to volumetric.

From Sunny to Rain:

1. Create a material parameter collection to access the variables within the materials in other blueprints.
2. Increase Cloud extinction scale to ~ 5.
3. Change extinction colour to white.
4. Reduce cloud height.
5. Increase Beer Powder power to 3.0.
6. Increase Exponential height fog density to 1.5 +- 0.5.
7. Increase fog falloff to 0.4.
8. Reduce intensity of directional light to 3.0 lux.
9. Change directional light colour to mid grey.
10. Utilize the Rain package assets to create wet objects and rain.
11. Fade the visibility of puddle decals.
12. Increase cloud bottom occlusion.



Hunting:

Tracking

- Tracks – Animals leave tracks behind them that last for a certain amount of time. The duration and intensity of prints depend on the weather conditions. Persistent sunny weather causes weaker prints. Persistent rain creates short lasting prints.
- Sounds – Each prey animal produces a sound that the player can use to locate the area an animal is in.
- Map Locations – Once discovered, the map will show the locations of animal herds. These locations will change during the year, due to migration.

Alerting/Stealth

- Scent Profile - The player has a scent profile that animals can use to detect you. Depending on the weather, your sent profile can change. This affects the difficulty of stealth. As when an animal detects you, it can run or attack.
- Spotted – Being seen by prey can cause them to run away or attack.

Killing Prey

- Damage Points – Certain areas of the prey's body are weaker to arrows than others. The head is almost always one shot but is the hardest place to hit.
- Different weapons – When hunting different animals, different weapons may be needed to kill prey. Smaller animals, like birds, can be killed by arrows. Medium, with arrows and spears. Large, like bison, with blades, axes, tomahawks.

Harvesting

- Part Utilization – Natives used most parts of hunted animals. From one kill you can expect hide, bone, teeth, meat, fat.
- Resource Quality – Depending on what animal you have killed, and the amount of damage dealt to the animal. The quality of hide can change. Doe hide < Buck hide < Bison hide. The number of arrows used to kill each animal, will reduce the quality of the hide.

Crafting:

Resources

- Resources – You need all the correct resources to craft specific weapons and armor. You can do this through hunting and gathering and being gifted rare resources through gameplay.
- Quality – Most weapons and armor can be crafted with any of that resource. Depending on how damaged or from what animal the resource came from, can affect the quality of weapons and armor.
- Progression – The information and blueprints received from tribe elders, can be seen as unlocking upgrades. The quality of materials used in construction can be seen as the item level.
- Upgrades – using higher quality resources and learning how to craft new items, can allow you to upgrade items. This could be creating better arrows that deal more damage. Or a quiver with more arrow storage. Pouches and straps to hold more tomahawks.

Blueprints

- Elder Wisdom – The wisdom of elder members of the tribe is needed to learn how to craft specific items. This can be gained after completing quests for them, or at certain milestones in the story.

Upgrades and Progression

- Upgrades – Using higher quality resources and learning how to craft new items, can allow you to upgrade items. This could be creating better arrows that deal more damage. Or a quiver with more arrow storage. Pouches and straps to hold more tomahawks.
- Progression – The information and blueprints received from tribe elders, can be seen as unlocking upgrades. The quality of materials used in construction can be seen as the item level.

Settlements and Territory:

Planting Settlements

- Locations – Settlements can be planted anywhere within your tribe's borders. Deciding where to plant a settlement, will depend on the resources around it. Such as bison herds and berries. You cannot plant settlements on enemy land.
- Village Variation – The size and look of a village can change depending on external factors. Climate can change a village aesthetic. Cold weather will increase the density of wooden houses and more people will wear thicker clothing. The level of resources and villagers will expand and reduce the size of a settlement.
- Planting – As the player can plant a village almost anywhere, object awareness will be needed to detect obstruction, so that buildings aren't erected on top of them.

Alliances/Wars

- Expansion – You can expand territory by killing enemy chiefs. By taking their settlements, you can expand the area where the player can hunt and gather resources. This will also allow you to place new settlements within the new borders.
- Alliances – Alliances can be formed by having a good reputation with another tribe. This could be through completing quests for them. You can worsen a relationship with a tribe by hunting or

taking the resources on their land without permission. An alliance allows both tribes to occupy each other's land, harvesting resources from both.

Migration

- Nomadic – During the year, the locations of animals and plants will change. Bison migrate north in the winter. This means they could move out of your tribe's borders. New settlements will need to be made to follow the migration.
- Migration Paths – The player can choose the migration path of the tribe. Using the map, the player can highlight a route for the rest of the tribe to follow. Some paths could be more dangerous than others. Depending on enemy borders, the tribe may have to move out of friendly land. This could cause skirmishes.

Fast Travel

- Locations – The player can fast travel to any friendly village. This means any of the players own villages, or any allied villages. This means that fast travel locations can change depending on the location of settlements.

Combat:

Weapons

- Bows – Bows are ranged attack weapons. Arrows can be fired at enemies and their spirit animals to kill them. Most useful in hunting.
- Tomahawk – A short–mid range weapon. The tomahawk can be used as an axe to chop enemies but can also be thrown short distances.
- Spear – A mid range weapon that deals more damage than an arrow, but has a shorter range.
- Knives – A short range weapon used mainly for skinning animals but can be used to stab close enemies. Or assassinate them in stealth.

Aiming

- Quick Shot – When enemies are close to the player, the player character will automatically aim at the closest person. When the enemies are further away from the player, the player can still fire. Further shots have a reduced accuracy. This works for bows, spears, and tomahawks.
- Long Shots – Long ranged shots can be made by aiming down on the bow. This removes quick shot but allows for more accurate aiming. Best used in hunting and long ranged combat.

Enemies

- Killing the Enemy – Enemies can use weapons to kill you, such as bows and tomahawks. Enemies have a medium amount of health, and can sometimes wear armor, which makes them more difficult to kill.
- Killing the Spirit – Enemy spirit animals come in many forms. Eagles have very little health but are more difficult to hit. Bears are more resistant to damage. It could be preferential to kill the enemy over the bear, in this case.
 - Enemy Ammunition
- Ammo-conscious Enemies – Enemies have a finite number of arrows. Depending on the number of arrows left, enemies will act differently. Enemies with many arrows will fire more

frequently and less accurately. Enemies with low ammo will preserve shots and wait for a better chance to shoot.

- Enemy loot - Depending on how many arrows an enemy fires, there will be a different number of arrows in their inventory. While waiting until an enemy runs out of arrows can increase your chance of survival. Killing enemies faster produces more arrows to loot.

Inventory Mechanics for Full Version of the Game:

- Player can check a 'bag' of items collected during the game
- Items sorted into categories based on their purpose
- Contains shortcuts to the more advanced systems (eg. weapon upgrades)
- Displays both items and their quantities
- There will be a maximum quantity based on the number of items collected
- Players will have to discard items in order to make space for new items

Inventory considerations:

- PvE - efficient and quick access via keyboard shortcut
- Must complement play style by allowing player to acquire items from combat and environment
- An item storage limit - this creates strategy and dilemma as the player will have to choose what to discard in order to obtain new items
- Items will be usable/ expendable
- Weapons will have an upgrade system that allows for further resource enhancement and promotes strategising

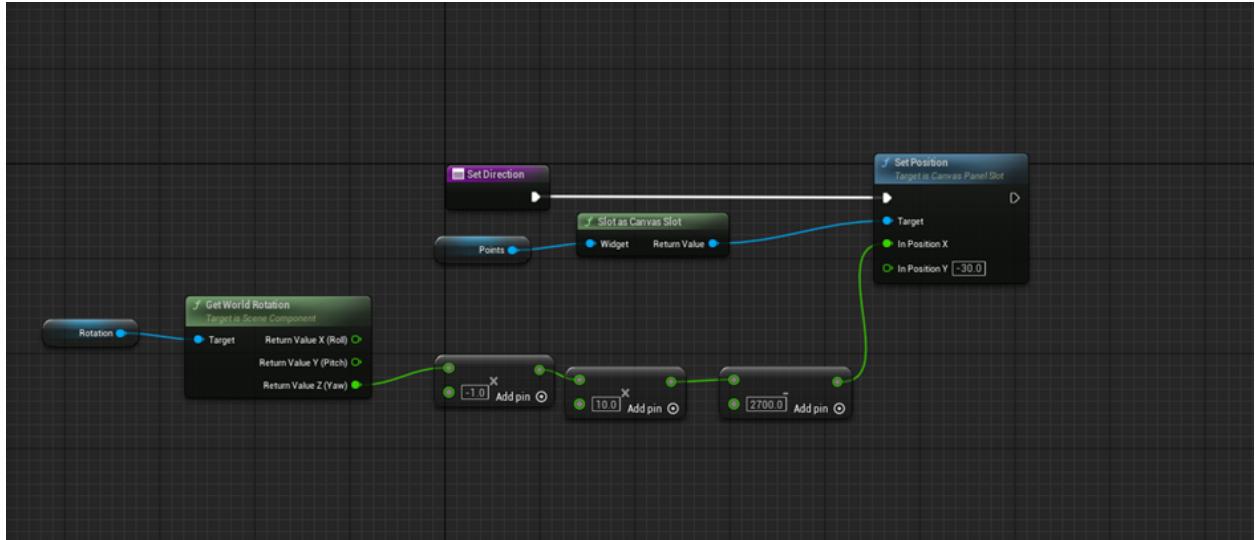
It is important to recognise that not every item in the game will fit into the categories provided or be important enough to be collected by the player e.g. not every leaf, piece of wood, expected loot will be attainable. This allows the player to be able to prioritise what items to keep without filling the inventory with too much useless loot.

As the game is centered around acquisition, the inventory can be used as an indication of success and progress toward the player's desired goals.

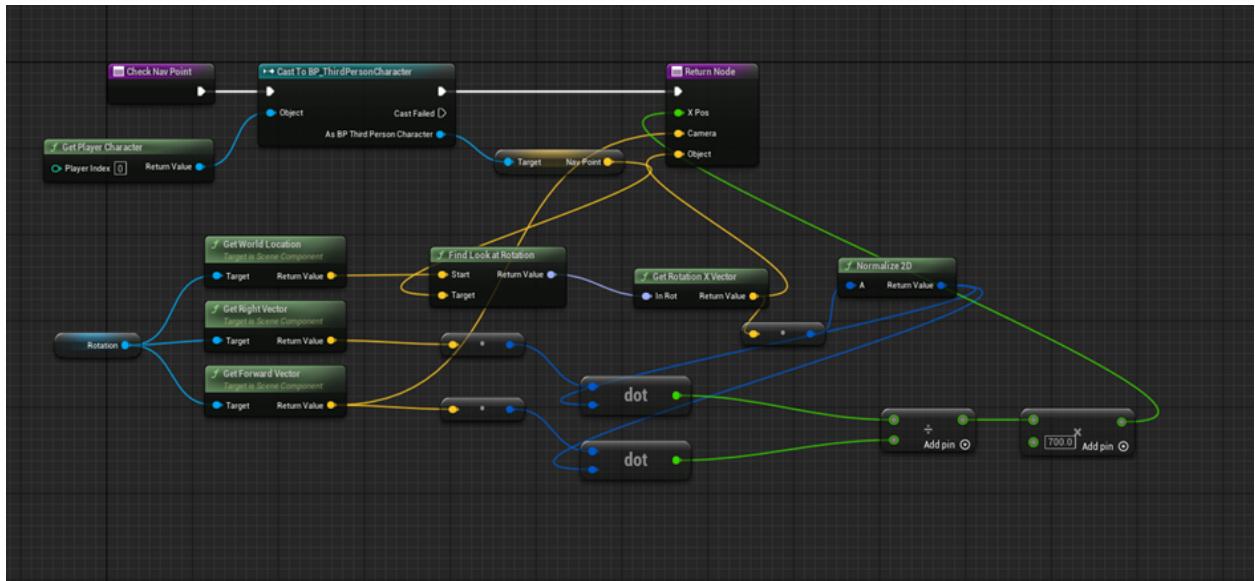
Compass

The compass uses 3 functions: Set Direction, Check Nav Point and Check if Behind.

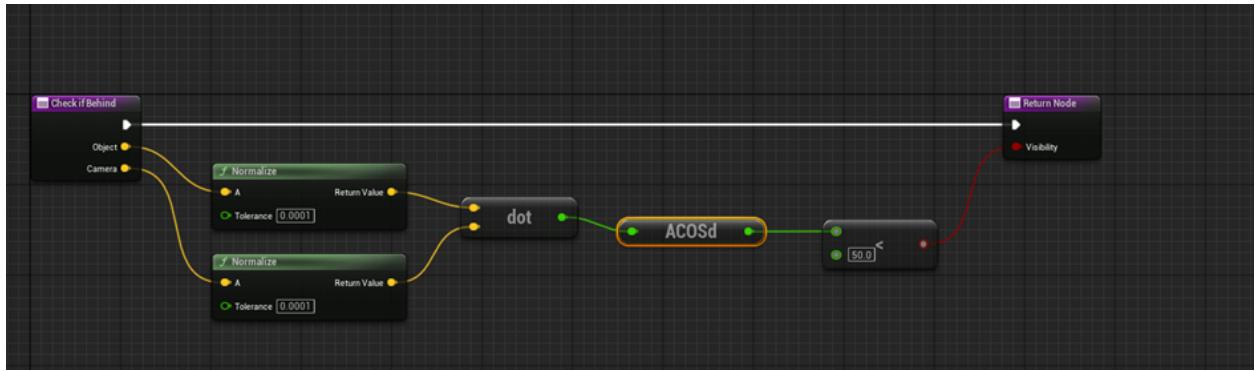
Set direction gets the world rotation of the camera and mathematically sets the position of the compass markers to the correct place.



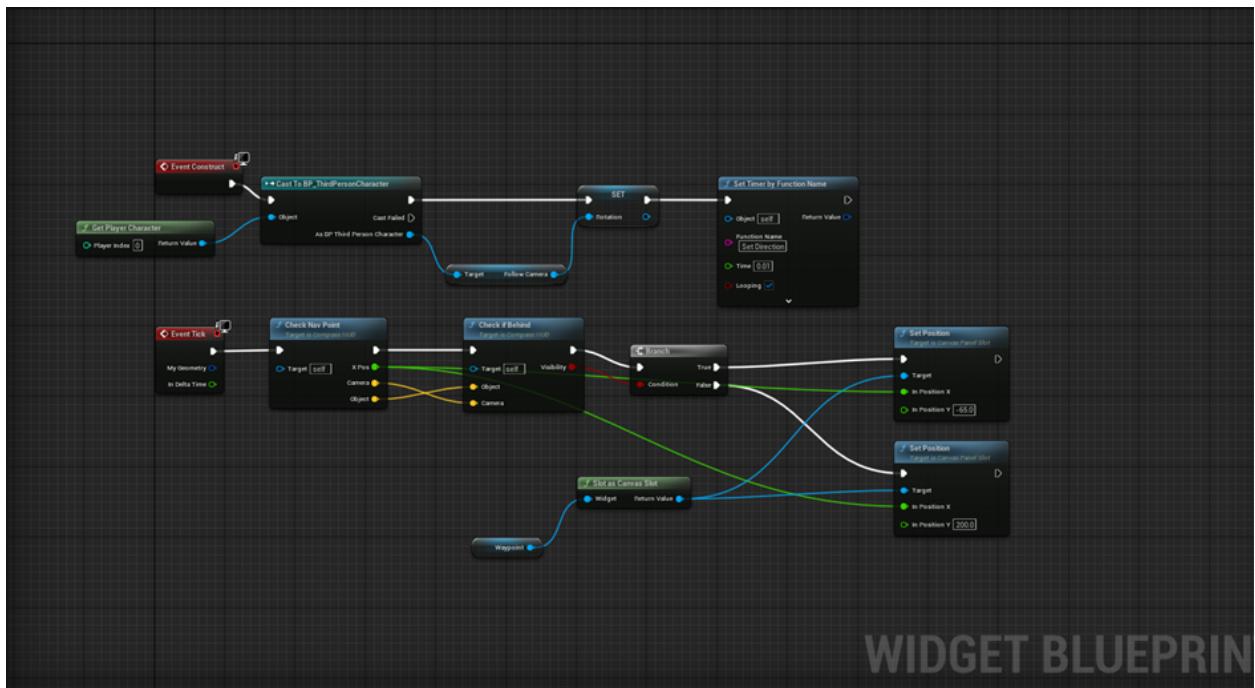
Check Nav Point gets a vector variable from the player character – this var is set in another blueprint which will be explained later. It gets the world location, right vector and forward vector of the camera and uses dot products to determine whether or not the player is looking at the nav point.



Check if Behind normalizes the vector of the camera and object (explained next) and gets the dot product of these. it then returns the inverse cosine of these. Then if the result is less than 50 (50 degrees), then the objective will not show.

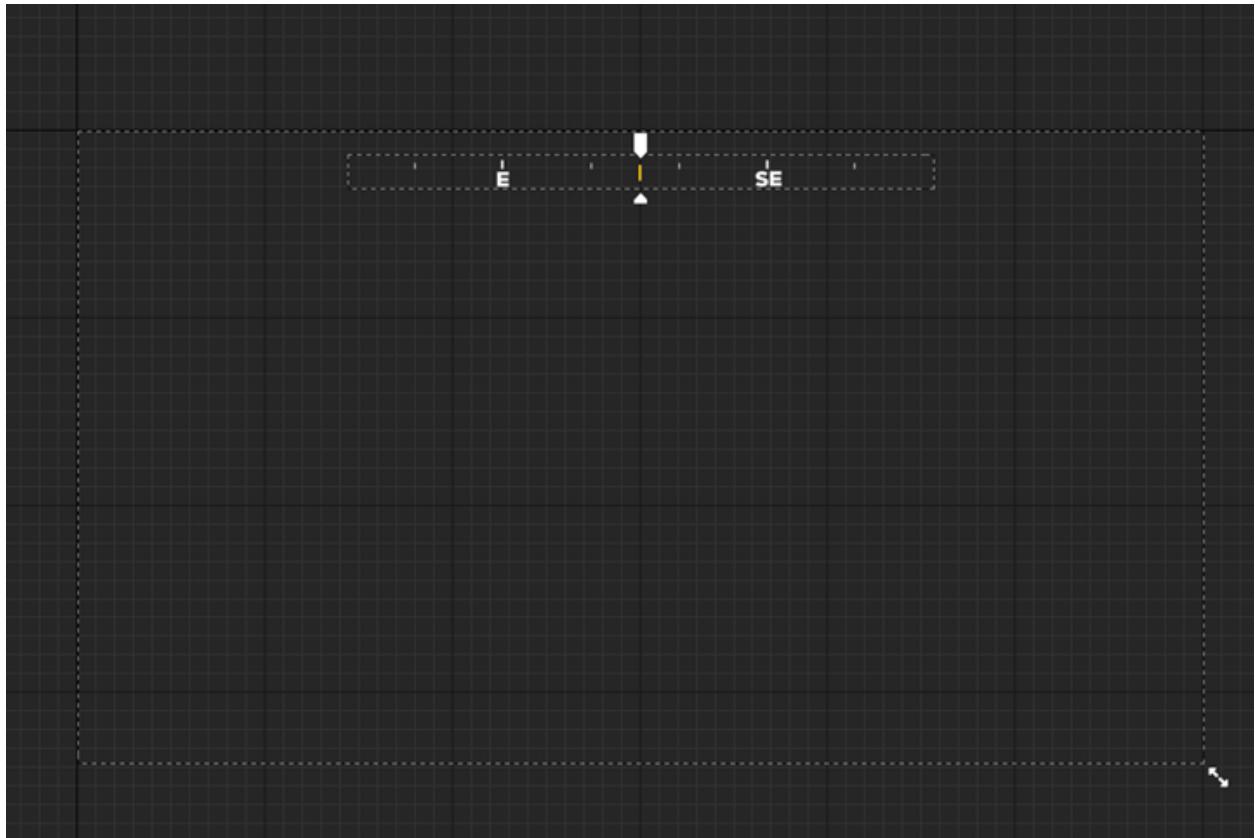


Finally, these are brought together in the event graph.

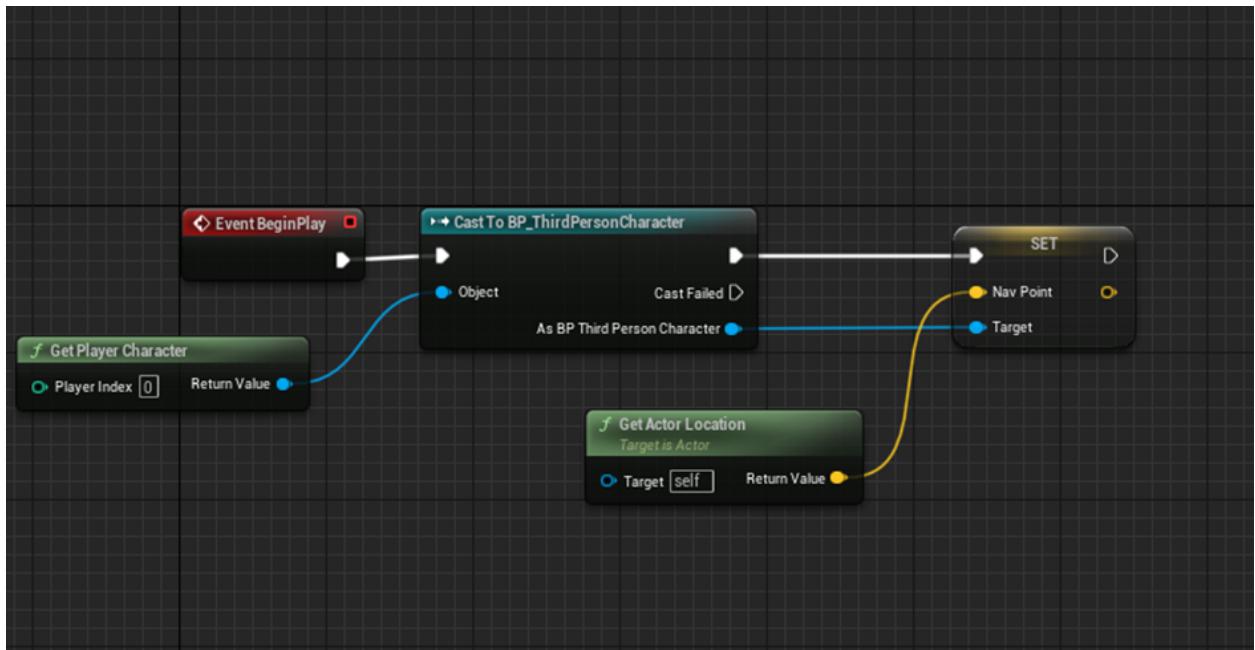


WIDGET BLUEPRIN

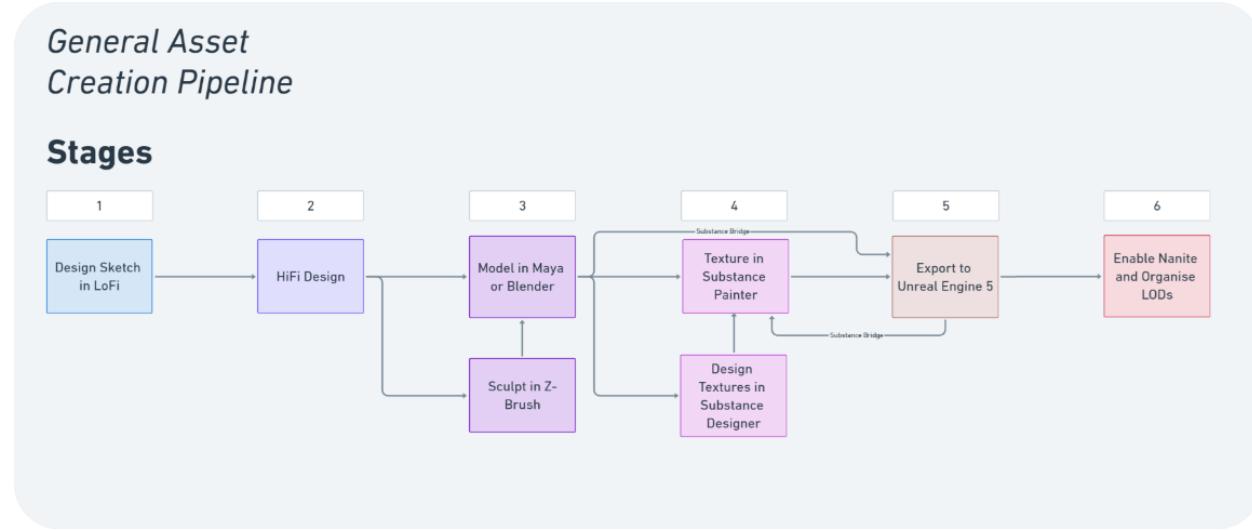
Widget screen for the compass:



The objective blueprint assigns a vector variable and sets it to the location of the blueprint.



Designs:



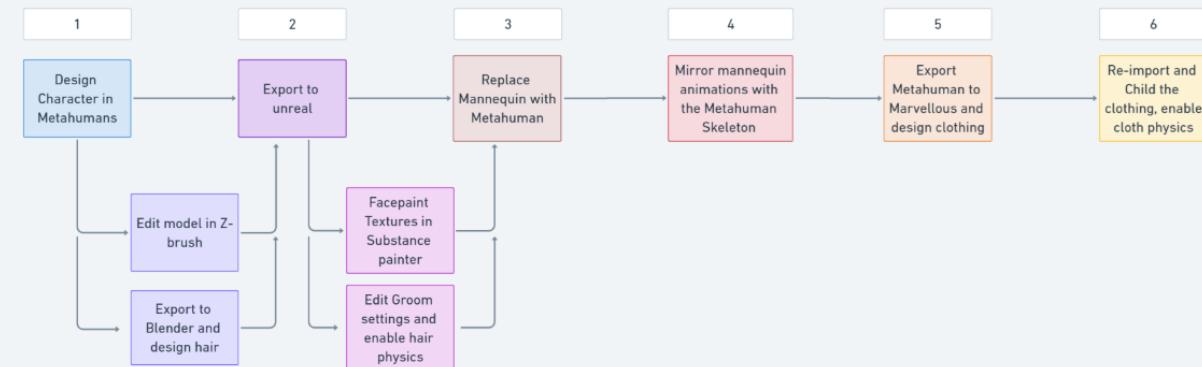
Characters (Human):

Character Creation Pipeline

1. Use the metahuman creator to design a native American character.
2. Additional editing can be done in Z-brush, to create variation.
3. Export to Blender and use the Hair particle edit to design a custom hair style.
4. Export to Unreal Engine 5.
5. Export the textures to Substance painter through the live link and create a custom face paint design.
6. Edit imported hair with groom. You can edit the physics and LODs. You can also use Groom to edit hair length and get a perceived growth over time.
7. Replace the mannequin model with the metahuman model.
8. Mirror the mannequin animation onto the Metahuman skeleton. Making sure to delete the middle knuckle of the metahuman.
9. Export the mesh to Marvelous designer and create the clothes.
10. Import the clothes design into Unreal and make them a child of the Metahuman character. Also add cloth physics to selected areas of the design, such as the headdress feathers and necklaces.

Character Creation Pipeline

Stages



Face Paint Designs:



1. Protagonist act1- First paint the protagonist receives. Should come in right after the main character reaches adulthood. Has the meaning of new warrior.



2. Protagonist Act 2to3- Protagonist face paint changes right after the death of the friend character in act 2. Symbolizes grief.



3. Protagonist Act 4- Protagonist receives the white handprint after the antagonist escapes. The hand symbol represents his victory over multiple hand to hand combats, the colour white represents he is still mourning.



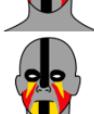
4. Village chief- Face paint the protagonist's father would have throughout the game. Represents his role as the chief. The main character will start wearing this paint at the end of the game once he becomes chief.



5. Generic paint 1- generic paint to be spread around and given to other NPCs, represents the role of a hunter.



6. Generic paint 2- New warrior paint from southern areas of North America.



7. Generic paint 3- Seasoned warrior paint.

Face paints will be prevalent and important in the game and must be treated carefully to avoid unwelcome drama. More important characters will receive a more specific style that matches their role or personality, side character and general NPCs will either receive a more generic role appropriate face paint or none at all. All face paint colours will be the same that were used and available during the time frame the game takes place (red, black, white, blue, yellow, green). Purple and brown were available but are not to be used as war or face paint.

Face paints were used for multiple different things but the game will focus on 4 main types. "war paint", visual messages power/protection and ceremonial. Each colour also has a specific meaning, these meanings can be used to develop subtext and characters.

Red: during war it symbolizes strength, blood, energy, power, war and victory. Out of war it symbolizes beauty and happiness.

Black: mostly used as a preparation for war, an aggressive colour that can symbolize that the wearer is a skilled warrior or just had a victory.

White: mourning or peace.

Blue: Wisdom and confidence.

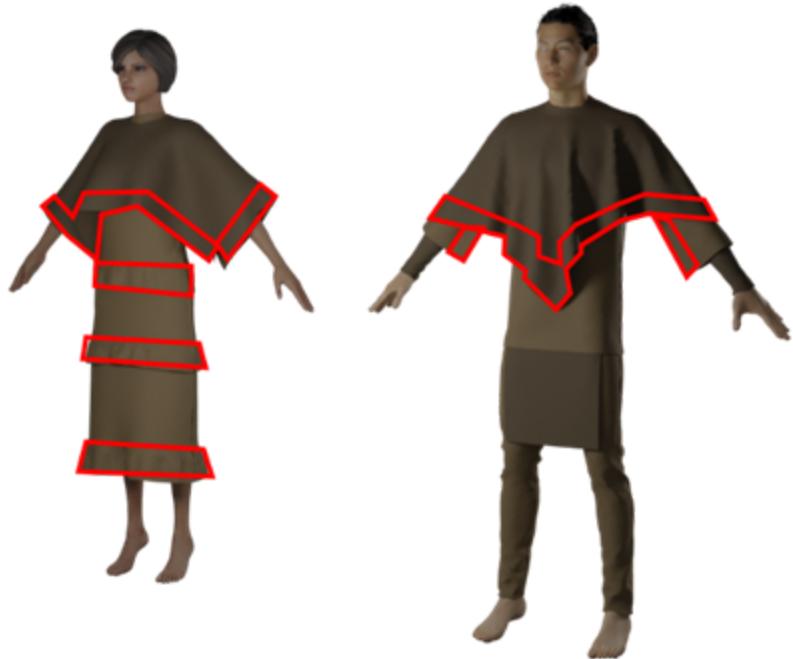
Yellow: Intellect or death. Can symbolize the wearer was heroic or lead a good life in death.

Green: Harmony and healing.

Face paints are considered a sacred tradition to most of the Native American population. Due to this care will be taken to avoid causing any disrespect to the culture.

Character Clothing Design:

The clothes will contain multiple layers; the base layer will be tight to the body and therefore won't need any simulating. Most characters will have another layer on top, usually consisting of a traditional or hide poncho. The tassels are modelled as a singular piece (the areas highlighted in red are some examples of the tassels before texturing) but will be made to look like multiple entities on the texturing process, this should lower any impact the movement of the tassels could have on game performance.



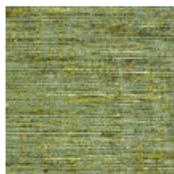
Clothing Pipeline:

The pipeline starts with the creation of characters in the unreal metahuman creator, from there their models are exported into blender so that the skeletal mesh can be prepared in preparation for the use of Marvelous. After exporting into marvelous the clothes are created and sent back into blender so that they can be joined with the original body mesh. In blender they are given their skeletal mesh root and weight painted so that they deform properly when added to the game. At this point the textures are created and everything is joined together in the unreal project.

Headdresses:

Another important aspect will help bring the clothes together are the native American headdresses. Within most native American cultures they carry a lot of weight as they are seen as something that must be earned by the individual. Headdresses are usually only worn by leaders or during special spiritual or cultural celebrations. To respect the cultural meaning of the headdress not every character in the game will have one, and it will be reserved to more important characters and NPCs.

Textures:



1. Yucca fiber texture with a brown tint. Most common type of fiber in native american settlements. Will be used for trousers and shirts.



2. Hide texture. Possibly from boat or bear. Used for accessories and traditional ponchos. Multiple colour variations for easy diversity within NPC clothing.



3. Battered leather texture for the shoes and sandals.

4. Textures for the tassel areas of the clothing, consists of rows of material and transparency to create the effect of individual tassels.

Design Choices:

1. Tassels: As discussed in the design aspects the tassels were grouped to decrease impact on game performance. When individually modelled each set of clothes ended up with hundreds of separate entities that needed to run calculations on player movement, gravity and collision for the physics to be realistic. By grouping the tassels, the amount of required calculations is reduced exponentially, as they are not able to collide with each other. The amount of entities requiring simulating also decreases to around 10 per model.
2. Mesh Complexity and Details: The clothes were designed to have a very simple mesh, allowing for further reduction in the poly count of the model. To achieve the desired realistic look, details will be added on the texturing stage, creating a realistic but compact model for the clothes.
3. Variety and Diversity: Variety and diversity will be achieved by a mixed use of clothing, hair and face paints. By mixing these 3 elements around it is possible to create an incredible amount of NPCs without having them looking too similar to each other. In the clothing aspect, different models and texture will be created, allowing for a wider variety of character looks and styles.

The minimum viable product for this area would be 2 fully textured sets of clothes that can be applied to the multiple character models depending on their gender.

Wishlist for final game:

N1 -> heavier clothes for snowy settlements, lighter clothes for settlements and the basic clothes for settlements in normal environments. N2 -> accessories for the primary characters that relate to their personalities. E.g.: a moon pendant for the love interest as it means protection, harvest and serenity.

Characters (Animal):

The wolf, eagle, raccoon and bear are the spirit animals and are a main mechanic of the game. These will be textured realistically but incorporating tribal influences in order to separate them aesthetically from the ordinary animals. The bison are also important in the full version as it is the main food source of the game. The deer will also be implemented as a food source but to also diversify the wildlife of the game.

All designs will have textures edited in Photoshop or Krita. Some models will be altered to match the animal and realistic style of the game. Realistic fur texture will be added sparingly in Blender to enhance the realistic style.

Wolf:

- Controlled by player - needs rigging
- Use a semi-realistic model
- Textured to fit a more tribal aesthetic to look different from the normal animals.
- One of the main mechanics of the game as it's a Spirit animal.

Summary of process:

- Use the wolf from the 'Animal Variety Pack' by PROTOFACTOR INC as the main model (contains rigging and animations already)
- Don't need to reshape since it's a realistic wolf model already.
- Texture and colour shown in the mood board below incorporating some real tribal symbols and other cultural influences.



Wolf Mood board



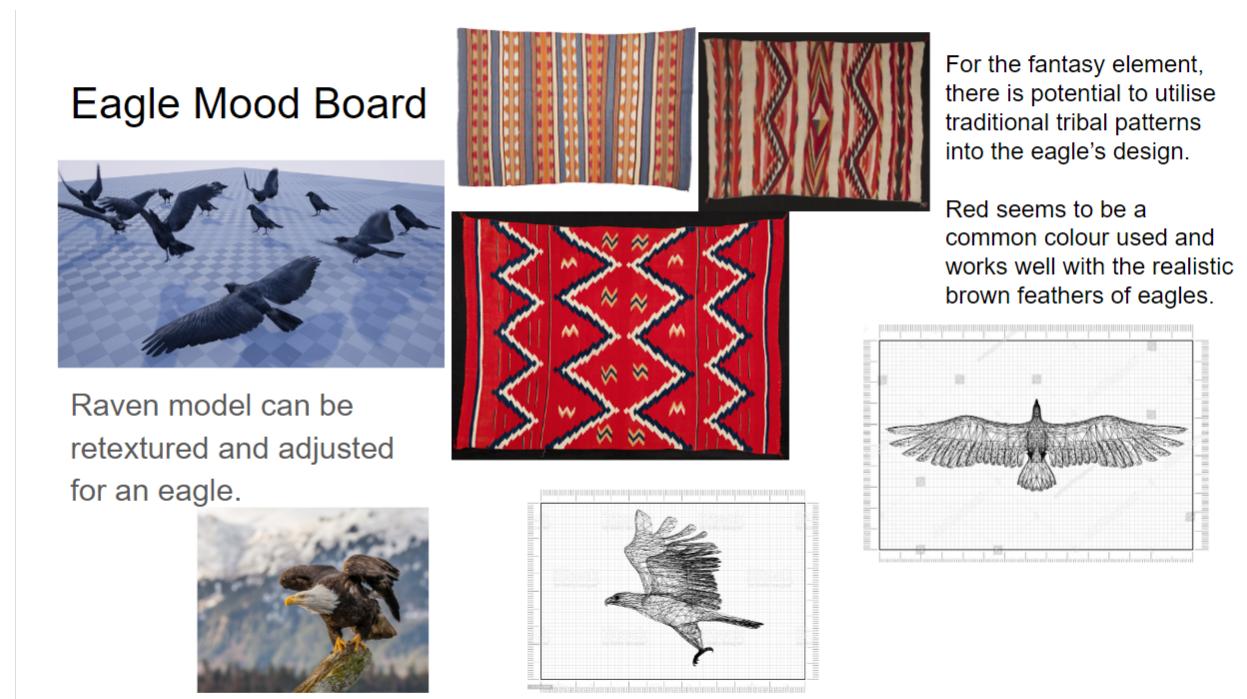
As shown in the art here we drew for the wolf the designs over the face and the chest area are mainly shown in the drawing but when we do the retexture of the wolf and makes it so the texture on a flat plain is visible making it able to be drawn over and fully flesh out the patterns that will be put on the back.

Eagle:

- Priority over the deer as it is one of the main mechanics of the game
- Controlled by player - needs rigging
- Use a semi-realistic model
- Textured to fit a tribal aesthetic to look different from the normal animals

Summary of process:

- Use the raven from the 'Animal Variety Pack' by PROTOFACTOR INC as the main model (contains rigging and animations already)
- Reshape the body to make an eagle
- Colour and texture according to the mood board below incorporating realism and tribal influence



First drafts of eagle retexturing:

Idea 1:



Idea 1 uses motifs of peace and strength as well as several other tribal designs. This emphasises the tribal narrative and alludes to the conflict and territorial acquisition presented in the game's narrative.

Idea 2:



Idea 2 uses the symbol of pain and other tribal patterns to allude to the more human aspects of the game. This creates understanding that the eagle is an extension of the player's human character rather than a completely separate entity.

Bear:

- Priority over the Deer and is one of the main mechanics of the game.
- Able to control with player - needs rigging

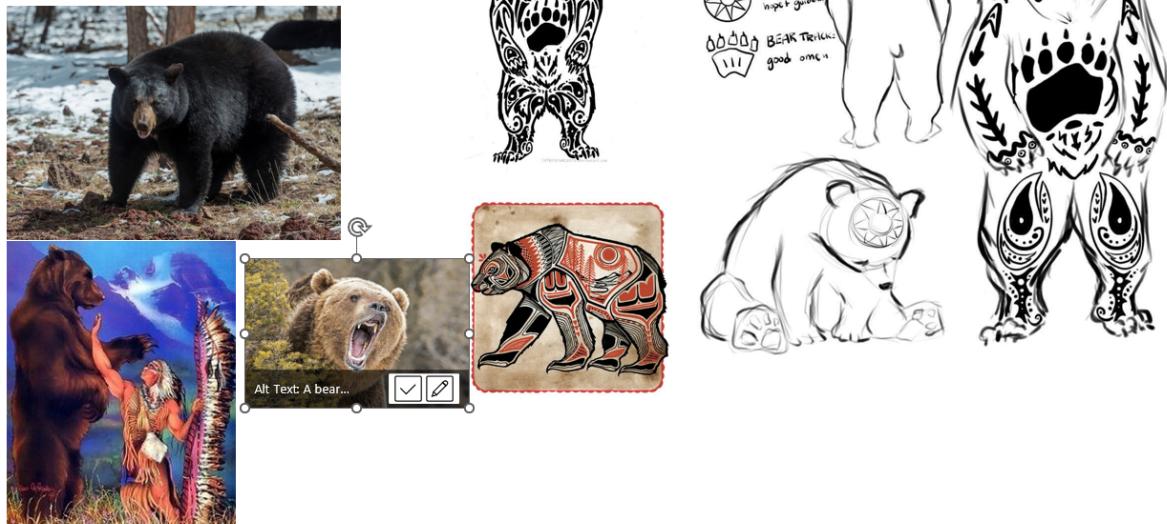
- Use semi realistic/ realistic model
- Textures to fit the tribal aesthetic as shown in the drawing below

Summary of process:

- Needing to find a good model and rig to use in the game.
- Colour and Texture referencing to the drawing made and mood board for change if necessary.
- Details shown below include the tribal influence that has been included in the detailing of the body of the bear.



Bear Mood Board



The bears were designed in this way, as bears are bigger with a lot more surface area. This allows space for more designs, such as more symbols, as well as a more cool and intimidating look.

Racoon:

- Realistic design
- Not as important in the pipeline than Eagle and Bear
- Able to control with player - needs rigging

Summary of process:

- Needing to find a good model and rig to use in the game.
- Color and texture will be similar to the references shown in the mood board below
- If a model found needs changing then it will be remodeled at the beginning of development.

Deer:

- Realistic design
- Can be used as a food source in the game - needs to look 'wild' with some damage and scarification
- Used as an NPC so is of lesser priority than the spirit animals

Summary of process:

- Use the deer from the 'Animal Variety Pack' by PROTOFACTOR INC as the main model
- Retexture to add scarification and other wounds
- Add more roughness and signs of damage to the horns

Deer Mood Board



Deer can be retextured to look more rough and suit the more survival aesthetic as they look too pristine for the wild environment.



Bison:

- Realistic design
- Migration and can be used as a food source in the game - needs to look 'wild' with some damage due to territorial disputes
- Used as an NPC so is of lesser priority than the spirit animals

Summary of process:

- Retexture to add scarification and other wounds
- Add more roughness and signs of damage to the horns and head area

Bison Mood Board



Some trial designs that were scrapped or reworked for the vertical slice:



The eagle designs above were trialed before the other spirit animal designs and even after revisions were deemed unsuitable for the game. A new design was created with a new colour scheme that matches animals created a few weeks after the original design. This creates consistency across all of the spirit animals and matches details used on the human characters.

The scar and wound created on the deer above was a test. The wound was not used in the final version but the scar has been reworked to look like a more natural texture.

Final Design of the Eagle Showcasing the New Colour Scheme:



Sound:

Main sounds used in the game:

- Footsteps
- Main ambience
- Ritual music
- Animal sounds (Eagle, Deer, Wolf, Bear, Bison)
- Button clicks
- Menu screen music
- Weapons

All sounds will be in accordance with the semi realistic aesthetic of the game. This will incorporate the use of music to create tone and atmosphere with the natural sounds of the environment to create immersion.

Whilst looking at the ambience and theme of the game, the music, environment, natural ambience, menu sounds and weapon sounds need to be real to the player. The sounds need to feel real whilst playing the game so that there isn't a take away from the experience.

Starting to look at references to use and styles that can be incorporated into the sounds that will be in the world have come to such things like the pan flute or a more traditional older form of woodwind instruments. Maybe a percussion instrument which is another version of a slit drum called a teponaztli.

Most sounds will be mixed and edited using Audacity.

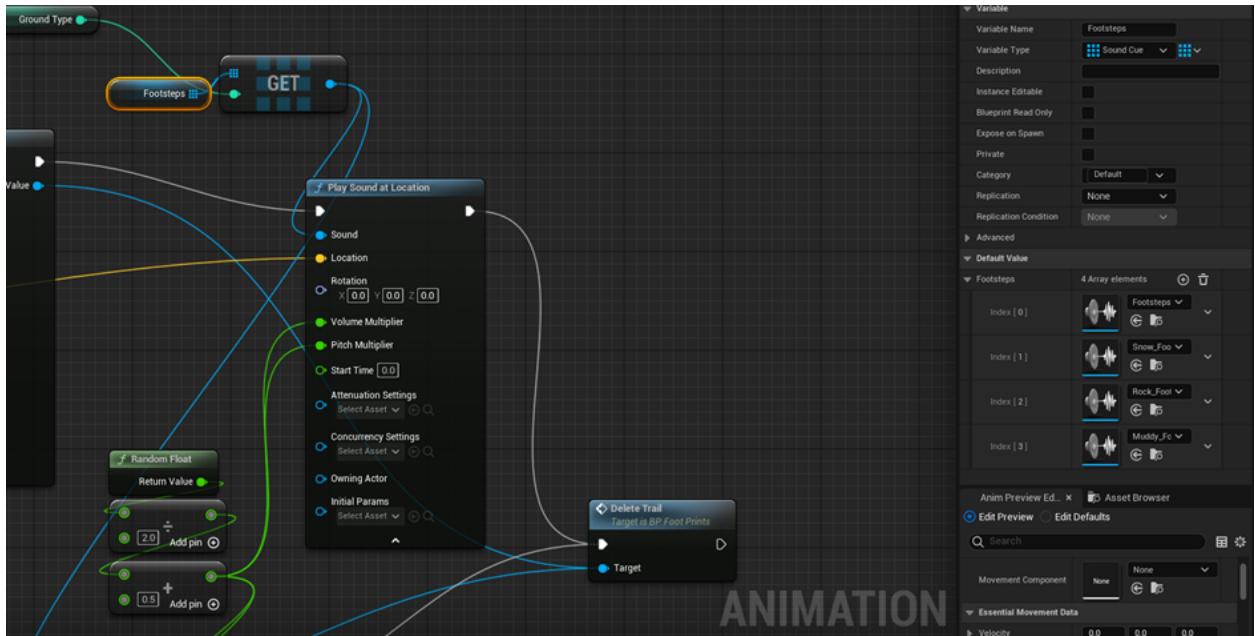
Some sounds will be created by ourselves and exported as .wav.

Footsteps:

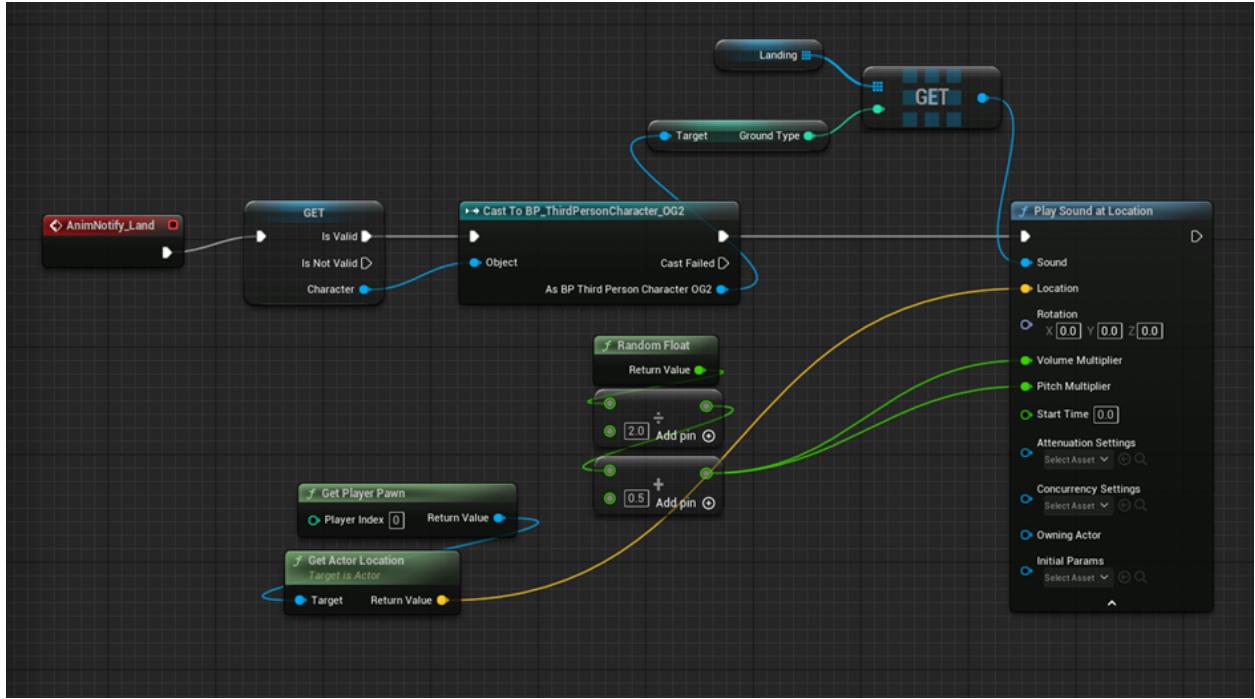
The footsteps will be taken from a free sfx sound bank as there are already a lot of good sources and therefore making our own would be inefficient.

The game has four different surfaces: grass, cave, mud and snow. Each needed a different footstep sound that changes seamlessly when the player moves over them. To do this, we created a blueprint for each surface with a trigger box inside. On the 'EventBeginOverlap', the sound will switch to whatever footstep is within the blueprint. Then, on the 'EventEndOverlap', it will switch back to the grass footstep as this is the default.

Using an array, each surface is given a value. Then this value is used to change the sound:

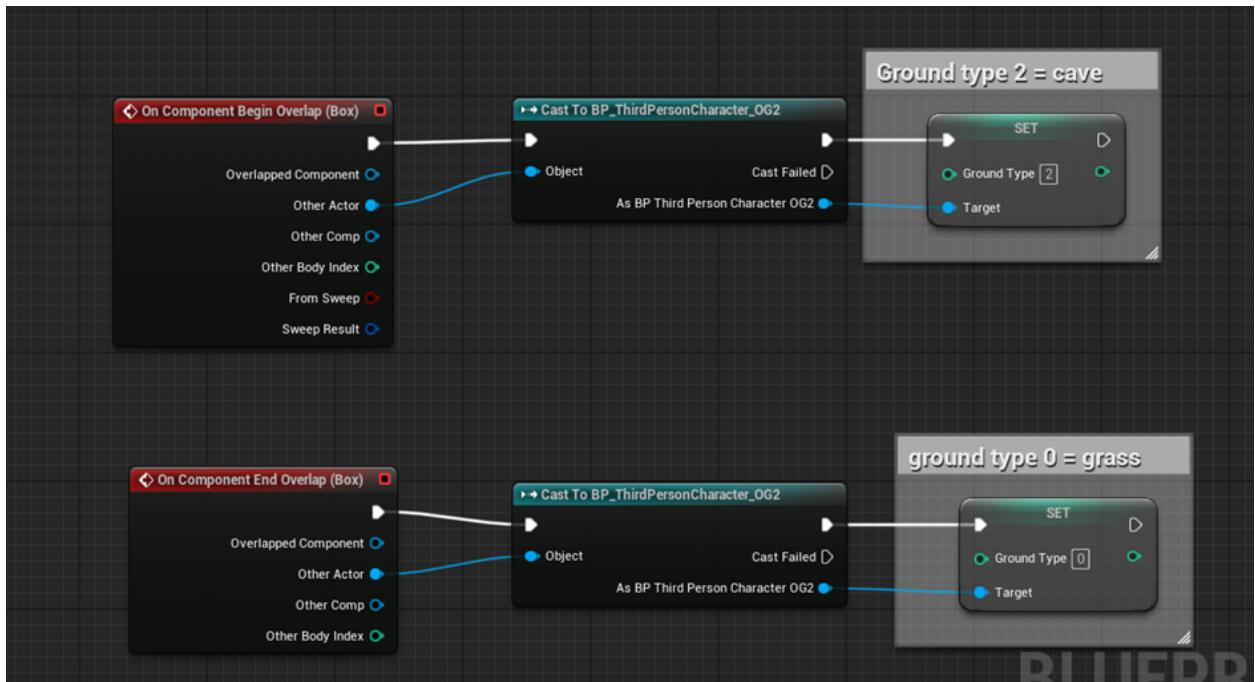


Here is the code for when the player lands after falling or jumping. It uses the same concept as the footsteps. An array of sounds is called and the ground type is used to grab the specific index of that array.



The footsteps use animation notifiers to call the code. An anim-notify is added on each step in the run animation, effectively calling the footstep sound to play with each step. The same technique was used for landing too.

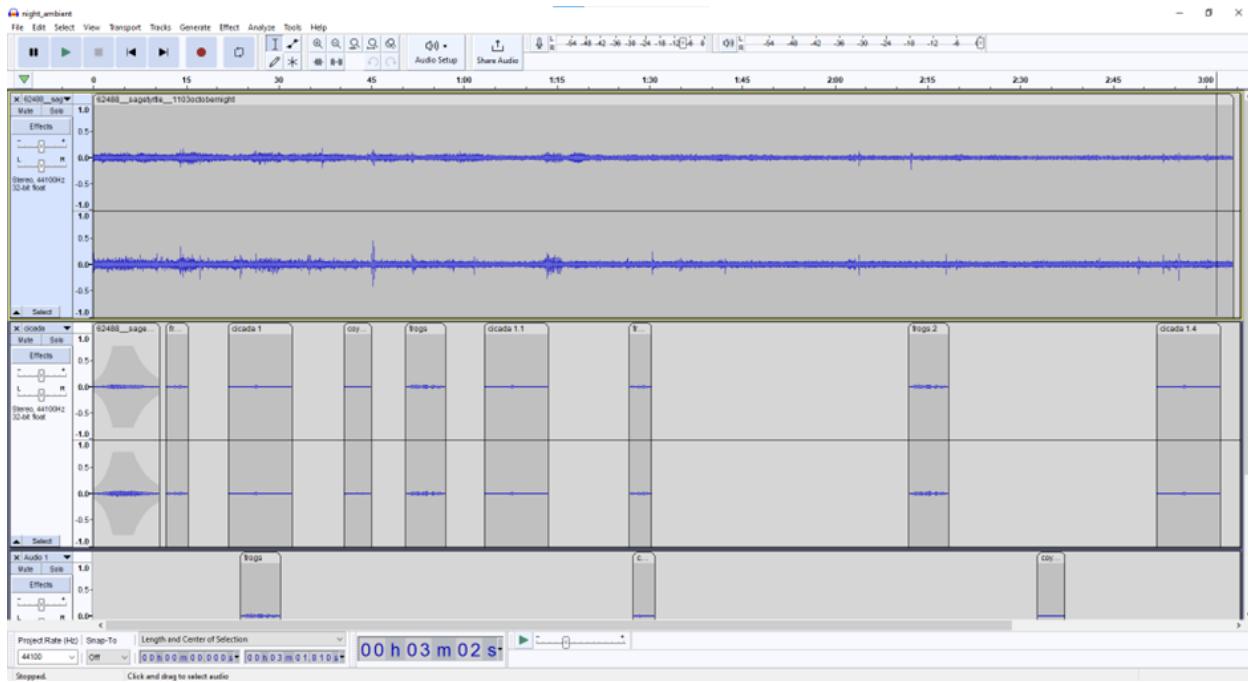
When the player is in the collision box, this code runs. This simply casts to the player, grabs the ground type variable and sets it to the correct type for that ground.



Main ambience:

A composed looping piece of music will play quietly in the background of the final version of the game to avoid dead noise and awkward silences. It will evoke the sense of adventure and exploration typical of open world games.

Natural ambient sounds (cave, nighttime, daytime, etc.) are layered with multiple sounds to create a believable soundscape.



Ritual music:

A sound specific to the rituals will be played to alert the player of their actions. This adds to the sense of atmosphere and fantasy furthering the importance of the ritual mechanic.

Animal sounds:

Animals will have realistic sounds to suit the realism of the game. The sounds of the spirit animals will also be played upon their appearance in-game.

The sounds for the animals will be gathered from freesounds and will be edited to get rid of any impurities so then it will be ready to go into further editing. More editing is done to the spirit animal sounds because of their incorporeal nature and in game look.

Button clicks:

There will be button click noises implemented as is typical and expected of modern video games.

Audio will be taken from FreeSounds and will be simple sounds to verify that the player has pressed and released a button.

Menu screen music:

A looping sample of the ambient music will be used on the menu screens to immediately set the tone of the game for the player.

Weapons:

Weapons will play a distinct sound when active. There will also be 'thud' noises when contact is made with other NPCs.

Since the weapons used in the game are all pre existing in the real world. Sound samples and recording of the weapons in different situations such as hitting multiple different surfaces are readily available to use for free such as the bows, bladed weapons and more solid options like clubs.

Easy edits can be made to the pre existing metallic sounds which are attached to the tomahawk and spear so that shortening the sound clip and changing some values will make it sound sharper which will work with the spear.

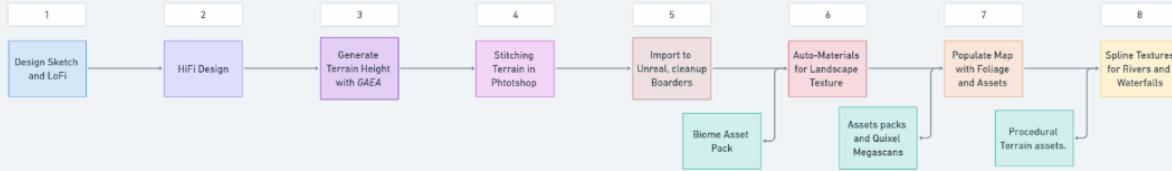
Level Design:

Map and Terrain Pipeline

1. Sketch the Lo-fi design of the map, considering the mechanics of the game and flow of the player journey. E.g. Subtly controlling player agency by making certain terrain difficult to traverse, creating a path for the player to follow.
2. Create a Hi-fi version using a vector graphic software, such as illustrator.
3. Use Gaea to generate the terrain height maps from the designs. However, Gaea can only be exported at 1K resolution. So, the design will have to be divided up into modules before exporting.
4. Stitch the modules together in Photoshop. Try to match the borders of each module, to create smoother transitions.
5. Import to Unreal Engine 5 and clean up any harsh transitions. Create micro details that Gaea couldn't create.
6. Use the auto-materials from the Biome asset pack to create the landscape textures, that are aware of the terrain and will dynamically adjust to changes in terrain angle and altitude.
7. Populate set areas with their respective foliage and rocks, using assets found on the Quixel Megascans and asset library. Enabling nanite, to reduce system workload.
8. Use spline textures and Niagara particle systems to create flowing rivers.

Map and Terrain Pipeline

Stages



Snow and Mud Deformation:

Niagara System

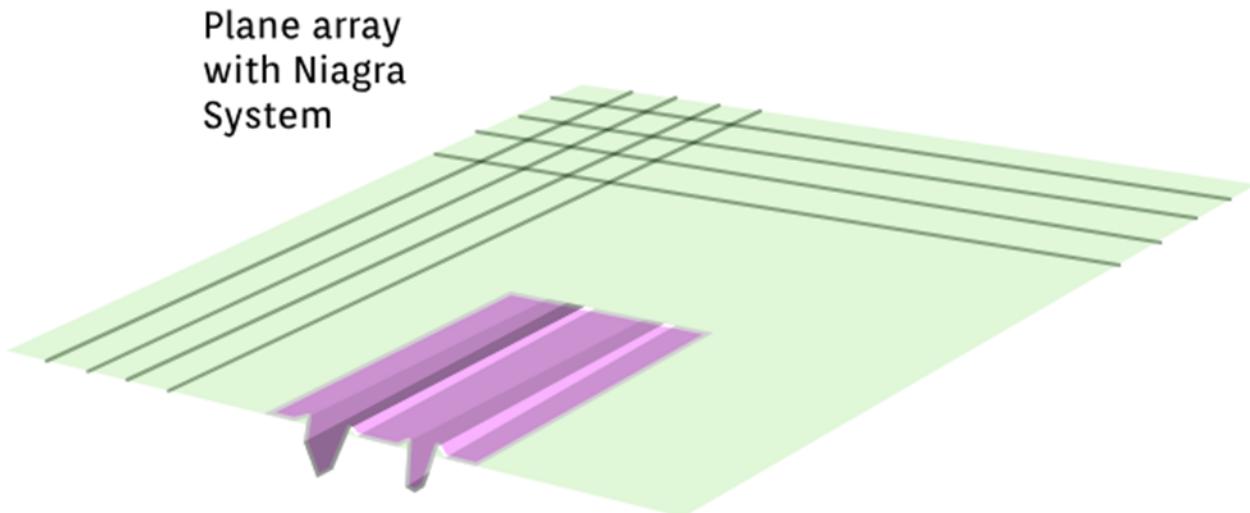
- A plane array is a single mesh that can be subdivided and deformed by a height map.
- The Niagara system used, can be deformed by the player. When the player's skeletal mesh interacts with the surface of the plane array the world position is deformed accordingly, to simulate the player walking through snow or mud.

Materials

- Normals – On top of the world displacement, normal maps are used to create the subtle detail and shading. This reduces the need for the Niagara system to be higher res.
- Material instances – The snow and mud material instances share the same base material, so can be edited exclusively of each other.

Optimization

- LODs – As the player moves away from a previously displaced section of snow, the subdivisions of the plane array reduces. This decreases GPU load.



Environment Optimization:

Textures

- Texture pooling – Reducing the resolution of textures can reduce the strain on texture pooling. Small repeated textures, such as leaves, can be optimized by reducing their max resolution to 0.5k. Reducing a texture from 2k to 0.5k reduces the pooling of that texture to a 16th.
- MIPs – Mips act as a dynamic LOD for textures. Reducing the Max LOD using biases can reduce strain on texture pooling, and increase framerate.

Nanite

- Nanite dynamically changes the mesh of an actor, maintaining a constant number of polygons being rendered. Nanite allows for higher poly meshes or more instances of a mesh. Foliage greatly benefits from nanite, reducing system load, and increasing frame rates. Nanite also reduces the need for LODs, which means trees can be continuously loaded at LOD 0.
-

HLODs

- HLODs combine actors at distances to reduce the amount of meshes to render. Having one large mesh instead of many small meshes, reduces the number of draw calls, which in turn, reduces CPU load.

Landscape Auto-Material

- Landscape auto material - The landscape auto material has a dynamic texture steaming density. The tiling density at further distances will reduce, reducing the amount of texture pooling.
- Cell bombing – Cell bombing (Figure 2) is a technique that displaces a texture, using a Voronoi noise map. Cell bombing diminishes the appearance of tiling, at the cost of frame rate. Using foliage, in conjunction with nanite, to cover tiling is more efficient than cell bombing. Cell bombing is not present in the Landscape material.

Foliage, Water bodies and Rivers:

Foliage

- Brush Passes – In Unreal Engine, foliage can be applied to a landscape using a foliage brush. Multiple passes or different types of foliage are needed for each environment. The forest for instance needs: tree pass, multiple rock and debris passes, a ground plant pass and a grass pass. The correct density of foliage, to balance aesthetics to system load, needs to be found.
- Collisions – Ground objects, such as trees and large rocks, need collisions. However, the complexity of collisions can greatly affect the frame rate due to the many instances. Having collisions on small foliage, can become frustrating for the player to navigate, whilst complicating the NavMesh.
- Culling Distance – Reducing the culling distance of grass can decrease framerate loss. However, the distance of rendered foliage instances will be closer to the camera, having a negative impact on aesthetics.
- Foliage Sources –

Multiple biomes and foliage packs.
Quixel bridge Megascans.

Foliage interactivity

- Using similar methods to the Mud displacement, specific foliage actors can be displaced when disturbed by the player character.
- Adding a noise texture to the world Position offset, makes the plant look as if they are reacting to a player walking through them.
- Simulation - The simulation works by Finding all the instances of a specific foliage actor within a given volume, then monitoring the player's current position. When a player moves through the foliage, the noise texture plays.

Water Bodies and Rivers

- Lakes and Ponds – The stationary bodies of water use the water plugin, native to unreal 5. Water zones can be created, which defines the sea level. Small ponds can be created with water brushes, which are vector shapes controlled by handles.
- Rivers – Flowing water requires a more complex system. Splines are used to map out the path of the streams and rivers. The river is split up into textured planes which are deformed by the spline. Using the splines angle of attack allows for the creation of waterfalls, as the material can be edited to make the water look more turbulent.

Wind Material

- Using the World position offset and a noise texture, within the leaf materials, allows for the creation of rustling trees. Using parameter collections, these attributes can be dynamically changed during play. For instance, the trees rustle more when it is windier.

Lighting and Postprocessing:

Lumen

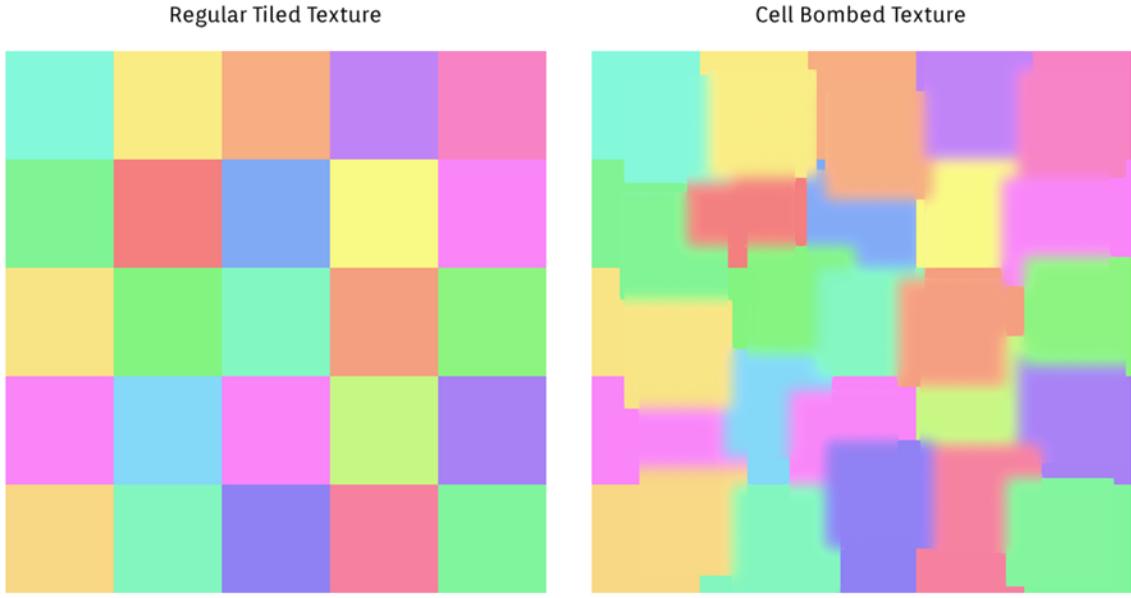
- Lumen is a global illumination and reflection light renderer that works in real time.
- In complicated scenes with many actors, lumen can have a huge impact on frame rate. Merging instances of actors together can diminish its effects.
- Reducing the max draw distance can also bolster frame rates.

Postprocessing volumes

- Postprocessing volumes are used to manipulate post processing parameters.
- They are used to change colour grading, exposure. But also, the lumen settings. You can optimize lumen by reducing the path tracing max bounces and samples per pixel.

Volumetrics

- Weather – Due to the weather mechanics, volumetrics are very key. Player and enemy visibility need to be reduced. Volumetrics are a good way to show this. Volumetric fog is aware of meshes and objects in proximity. Therefore, interiors are less affected by fog. Which is more realistic.



Map Design and Aesthetics

The map is an alternate fabrication of native America. To start off designing, the best direction to move forward was to study the diverse landscapes of America. When exploring these environments and communicating with the team, it was evident what geographic features would be incorporated into the map. The following biomes/biospheres are down below.

- Valleys are Created by massive amounts of erosion over time or Earth's plates shifting. Resulting in hills and mountains being sat in between. They incorporate streams of rivers flowing within. Making these areas a massive hotspot for wildlife and a centre of seasonal migration; as a key spot for temporary settlements.



- Forests This biome will be our most complex biome due to the fact forests incorporate a high level of efficient ecosystems within them. With most of the map being set in this area. It gives us the opportunity to potentially embody high levels of diverse wildlife. Making it the main source for hunting grounds for the player as well as the possibility of being hunted by

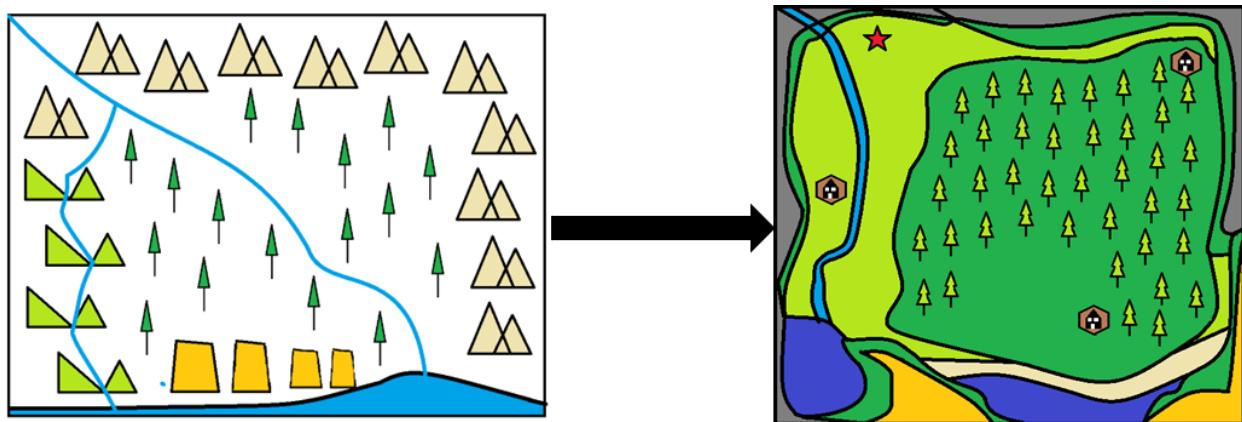
other predators. This area gives the team/sound designers a perfect opportunity to implement an appropriate level of different sounds, to help create the illusion of other untamed animals.

(Inspiration: Sierra National Forest, California and Sawtooth National Forest, Idaho and Utah.)



- Mountains/Canyons around the map will be of different climates with the northeast being snow covered mountains inspired by Colorado's terrain. The northwest and southwest are inspired by Utah and Idaho's biosphere. Seen above with the forest reference images. These mountains will serve the purpose of being a smooth hard barrier for the player. Instead of having rough walls the mountains are implemented to be barriers for the player. Mentioned earlier with the different terrains in the map, this can help the player guide through the map and help identify what section of the map they are currently in.

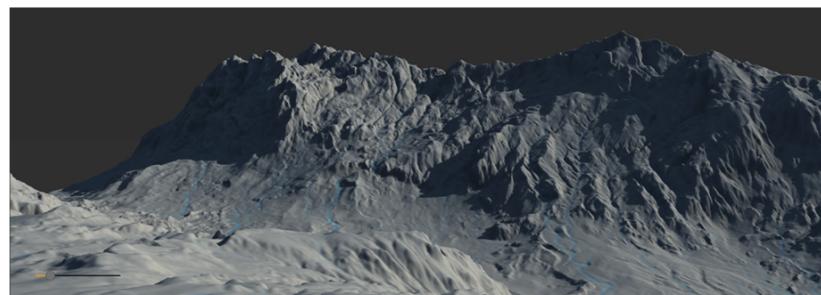
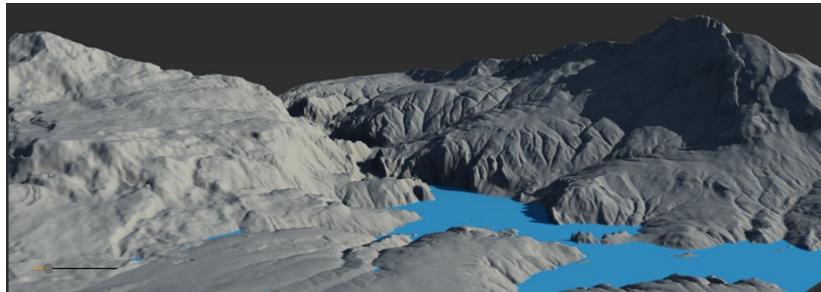
Design Having gathered all these biomes and studying American landscapes a couple of potential design ideas for the maps were created. Down below is a brief mock-up of potential plans done using Microsoft Paint.

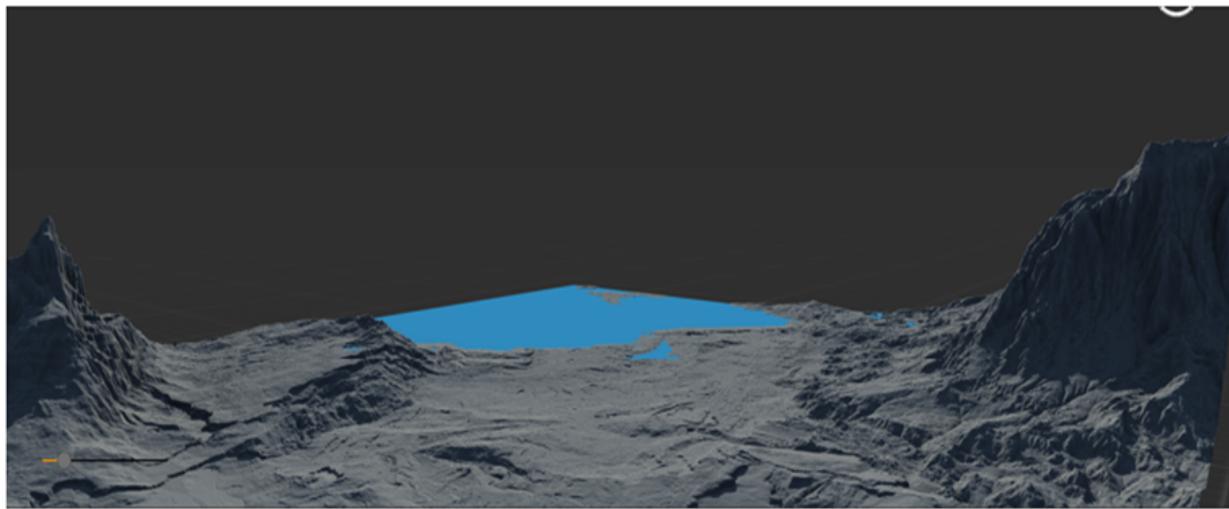
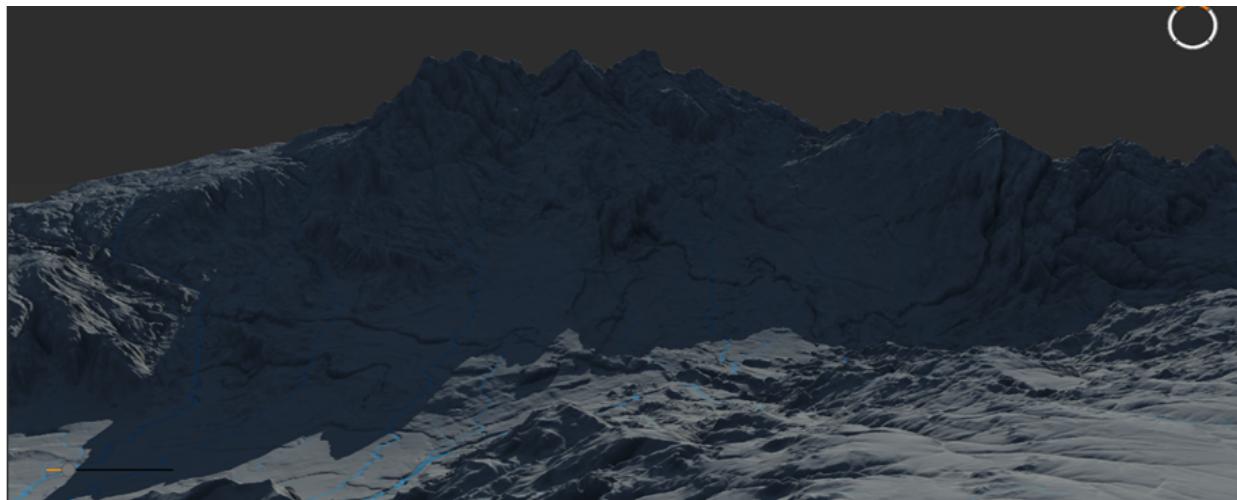


Seen in the examples above, the left side of the map has a Valley biome where the player will start off in the top of the valley. The further deep down the valley the player will then run into a lake which will be used as a soft hard barrier like the mountains. Next to this on the right is the sea of the map like the lake being used as a barrier. Shown above the Mountains are coloured in a yellow instead of a grey to resemble the change in terrain. With the appearance starting to

resemble that of a canyon just like southern America. The middle of the map is where the player will spend the majority of their time in for reasons explained later on. When wandering further up north the player will notice climate change followed by snowy mountains resembling northern America.

When further designing the map, using Gaea which is a terrain design tool for VFX, games, and virtual production. Down below are images of the map with the first three screenshots of the Valley side and the rest being the right side of the map.





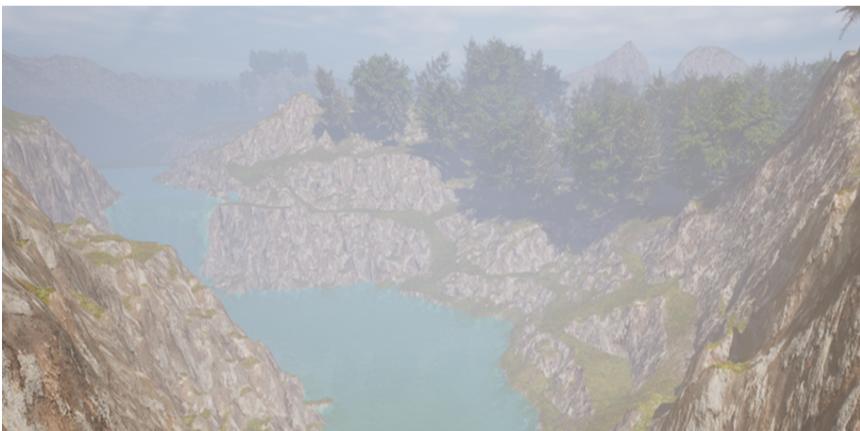
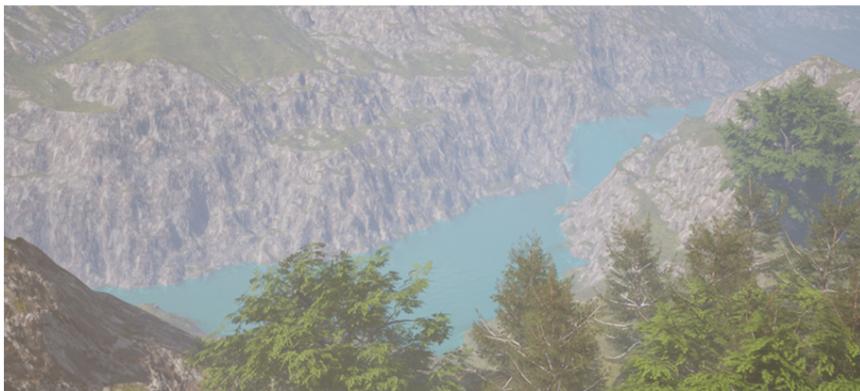
Pathing when developing the map for the demo it is important to avoid Inadequate pathing at any means possible. This is due to many flaws in open world games having the issue of the player getting lost and struggling to navigate. Resulting in users often finding themselves lost or even walking in circles. This goes back to borders discussed earlier, when designing the map soft barriers will be used to help guide a clear path to the player. This can be incorporated by using rocks, trees or ditches to steer the player away and make sure they follow the trail.

When implementing these soft barriers, the player will still have the option to go through these blockages, but it will cost them time and patience. This subtle disruption makes the player choose to not go off the hook and find themselves completely misguided, whilst still having the fundamentals of an open world game. With the paths placed around the map they will all lead to areas that are important eg; Landmarks, Key hunting spots and more. When designing these areas, I will keep in mind that flow of play is important.

To make sure this is done each of these areas/sections of the map will be connected to each other using trails. With the trails being implemented correctly and giving the player a clear

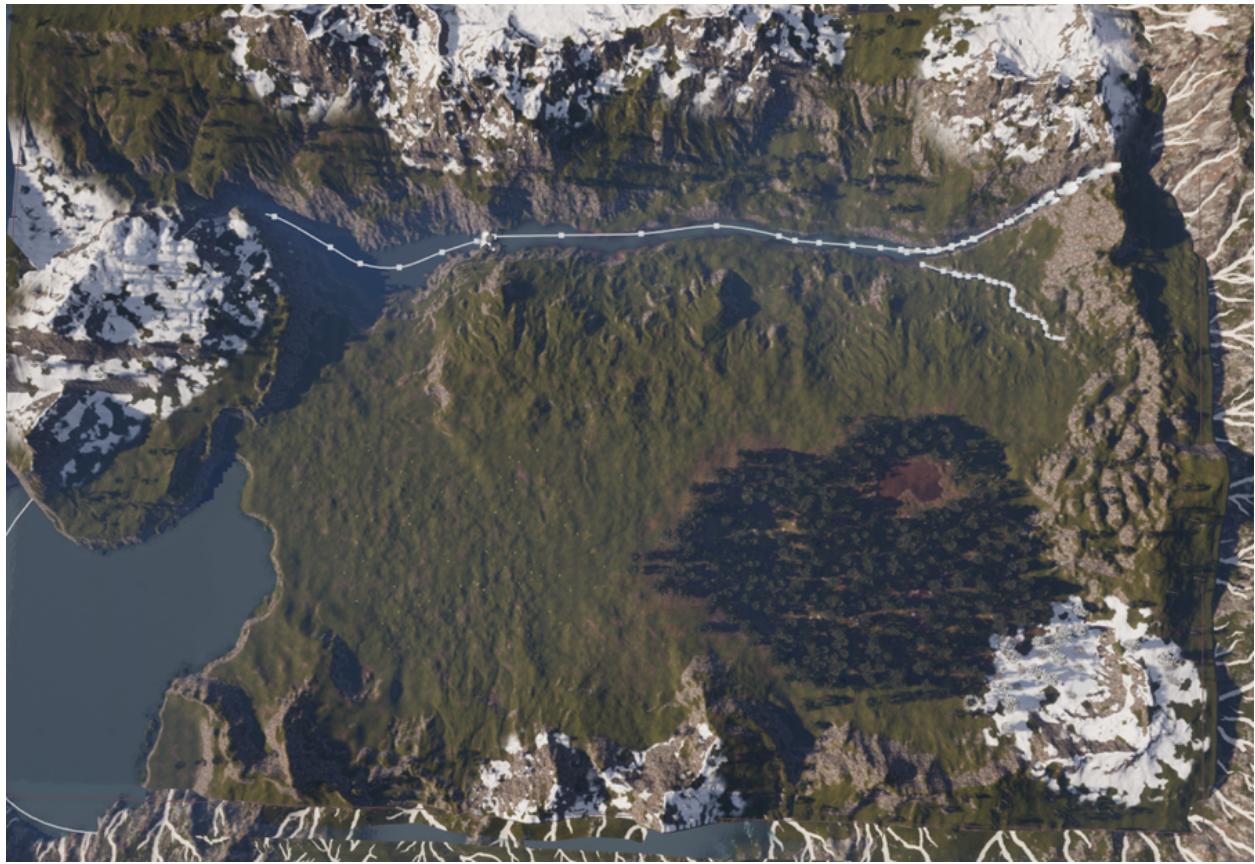
navigation of the map, users will often not have to find themselves going off and on the map to know where they are. As well as this each section of the map will have a clear difference in climate and biosphere. For example, drier ground, snowy mountains, taller trees, muddy terrains, wet and rainy hills, flat plains, a valley and rocky canonised mountains. With these variations of biomes being implemented the player will not be misaligned when patrolling the open world.

Down below are images of the map implemented into Unreal Engine 5. This area shown is the waterfall area located south of the valley. In the first image the path is highlighted using MS Paint.





Note these are early images off the level and not the final product. Here is an early photo of the map's full layout.



Camp Design

Research For the camps located around the map, a realistic portrayal of Native American settlements has been followed. Before the designing process had fully started it was evident that the best approach was to research their camps. This was to help develop an understanding of their culture and the basic layouts of the camp.

Teepee Native Americans used tents to live in and were named Tepee. Unlike normal tents today these were made using animal pelts placed over wooden poles. The tents would have holes on the top to allow smoke to escape the inside of the tent. What made the Tepee so great is its durability. The tent provides warmth from the harsh weather and coolness from the scorching heat in the south. The main reason they were so useful was it fitted in with Natives constantly relocating; it was easy and quick to deconstruct and reconstruct.

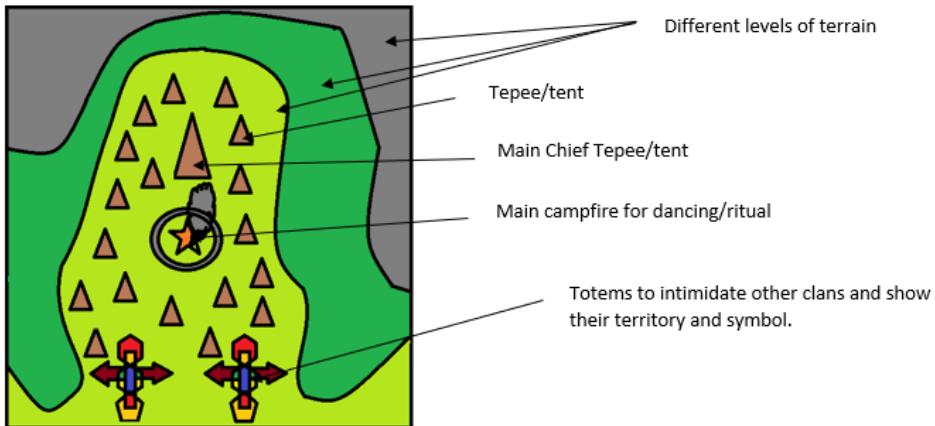
Totem Native Americans used totems as a symbol of their clan/family or spiritual symbol. These statues were commonly placed around native camps. To help identify their territory, dances and symbols. As well as serving the purpose to help guide and protect you. These statues were mainly carved out of wood and mended into animals such as: Birds, Bears, Frogs, Wolves, Humans and others.



Campfires Native Americans used massive fires near or in the middle of their settlements. This was most commonly used to help summon spirits as well as help purify or scare bad spirits, i.e. The infamous Wendigo. This was due to many native American clans/families seeing fire as a use of purification. Commonly these acts of fire would also be performed with dance rituals as dancers would also be attracted by the power of fire/purification. Helping to strengthen the sacred act of fire. These dance rituals fit into our theme of our game with players being able to change the game/level using these rituals. This makes it essential for my design to have a giant fire implanted in the middle.



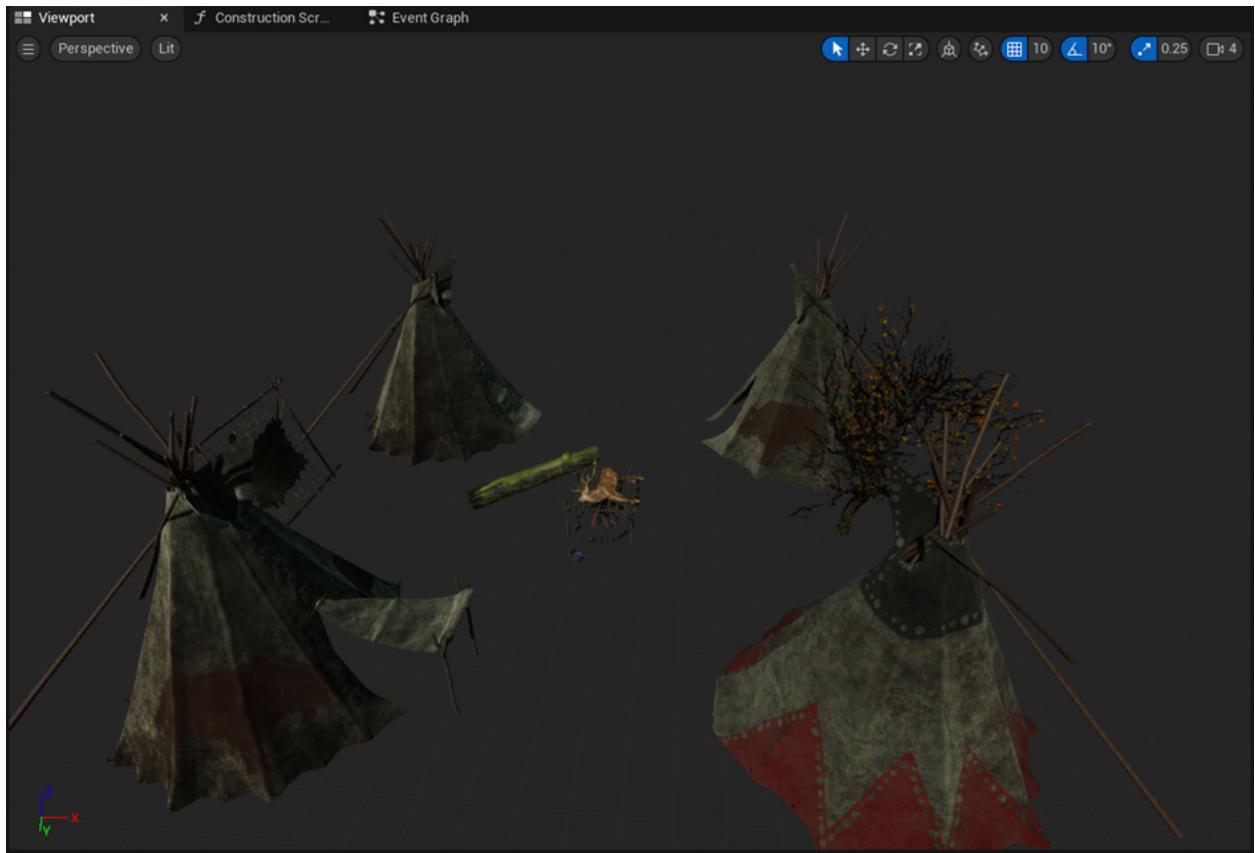
Design Having gathered all of the key components of what makes a fantasy take on a Native Camp, a potential layout of the camp was drawn. See down below using Microsoft Paint.



Finishing off the design Once the settlement was sketched and mapped out, construction of the camp on unreal engine 5 was started. Here below you can see the progress of the camp into the map made earlier.







The camp is built then added to a blueprint.

Once placed, these blueprints are converted back to static meshes and a Cull Distance Volume is used to unload them when the player is a certain distance away.

Cave Design

For the map with biomes and settlements already implemented natural voids are added into our game by use of caves.

Before immediately starting on the cavern, these voids were researched. Exploring their use as a place of habitat, danger or exploration.

Cave Types

Sea Caves:

Sea caves are located around the world next to coastlines or massive streams. They are formed by massive amounts of wave friction causing erosion over millions of years.



Lava Tubes:

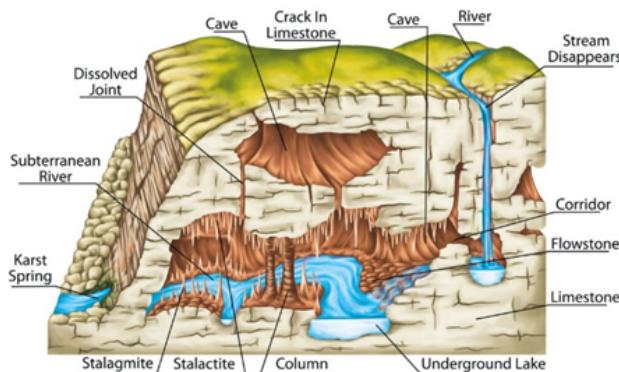
Lava tubes/ caves are created when lava from a volcano underground streams through the crust. Over time this stream creates a smooth tunnel which eventually hardens when the lava cools down or is eventually redirected.



The thought of potentially having Lava implemented into the cave given the illusion the player is potentially in a volcano sparks excitement.

Solution Caves:

Solution caves are the most common of caves around the world. Formed by the formation of rainwater breaking down onto cracks of rocks. Due to rainwater being acidic this eventually dissolves the rocks. Many solution caves have their own stream of water pouring down from the source. This stream eventually builds up and in most cases forms a river. Perfect for our map with the valley and river.



Building the cave

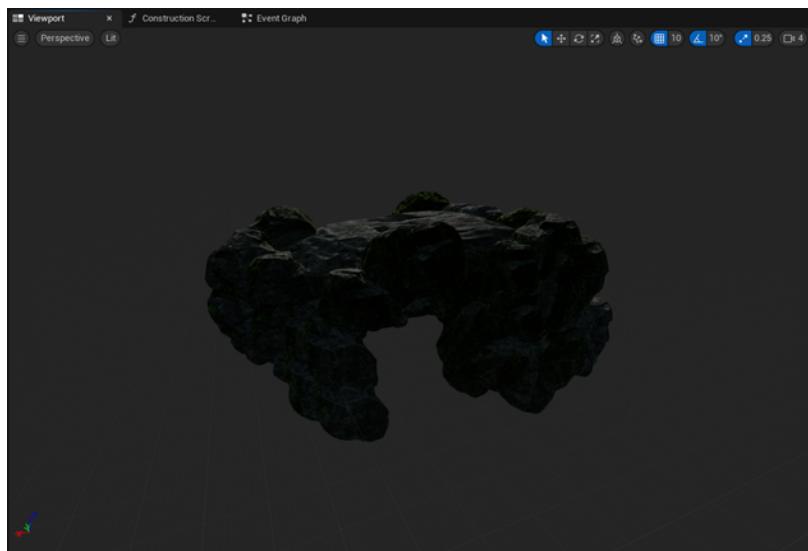
The cave will be located directly above the large settlement and next to the valley.

This is seen with the red star resembling the cave and the orange circles showing settlements.

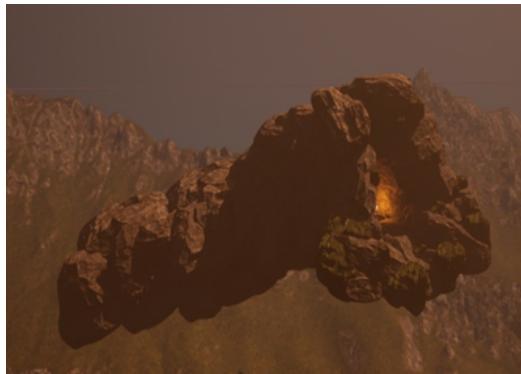


As seen the cave is placed where the second stream of water will flow and join the main river into the valley. It is also directly next to the village making it more likely to be explored.

To make the caves, rock assets are used to make the walls and ceilings. Some of these assets had materials that update as they are moved, adding variety to the look of each rock. Assets are grouped together and used to create a blueprint so that they can be easily added into the main game.



When developing the cave, lights and decals are used to help the player be able to clearly navigate through the cave. Here below you can see the design evolve from one level to three.



With this image directly above the cave was going to be designed as this but upon playing the entrance of the cavern seemed lifeless and empty. The cave was completely redesigned.



The entrance of the cave is designed in a way that the player will plummet once entered. After having fallen down the player will not be able to return to the entrance of the cave. This is done to encourage the player to continue their journey within the cave and find another way out.

Here is the redesigned entrance of the map. The implementation of glowing mushrooms was to add light for the player and to incorporate life and fantasy. The totem placed there is to show that this cave is a base for potential bad tribes. The smoke down below is the pit of lava flowing beneath the cave telling the player that this place is like Hell itself and is a place of evil and darkness. Across the cave cages of animals are placed around the map equipped with bones of these deceased mammals. Telling the player this tribe dwelling down here have no respect for any spirits and is a place of torture and animal sacrifice. This can be seen with the easter egg placed into the main area of the cave which is a reference to a popular film.



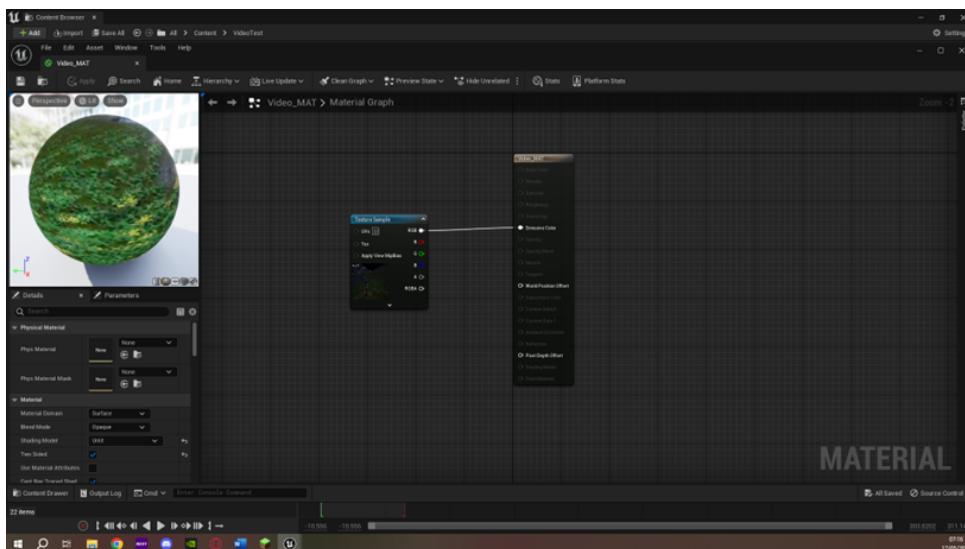
In the cave stalactites and tree roots will be placed across the roof of the cave to create a more diverse void. Stalactites are formed from water and minerals dripping from the ceiling. This creates the opportunity to add dripping effects and other audio noises into the cave. To get down to the second floor the player has two paths to follow to establish a natural flow of play. With a way to go down and another to go back up. When down on the level the player will encounter the tribe/cults settlement and tortured totem.



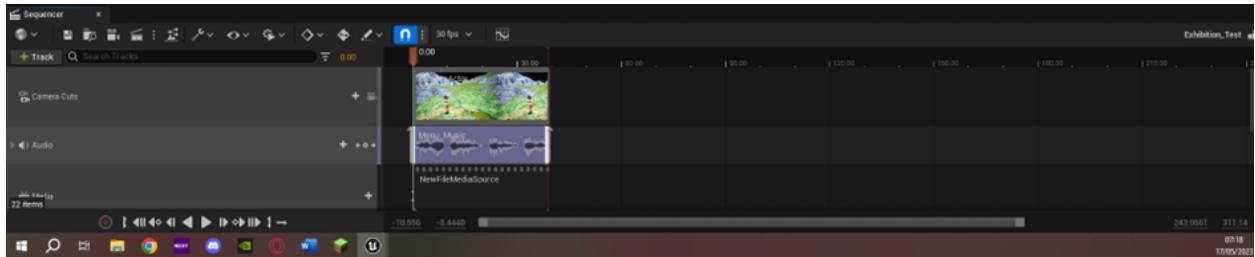
This area is the exit of the hellish cave, and the player will encounter a stream of water. This stream leads to the valley river and eventual waterfall. The totem placed here is slanted and fallen over to a boulder in the exit. This is done to show to the player how the settlers in this cave have no respect for their own spirits and soul. Following the stream, the player will be guided to the exit and leave the volcanic and bad spirited cave.

Finalising the Vertical Slice:

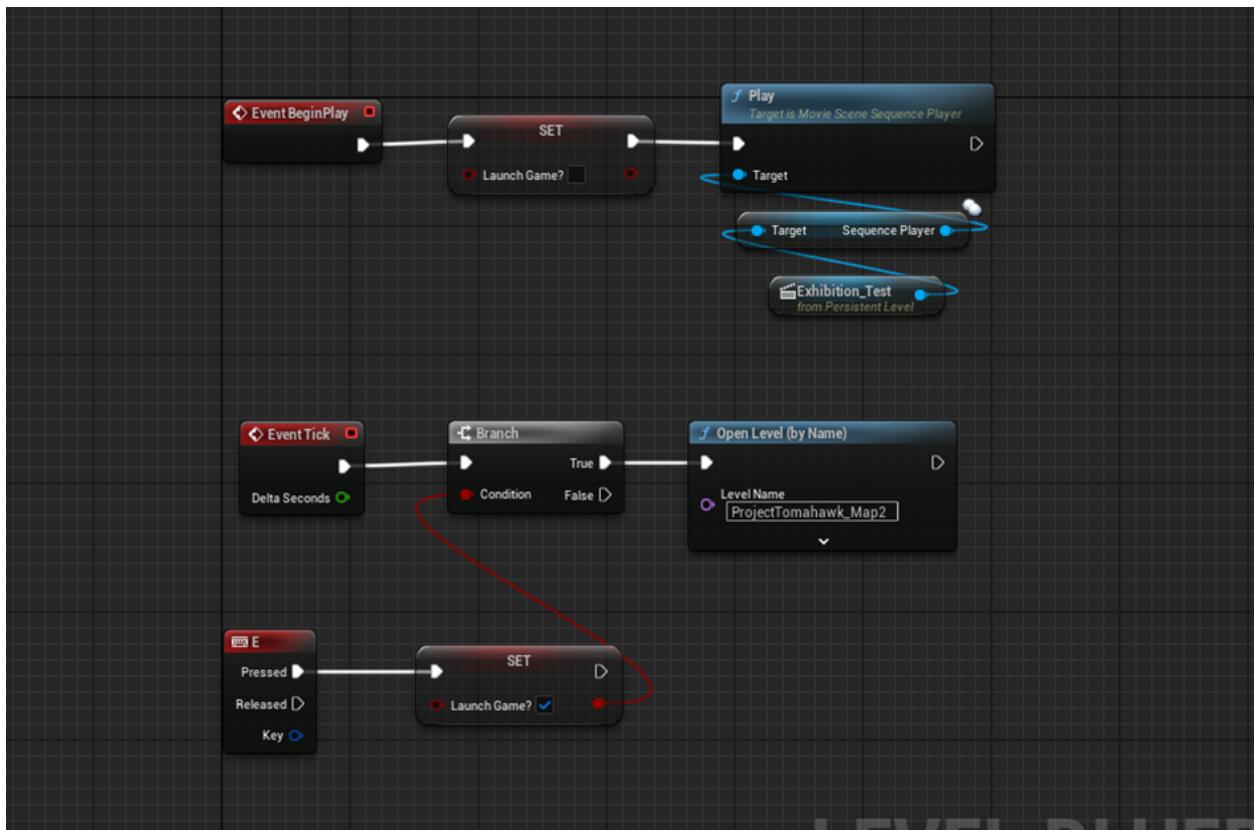
For the attract mode, some gameplay is recorded and edited into a video. Then, in the engine, an image plate is created and attached to a camera. Importing the video as a media asset, a material is created that was unlit and two sided to ensure it wouldn't be affected by lighting.



A level sequence is created by using a media track and assigning to the video file. Finally, the camera is tracked in front of the image plate.



Then in the level blueprint of this new level, the video is played on the begin play and made so that if E is pressed, the main game will launch. *Note this was later changed to Spacebar to launch the game, not E.



References:

- Anon. *Amore Matte Velvet* [online] loomefabrics.co.uk. Available from: <https://www.loomefabrics.co.uk/shop/amore-matt-velvet-curtain-contract-upholstery-fabric.html> [Accessed 16 May 2023]
- Anon. *Bear Totem Tattoo*[online]www.imgur.com - Online Image Arcade!, Pintrest.com, Available from <https://www.pinterest.fr/pin/95420085830395348/> [Accessed 18th Feb 2023]
- Anon. *Best Lava Tubes to Explore in the US* [online] topozone.com. Available from: https://www.topozone.com/lava-tubes-explore/#google_vignette?utm_content=cmp-true [Accessed 16 May 2023]
- Anon. *Cave Types* [online] nckri.org. Available from: <https://nckri.org/caves/types/> [Accessed 16 May 2023]
- Anon. *Forests of the United States* [online] en.wikipedia.org. Available from: https://en.wikipedia.org/wiki/Forests_of_the_United_States [Accessed 16 May 2023]
- Anon. *Mojave National Preserve* [online] yiftahshahar.com. Available from: <https://www.yiftahshahar.com/2022/02/mojave-national-preserve-lava-tube.html> [Accessed 15 May 2023]
- Anon., 2018. *Native American Totems* [online] ciscosgallery.com. Available from: <https://ciscosgallery.com/blogs/library/native-american-totems> [Accessed 16 May 2023]
- Anon. *Deer hunting Indian style* [online]. Primitivearcher.com. Available from: <http://www.primitivearcher.com/smf/index.php?topic=50839.0> [Accessed 20 Feb 2023].
- Anon., 2023 [online] Google.com. Available from: https://www.google.com/search?q=american+eagle&tbo=isch&ved=2ahUKEwjD5a_Q06T9AhW6U6QEHQ6AB2MQ2-cCegQIABAA&oq=american+eagle&gs_lcp=CgNpbWcQAzIHCAAQsQMQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIFCAAQgAQ6BAgjECc6CAgAEIAEELEDUOoHWKIZYllaaABwAHgAgAE_iAG9BpIBAjE1mAEAoAEBqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=slHzY8NNuqeR1Q-OgJ6YBg&bih=937&bih=937&biw=1920#imgrc=0o2pHfrE_eV9sM [Accessed 20 Feb 2023].
- Anon., 2023. *Third Saturday: Rug weaving* [online]. Utah.edu. Available from: <https://umfa.utah.edu/third-saturday-rug-weaving> [Accessed 20 Feb 2023].
- Anon., 2023 [online] Google.com. Available from: https://www.google.com/search?q=wild+deer+america&sxsrf=AJOqlzUKSxDvAvQXVCsh6PBEVyatfvOL1g:1676915303678&source=lnms&tbo=isch&sa=X&ved=2ahUKEwjD5a_Q06T9AhW6U6QEHQ6AB2MQ2-cCegQIABAA&oq=wild+deer+america&gs_lcp=CgNpbWcQAzIHCAAQsQMQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIECAAQQzIFCAAQgAQ6BAgjECc6CAgAEIAEELEDUOoHWKIZYllaaABwAHgAgAE_iAG9BpIBAjE1mAEAoAEBqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=slHzY8NNuqeR1Q-OgJ6YBg&bih=937&bih=937&biw=1920#imgrc=qfK-JT2onsu1tM [Accessed 20 Feb 2023].
- Anon. *Metamorphic Fabric* [online] housedecorinteriors.co.uk. Available from: https://www.housedecorinteriors.co.uk/fabrics/har440379_metamorphic_fabric_yucca_harlequin

[prism_plains_greens_collection/#.ZGPX0-rMJD8](#) [Accessed 16 May 2023]

Anon. *Sea/Littoral Caves*. [online] nps.gov. Available from:
<https://www.nps.gov/subjects/caves/sea-or-littoral-caves.htm> [Accessed 16 May 2023]

Anon. *Valley Manipulation* [online] powerlisting.fandom.com. Available from:
https://powerlisting.fandom.com/wiki/Valley_Manipulation [Accessed 16 May 2023]

Bernat. J.A. *20 of the Most Beautiful Sea Caves in the World* [online] rd.com. Available from:
<https://www.rd.com/list/sea-caves/> [Accessed 16 May 2023]

Borkia. 2013. *Animal Fur Texture* [online] depositphotos.com. Available from:
<https://depositphotos.com/24156477/stock-photo-animal-fur-texture.html> [Accessed 16 May 2023]

Carlos.B, 2016. *The World's Most Beautiful Cave?* [online] anothermag.com. Available from:
<https://www.anothermag.com/design-living/8973/the-world-s-most-beautiful-cave> [Accessed 16 May 2023]

Cumming,J., *White-Tailed Deer* [online] NationalGeographic.com. Available from:
<https://www.nationalgeographic.com/animals/mammals/facts/white-tailed-deer> [Accessed 20 Feb 2023].

Delimont.D. *The 20 Most Beautiful Forests of America* [online] countryliving.com. Available from:
<https://www.countryliving.com/life/travel/g3252/beautiful-forests/?slide=13> [Accessed 16 May 2023]

Fareed Khan. *HAIDA - Eagle of the Haida Gwaii* [online] Flickr.com., Available from
<https://www.flickr.com/photos/fareed-khan/8396586955> [Accessed 18th Feb 2023]

Hansen,M., 2020 [online] themeateater.com. Available from:
<https://www.themeateater.com/conservation/habitat/native-americans-the-original-quality-deer-managers>[Accessed 20 Feb 2023].

Kendall.M,2012.*Ritual Flames* [online] magazine.pomona. Available from:
<https://magazine.pomona.edu/2012/fall/ritual-flames/> [Accessed 16 May 2023]

Krahmer.F. *The 20 Most Beautiful Forests of America* [online] countryliving.com. Available from:
<https://www.countryliving.com/life/travel/g3252/beautiful-forests/> [Accessed 16 May 2023]

laginartisan, *Native Indian American 100 symbols from pottery, textile and petroglyph* [online]stock.adobe.com, Available from:
https://stock.adobe.com/uk/search?k=native+american+symbols&asset_id=541063474 [Accessed 19th Feb 2023]

Media.I. *Postojna Cave Photo Gallery* [online] travelslovenia.org. Available from:
<https://travelslovenia.org/postojna-cave-pictures/> [Accessed 16 May 2023]

PROTOFACTOR INC. 2018. *Animal Variety Pack* [online] Unrealengine.com. Available From:<https://www.unrealengine.com/marketplace/en-US/product/17c2d7d545674204a7644c3c0c4c58ba> [Accessed 20 Feb 2023]

Shutterstock, 2023 [online] Google.com. Available from:
https://www.google.com/search?q=eagle+blueprint&tbo=isch&ved=2ahUKEwj7hlaX06T9AhUkUqQEHXVXDHMQ2-cCegQIABAA&oq=eagle+blueprint&gs_lcp=CgNpbWcQAzIECCMQJzIFCAAQgAQyBggAEAUQHjIGCAAQBRAeMgYIABAEB4yBggAEAUQHjIGCAAQBRAeMgYIABAEB4yBggAEAgQHIDvC1jxFWD8GGgAcAB4AIABOYgBpwGSAQEzmAEAoAEBqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=N7HzY7uNMKSkkdUP9a6xmAc&bih=937&biw=1920 [Accessed 20 Feb 2023].

Shutterstock, 2023 [online] Google.com. Available from:
https://www.google.com/search?q=eagle+blueprint&tbo=isch&ved=2ahUKEwj7hlaX06T9AhUkUqQEHXVXDHMQ2-cCegQIABAA&oq=eagle+blueprint&gs_lcp=CgNpbWcQAzIECCMQJzIFCAAQgAQyBggAEAUQHjIGCAAQBRAeMgYIABAEB4yBggAEAUQHjIGCAAQBRAeMgYIABAEB4yBggAEAgQHIDvC1jxFWD8GGgAcAB4AIABOYgBpwGSAQEzmAEAoAEBqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=N7HzY7uNMKSkkdUP9a6xmAc&bih=937&biw=1920#imgrc=q7MpEL_ICZ1YRM [Accessed 20 Feb 2023].

Thapa.S, 2023. *Animal Design Concept Art*. Bournemouth. Unpublished.

Webb.R, 2006. *The Newlands Valley* [online] en.wiktionary.org. Available from:
https://en.wiktionary.org/wiki/valley#/media/File:Newlands_-_geograph.org.uk_-_283875.jpg [Accessed 16 May 2023]

Wei.J. [online]usatoday.com Available from:
<https://eu.usatoday.com/story/travel/experience/national-parks/2022/08/19/hawaii-volcanoes-na-huku-lava-tube/7845347001/> [Accessed 16 May 2023]