**CS465 – Design Team #5**

**Design Document for:**

# Tribe to Survive

**A virtual reality economic survival experience**

“Native North America probably wasn’t this fun…”

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Design History

The following is a summary of changes made specifically to this document. The version numbers do not correspond to versions of the application architecture, but rather the version of this document itself.

## Version 1.10 <Template Placeholder>

[Change Description]

1. Itemized modification 1
2. Itemized modification 2

# Project Overview

## Philosophy

### Focus

The primary goal of this project is to utilize VR genre and mechanics research to develop an immersive, educational experience that is both enjoyable and informative. Having relation to both history and education, the genres of exploration and simulation are to be applied in order to achieve this goal.

### Inspiration

Gameplay inspiration has been taken from a number of existing experiences and games. Primarily, cultural simulations that include interactive elements for users to feel a part of the progression of a culture through time. Examples of this include classic games such as Oregon Trail and Civilization. Gameplay elements from this genre are to be mixed with survival mechanics from games such as *Tharsis* or *FTL: Faster Than Light*, where users are responsible to manage entities throughout dynamic events. The result is an experience with primary tasks involving casual status management, while secondary tasks performed through “mini-games.”

## Common Questions

### What is the project?

This project is an exploration of concepts, applying modern VR technology research to the development of a unique educational experience.

### Why develop this project?

This project is relevant for two main reasons. First of all, VR as a platform has quickly come into various industry spotlights, and research into possible applications for the platform deserves exploration. This project is also relevant as an opportunity for both the developers and stakeholders to discover how digital art can continue to serve as a learning tool while stimulating the imagination.

### What is the setting?

The setting for this project takes the user back in time to pre-European occupation of North America. Interactions are displayed and/or simulated for tribes of various economic statuses.

### What does the user control?

The user will control decisions made for one or more tribes in a primary management system, as well as partaking in a variety of actions during any “mini-games” related to these decisions.

### 

### What is the main goal?

The main goal is to advance the tribe(s) culture throughout time, combating opposition from other tribes or external influence from Europeans or natural disasters.

### What’s unique about this project?

This project is unique due to the technology (VR), world/time setting, and mixture of gameplay elements.

# Feature Set

## General Features

Mixture of 2D and 3D graphics.

World-space user interfaces.

Gaze-based interaction.

Randomly-generated events and outcomes.

## Multiplayer Features

(None)

## Editor

(No world editor available)

## Gameplay

The first round is the combat arena. The tribes are visible, and have basic attributes, and holdings of Assets as well. Player's will freely roam the plain until they select an event.

Events include hunting, trading, and farming. These populate the board prior to the beginning of the new round.

After completing (failure or success) an event, the end of the round resolves the events outcome and the penalties of unattended events if applicable.

Several types of events will spring up, which may be attacked (adds to repair/work required to benefit), or supported (adds to the repairs/work required to not be harmed by the event). Beneficial events, once completed, grant additional attributes and/or items for a number of future events. Instead of using pure turn based mechanics, your choice of which events to tackle first causes "rounds" to elapse.

Each event which is a mound icon that will have animation(highlights), which will stand out against a mostly still background. A player approaches the mound within touching distance, to press a button which enters the die rolling game. Entering and rolling dice commits the player's game to moving another round into the future, which increments the age of the world, as well as incurs the effects of all events on the board.

Some events can be mini-games or simply museum pieces. On this note, significant differences in how the event affects your attributes and assets provide novelty. In addition, a number of historical events must have variation and number more than 6, preferably 8 or more. Time passing changes the event pool, and each event can have a predisposition, to different outcomes. Pools consist of chronologically organized situations primarily dependent on the weather. Droughts, and significant warming and cooling trends from 500AD to present.

Every round's end causes the reassessment of every attribute and asset. The assets you have respond to events, and cause a change to your attributes. This allows your actions to take resolve by turn's end, setting you up for new choices in the next round.

The Game World

## Overview

Topical information of the Native Americans based on archaeological evidence.

Cultural tidbits that survive via written/oral tradition.

Minor elements of science education can be presented in the following:

Description of tools

Tempered pottery

Hunting/Gathering

Architecture

Social Hierarchy

## World Features

1. Attributes = Population, Health, Happiness

2. Assets = Commodities by our standards, food, wealth, nobility

Nobility, standing, prestige, political clout, are all synonyms and in the Mound Building cultures was based upon the succession of generations of leading figures, and their subsequent burial in these mounds over time.

3. Rounds = the period from the start of the game (combat mode) through the end of completing interaction with the first event. The second round picks up at the conclusion of the first event, and marks the application of all effects of all events.

## The Physical World

### Overview

The source of conflict of the game is the early history of Native Americans that is diverse and murky. Eventually the invading European forces beset an already churning societal structure. To facilitate the conflict, tribes maintain an array of activities and mitigate a series of offenses by rival tribes, political rivals, and Europeans.

### Key Locations (Scenes)

Tribal overview: Main screen showing current status of tribes.

Activity scenes (Hunting, Trading, etc.)

### Travel

The player is in control of a hero (male/female) who runs around between the tribes administering actions and fighting adversaries to support these tribes. Several activities exist which enhance and improve the tribes, events occur which also affect the tribes periodically, with the end result that while a player's actions can save the day, long term survival requires mastery of reacting to adversity.

### Scale

While in the main scene, tribes are shown from an aerial view. When inside an activity, the user is placed into a real-world scale environment.

### Notable Objects

Tribe Attributes:

Population: A form of max score with massive impact upon the survivability of a tribe. Larger populations are primarily supported by agriculture, while the same population will require much more hunting and effort to support if they become nomadic. As climate change affected their harvest many tribes resorted to nomadic existences even as their way of life was devastated by disease and encroaching Europeans.

Health: The actual measure of a population's resistance to disease and adversity. Healthy peoples are more reasonable, and functional, while naturally surviving more attacks. Disease and constant warfare beleaguer a tribe into meek subsistence, then demise.

Happiness: War and conflict diminish the prowess and proactive potential of a tribe. Such strain reduces reactionary efficiency and causes more difficulties as unhappy people fail to confront obstacles with the same zeal.

These attributes are abstracts to facilitate player empathy. The actual gears of conflict are based upon the status of these attributes and the amounts of the following tools and miscellanea. These assets represent a particular Tribe's ability to accomplish tasks, represented by an amount of dice available to roll. A given amount of growth, requiring a given sum value of dice rolled. An asset's value is a quantity of dice that add to the respective Attribute when each round resolves.

Food: Primarily beneficial to population.

Wealth: Aids health by providing the means to survive.

Nobility: The status of a tribe is averaged as the culmination of status a tribe has, which is gained by political actions including nobility and sacrifice, but also trading savvy.

### Weather

(N/A) ?

### Day and Night

(N/A) ?

### Time

The time is to progress for the most part, actively, with no functional pause available. (Pausing is a feature that negates player actions.) Each tribe is demarked by a sector of the 360-degree, viewable area. The conflict between tribes is minor, while tribes you don't control will pose significant opposition. Each tribe may trade, negotiate, harass, and steal from others, as well as aid, and make war with them.

For computing advanced points of the game informed by previous pre-generated events, I recommend a linked list of nodes that gather the sum affects each round, apply them to the attributes and assets, then compute the A's. Record these 2 objects, the round events (could be dropped but future story can be affected), and the final score.

## Rendering System

### Overview

Unity 5+ will be used in development of scenes, deployed to Samsung Gear VR.

### 2D/3D Rendering

Low poly models will be used throughout, with texture atlases preferable. Any static scenes will be pre-rendered “domes.”

## Camera

### Overview

As a VR game, the camera considerations should always be made with user comfort in mind. Standard considerations include constant acceleration during movement, and no residual manipulation of camera angle (head-bob, shaking, etc.)

### Camera Placement

Considerations made for each scene to provide entirely 360-degree view at all times. This includes considerations such as the focus of action, or possibly mechanics employed to ensure the user is aware of objects to be focused.

### Camera Movement

Movement of the camera should be avoided if at all possible. In special cases, placing the user in a vehicular setting is acceptable (i.e. in a boat).

## Game Engine

### 

### Overview

Describe the game engine in general.

### Water

Only low-poly, low resolution water should be used, as all scenes must maintain >60 fps.

### Physics

Unity provides built-in physics interaction. In scenes where this is used, special considerations to CPU performance will be made. Only a small number of interacting objects is recommended.

## Lighting Models

### Overview

Each scene maintains a common color palette, which can differ between indoor/outdoor and night/day scenes. Scenes of a common place or time should hold similar color palettes and lighting models.

### Lighting Model (Outside - Day)

Color palette for day is similar to a typical Midwestern cloudy day. Plenty of teal, light grey, amber, and brown for the environment. Global lighting model should be used, with only a slight directional light from the sky.

### Lighting Model (Inside/Day)

Indoor day environments have bright sections bleeding through spaces in structure, while indoor illumination provided either by fire or light from entryway. Bloom/HDR should be used on simple indoor scenes. Color palette is dark and dirty.

### Lighting Model (Outside/Night)

Nighttime outdoor lighting are very dark, with only slight global/directional illumination from the moon. Most environmental lighting should either be pre-rendered (environmental dome), or real-time spotlights from fire. Color palette is extremely cool, environment illuminated with faint blue/white light.

### Lighting Model (Inside/Night)

Almost completely black in corners, but vibrant near light sources (fire). Color palette shifts to the color of fire, accented by the whites, greens, reds, and golds of character clothing and posessions.

# Game Characters

## Overview

(TBD)

## Notable Characters

(TBD)

## Interaction (Enemies, etc.)

(TBD)

# User Interface

## Overview

The user interface is entirely composed of world-scale menus, decorated or cleverly disguised as in-game objects. The following sections detail the application of user interface in each respective scene.

## Main Menu

## Tribal Status

## Hunting/Gathering

## Pottery Making

## Agriculture

## Trade

# Artifacts

## Overview

The following artifacts are showcased throughout scenes, their use and importance highlighted in any related application.

## Hunting/Gathering

## Pottery Making

## Agriculture

## Trade

# Musical Scores and Sound Effects

## Overview

(TBD)

## 3D Sound

(TBD)

## Sound Effects

(TBD)

# Single-Player Game

## Overview

(TBD)

## Single Player Game Detail #1

## Single Player Game Detail #2

## Story

(TBD)

## Hours of Gameplay

(TBD)

## Victory Conditions

(TBD)

## Persistence

(TBD)

## Saving and Loading

(TBD)

## Customization

(TBD)

# Character Rendering

## Overview

## Character Rendering Detail #1

## Character Rendering Detail #2

# Extra Miscellaneous Items

## Overview

## Stretch Ideas

# “Objects Appendix”

# “User Interface Appendix”

# “Character Rendering and Animation Appendix”

# “Story Appendix”