**Vacuum War**

**Technical Document**

**Frameworks & Libraries:**

Unity Engine 2020.3.26f

OpenXR Plug-in

XR Interaction Toolkit

**Tools & Software:**

*Visual Studio 2019* - Code Editor

Maya

Zbrush

Substance Painter

3D Dimension

{**@Lei -** hw tech stack}

**Levels:**

Single level

## **Gameplay Loop**

1. Spawn in VR environment holding the vacuum cleaner with vacuum head on
2. Click trigger to suck nut and bolts in the vacuum
3. Switch the vacuum head physically to shooter hear to transform the vacuum to gun
4. Shoot various targets in the environment.
5. Once bullets are over, switch back to the vacuum head and re-suck the objects to get bullets.

## **Mechanics Documentation**

* A vacuum cleaner with 6 DOF in VR.
* Suction:
  + Attaching vacuum head which has RFID tag of ‘vacuum’.
  + Press the trigger on the vacuum (mapped to trigger button on oculus quest 2 controllers) to start the vacuum
  + Collect the objects on the ground and increase the number of bullets in the vacuum.
  + If the vacuum is full of bullets, remove the vacuum head and switch to shooting.
* Shooting:
  + Attaching vacuum head which has RFID tag of ‘gun’.
  + Aim and press the trigger on the vacuum (mapped to trigger button on oculus quest 2 controllers) to shoot bullets from the vacuum.
  + Destroy targets to collect points.
  + If the vacuum is empty, remove the gun head and switch to suction.

## **Adding Content**

* Content in the game can be added to the Unity Engine.
* UI changes can be made in the Scene view in the engine.
* Properties on objects can be changed from various fields in the inspector tab.
* There are 3 types of scripts found in the game:
  + **Arduino hardware scripts:** scripts to make connections between the physical vacuum hardware and unity software
  + **XR Environment and Interactable scripts:** Used to setup and incorporate VR environment in the game
  + **Game Code:** Manages the game code and logic in the game for suction and shooting mechanics.

## **Release Platform:**

Windows