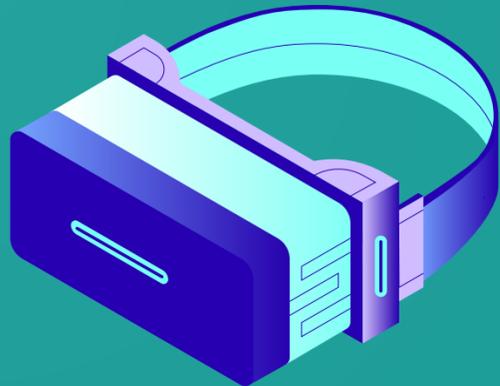


SoCal Edison Virtual Reality Training Program



Meet the Team



Fernando Torres



Martin Castorena



Cameron Cheng



Matthew Mendoza



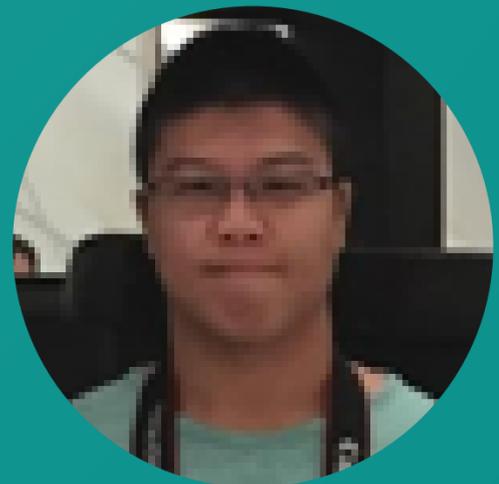
Manuel Guillen



Jaiden Holcomb



Denise Tabilas



Seng Hei James Lei



Kevin Truong



Han Cao



Meet the Team



Dr. David Krum
Advisor



Abder Elandaloussi
Liaison

Agenda



Background



Problem



Requirements and Design

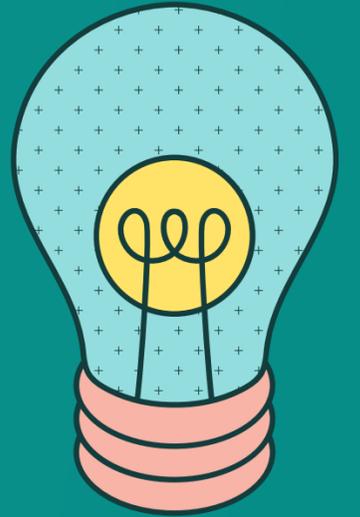
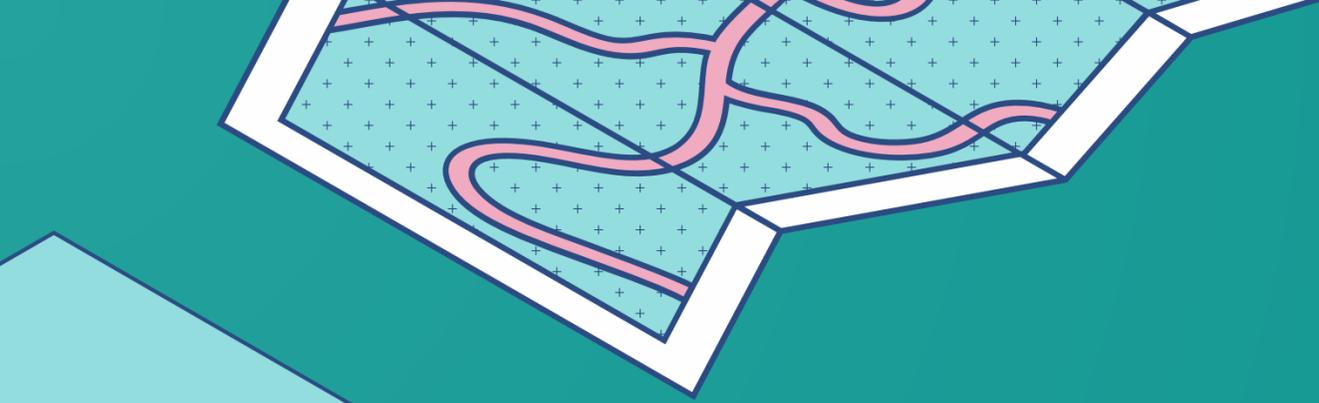


Implementation and Demo

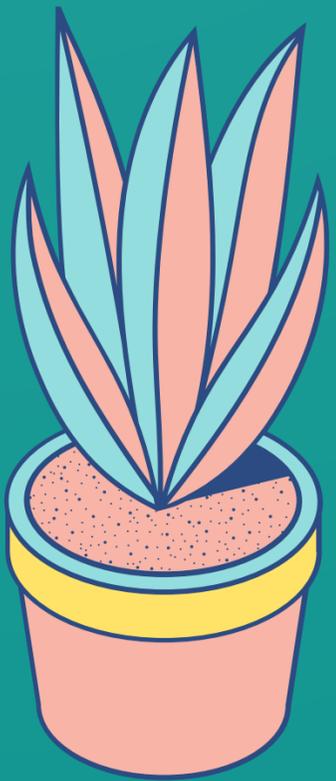


Final Words





Background



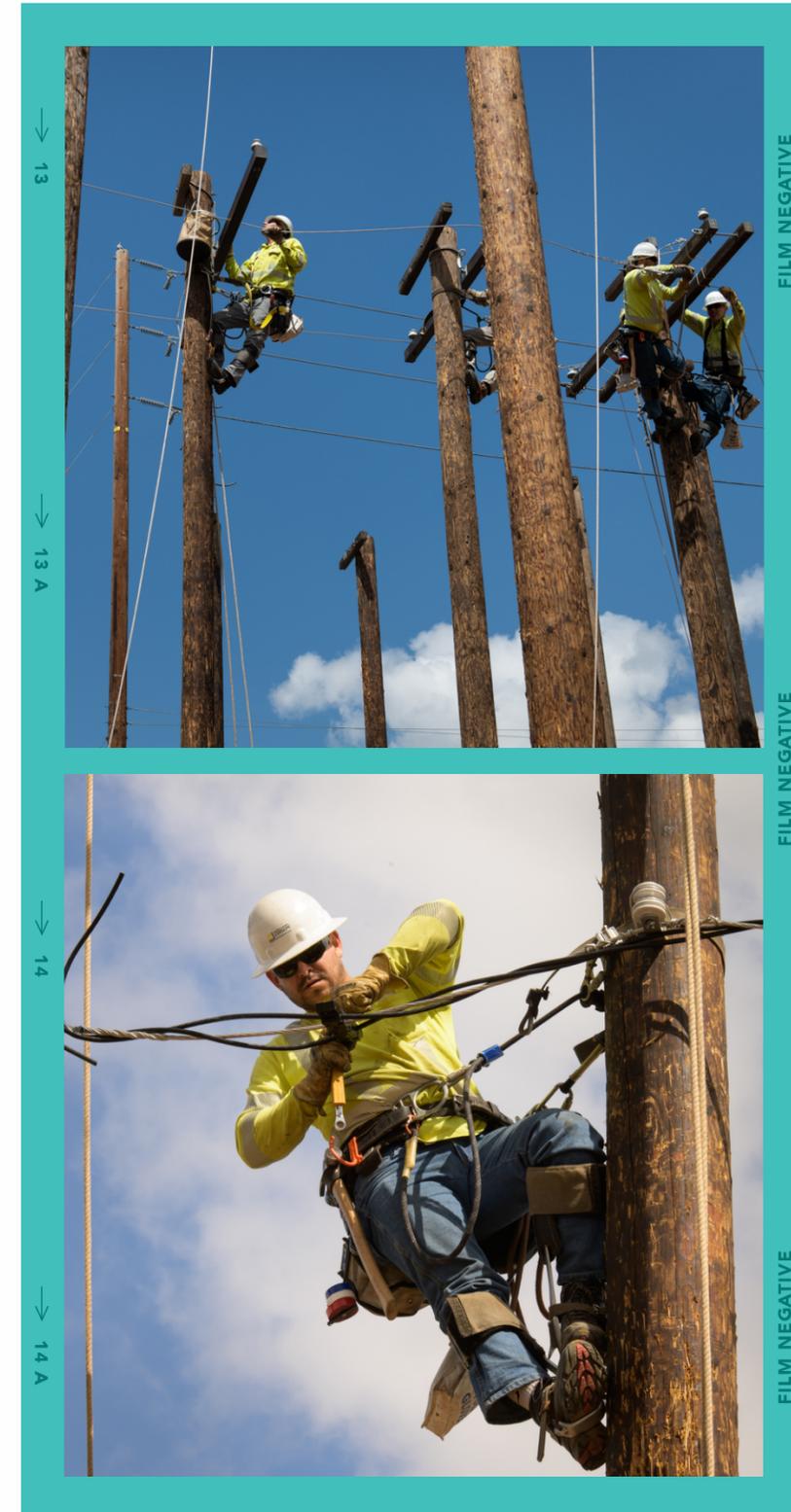
SoCal Edison (SCE)



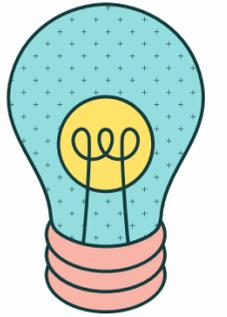
Largest branch of Edison International, serves ~15 million people



Training facility in Chino Hills



Problem



Create a new approach to training Southern California Edison worker and contractors.

Objective

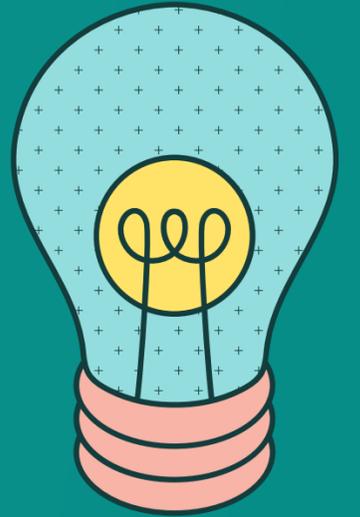
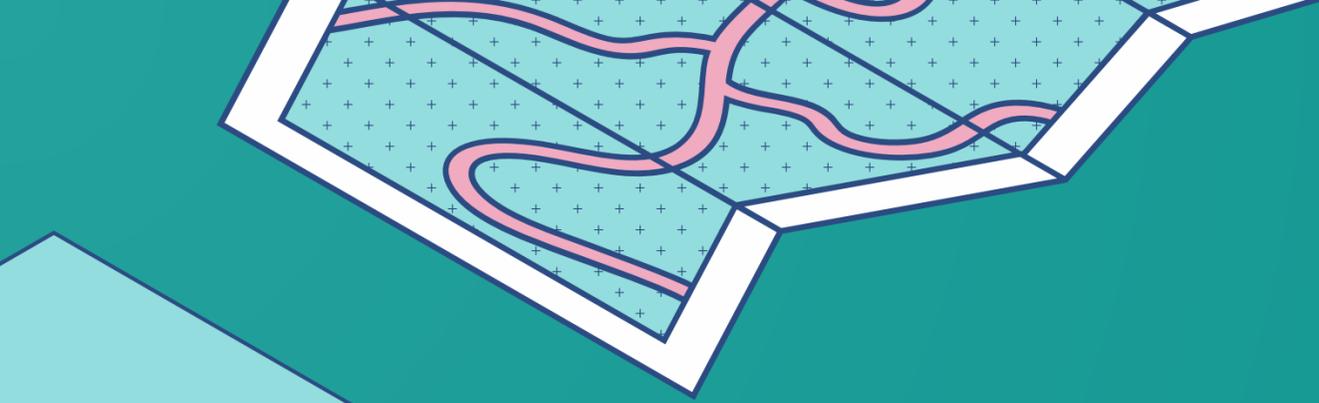
VR training simulation for both contractors and SCE workers, emphasizing the importance of installing equipment securely and appropriately while following the provided installation guide.



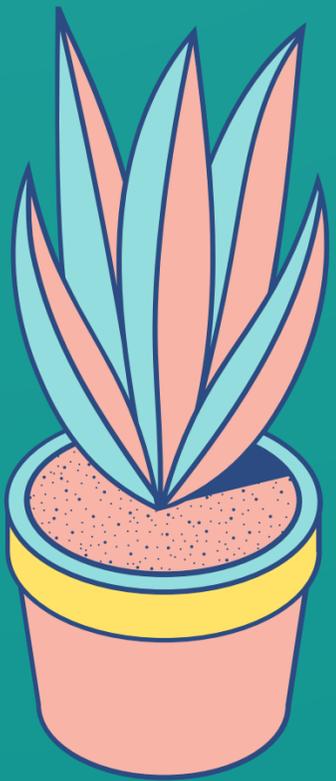
Key Requirements and Design

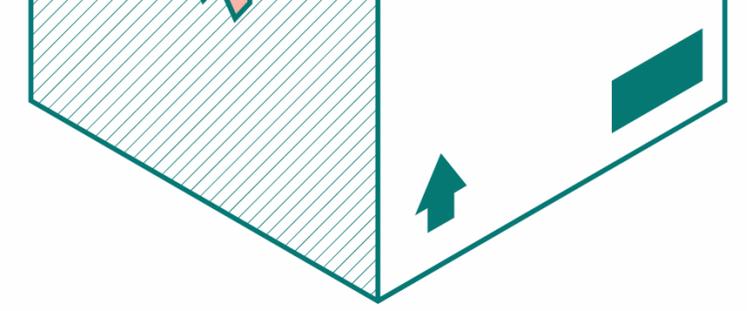
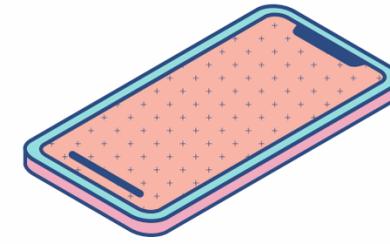
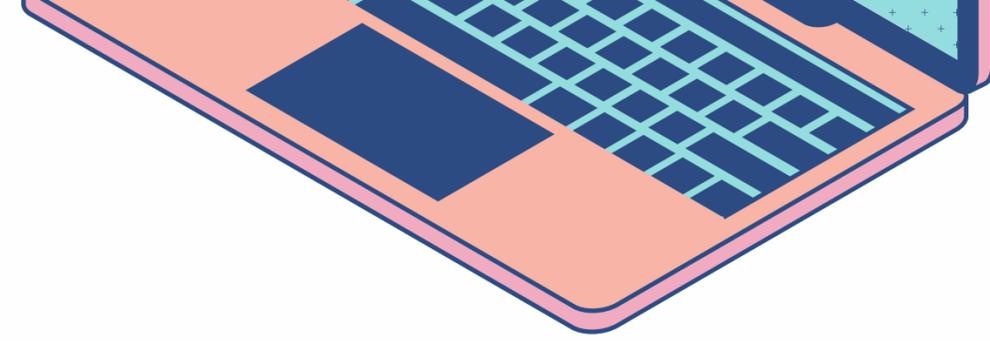
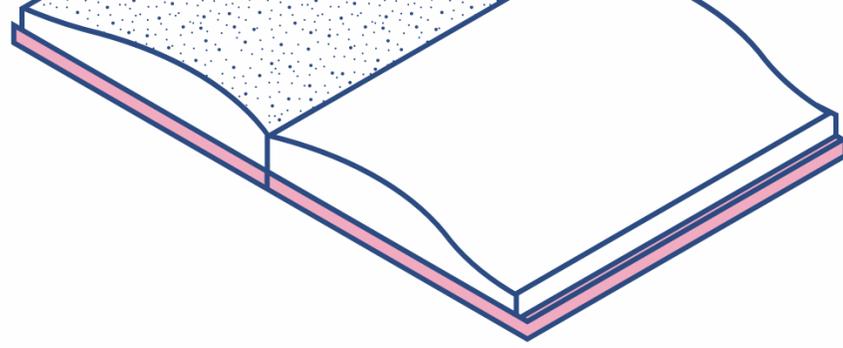
- Create a VR application to be run with the Meta Quest 2 Headset and its controllers
- Simulate field worker training
- Design UI to be user-friendly and intuitive
- Ensure that user follows safety protocols
- Installation steps are easy to follow





Implementation





Han

Software Used

3D Modeling

Blender

Autodesk Maya

Development

Unity

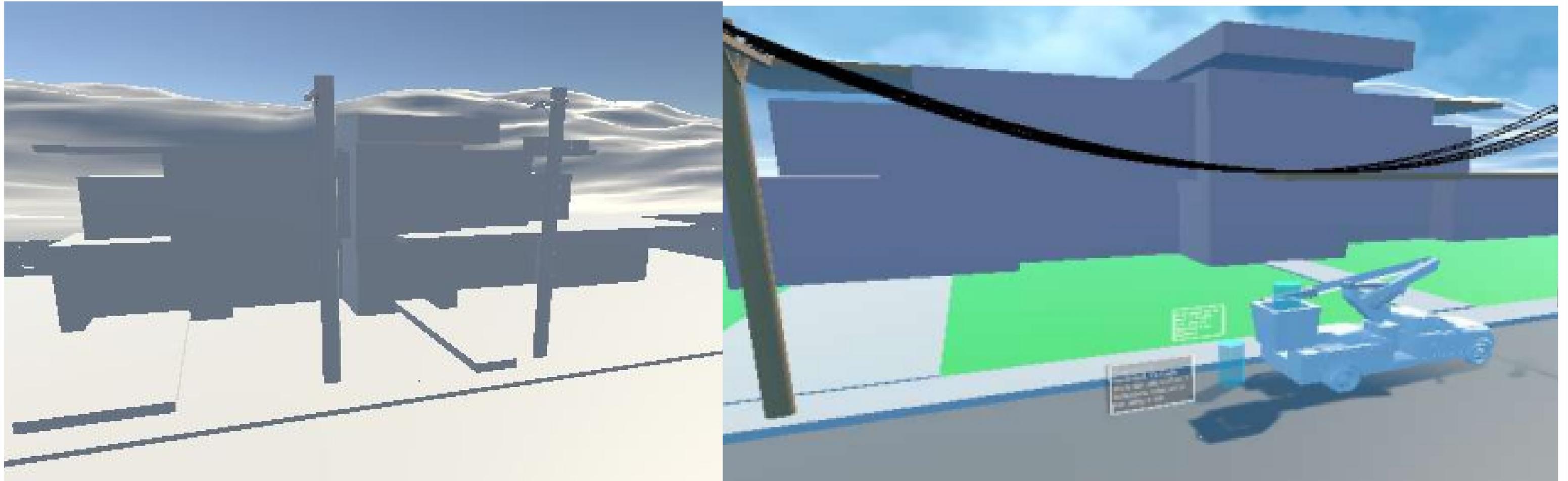
Microsoft Visual Studio

Communication

Github

Discord

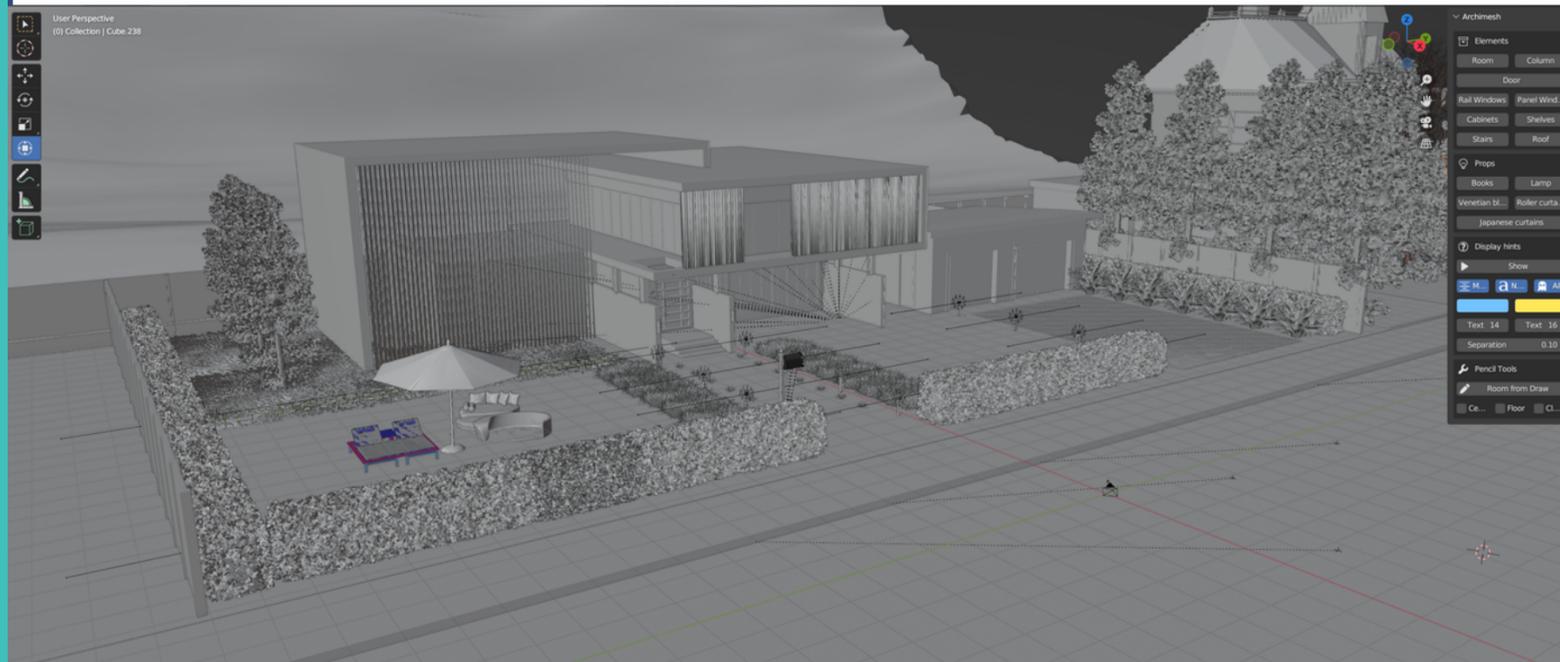
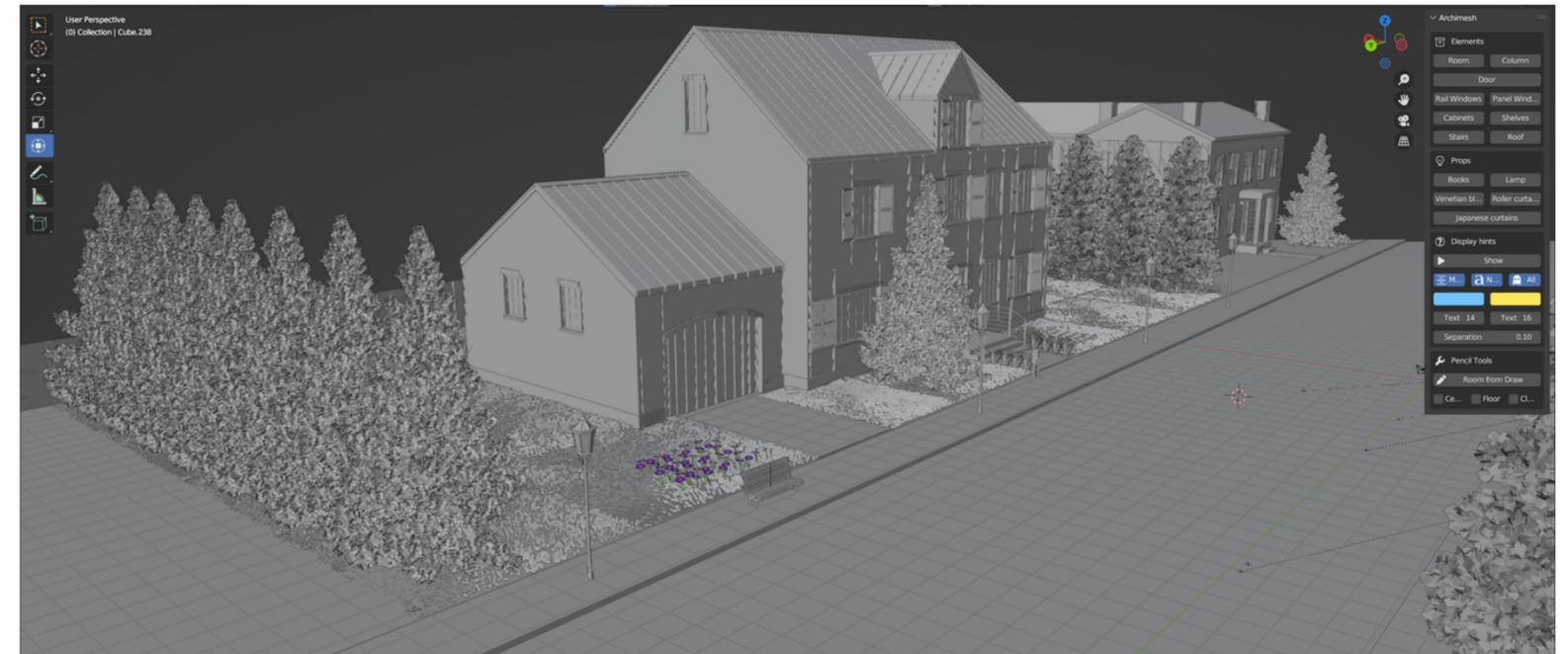
3D Modeling - Initial Environment



3D Modeling - Scene

First concept :

- Users feel like they are in the actual world.
- Very Details of Mods
- Back yard, front yard, garage, turf, grass, trees.



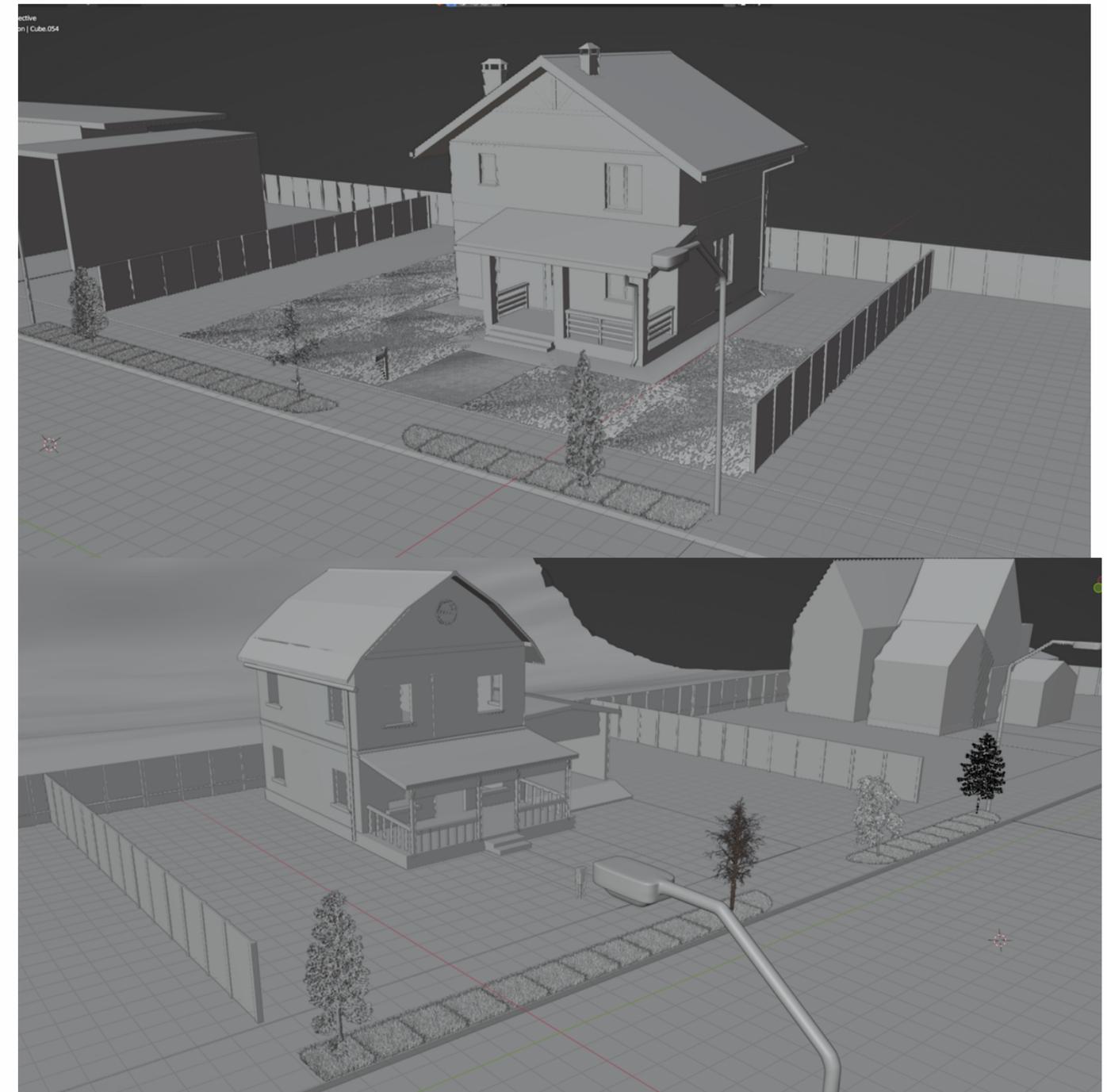
Result :

- Limitation
- File size is too big
- Not working on the VR headset

3D Modeling - Scene

Second improvement:

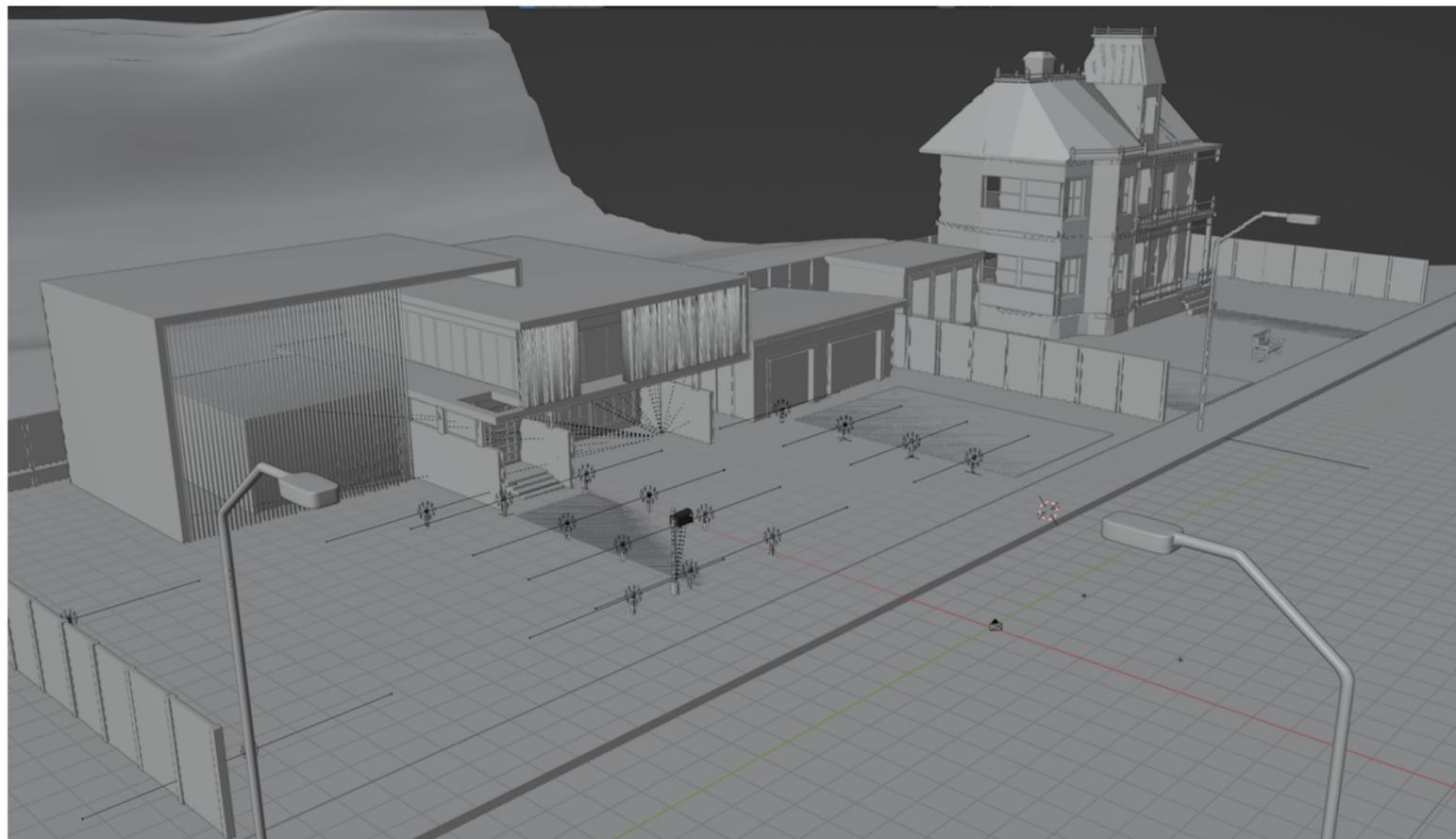
- Use realistic photos as reference
- Less Detail of Mods
- Simplify the architecture style



3D Modeling - Scene

Final decision :

- Keep three of the fanciest houses
- Remove the unnecessary
- Reduce the size of the scene



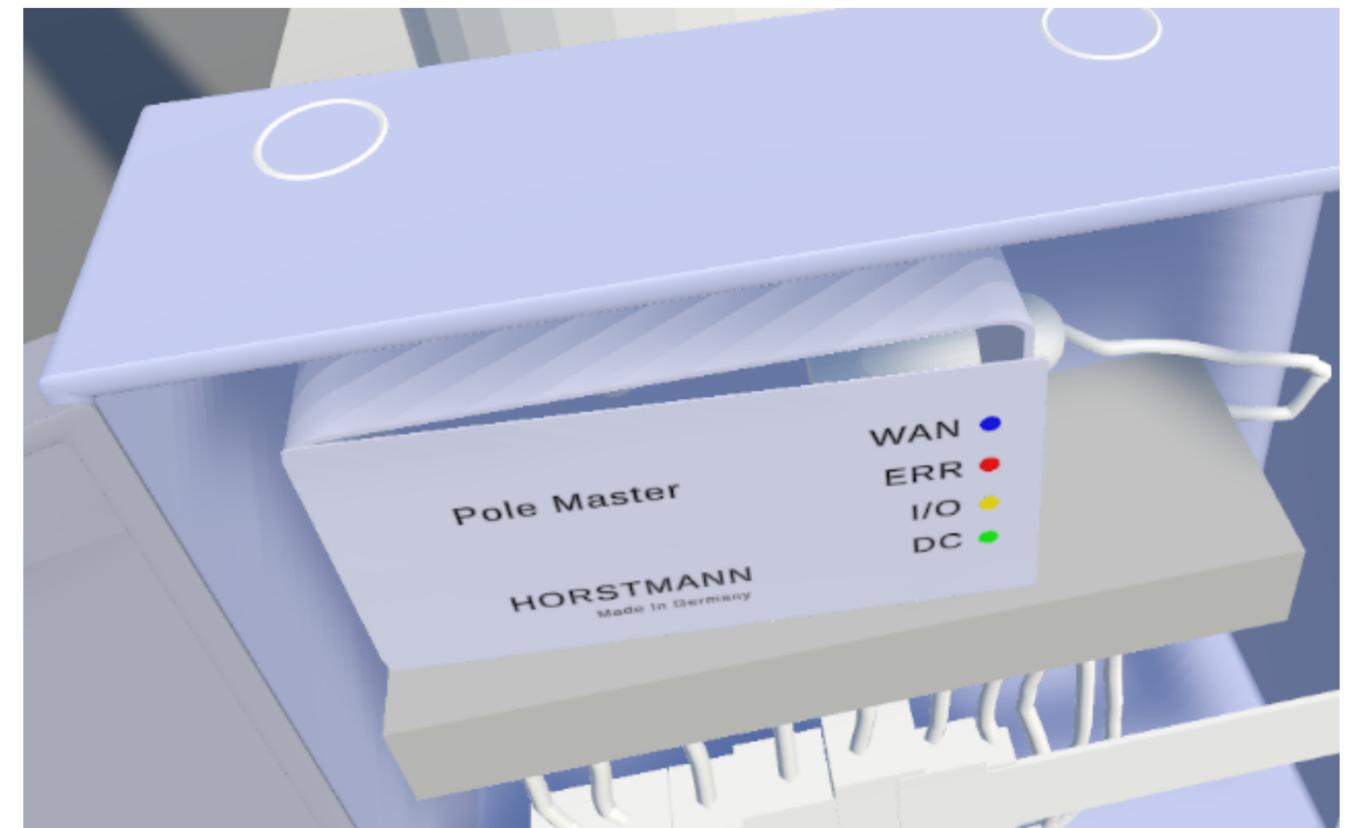
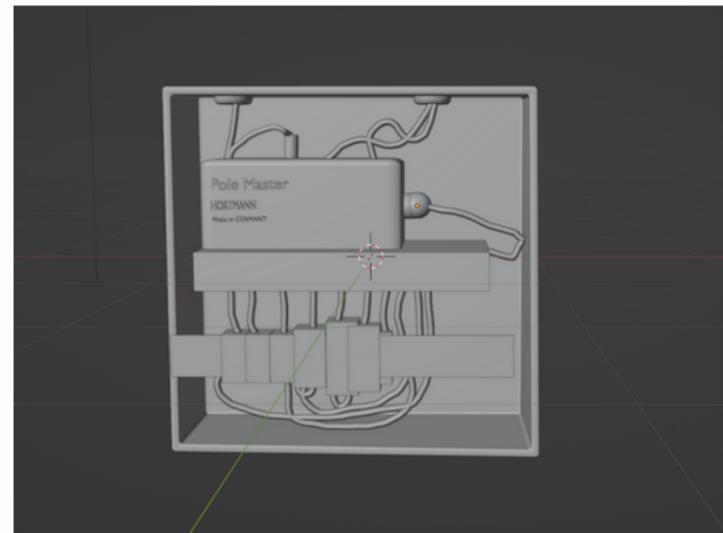
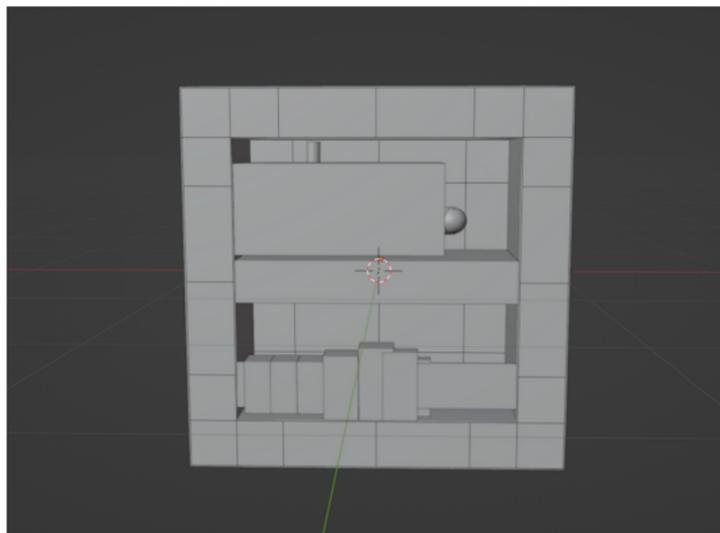
Measure:

- Modify the number of houses
- Remove grass, trees, glass etc.
- Modify the parameters of the house

3D Modeling - Pole Master and General Equipment



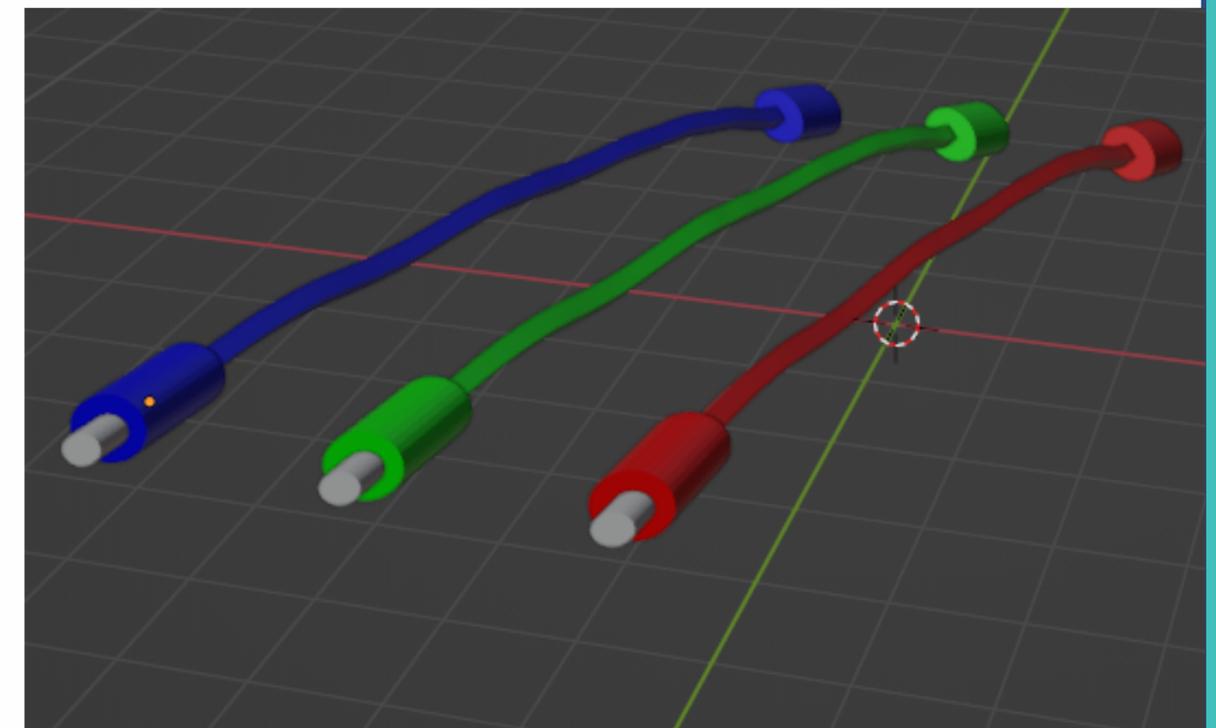
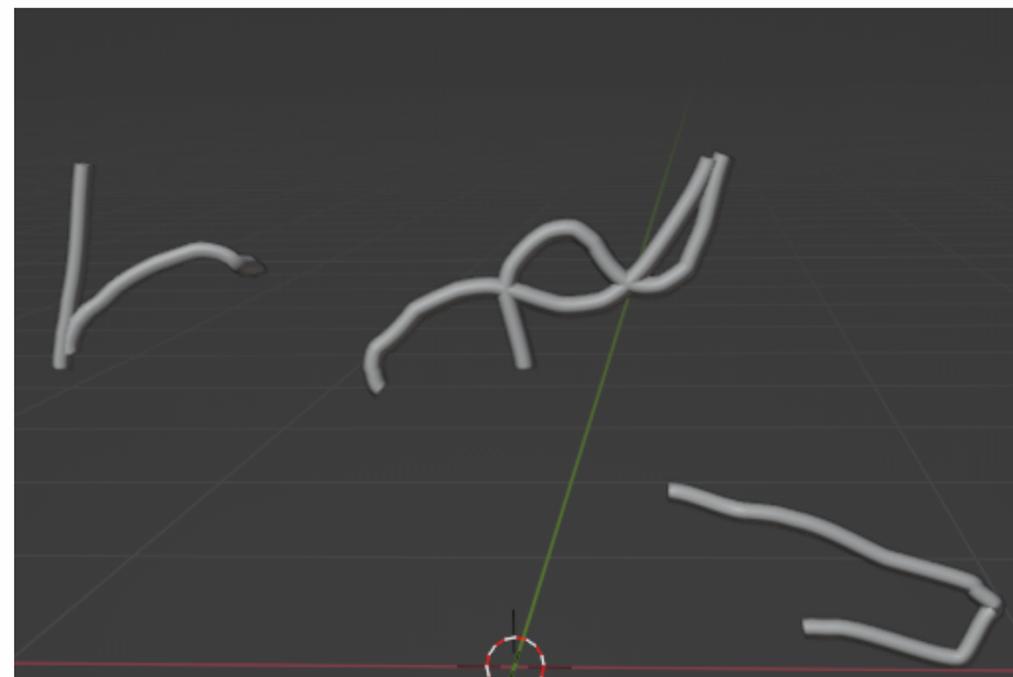
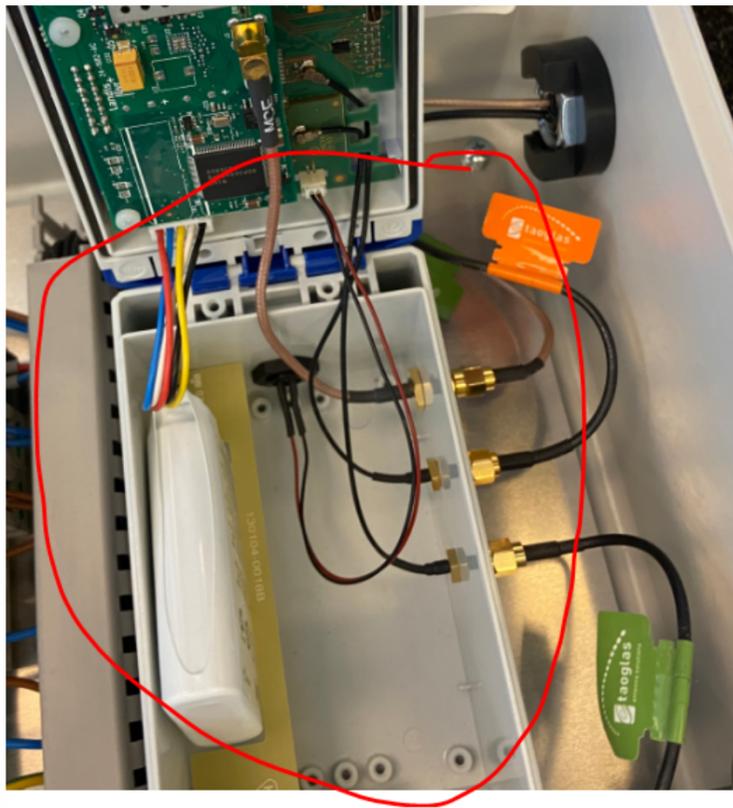
Pole Master



3D Modeling - Electrical Wiring

Important to get wiring and lights as accurate as possible

Complicated process both in VR and outside of VR, every detail on the devices matters



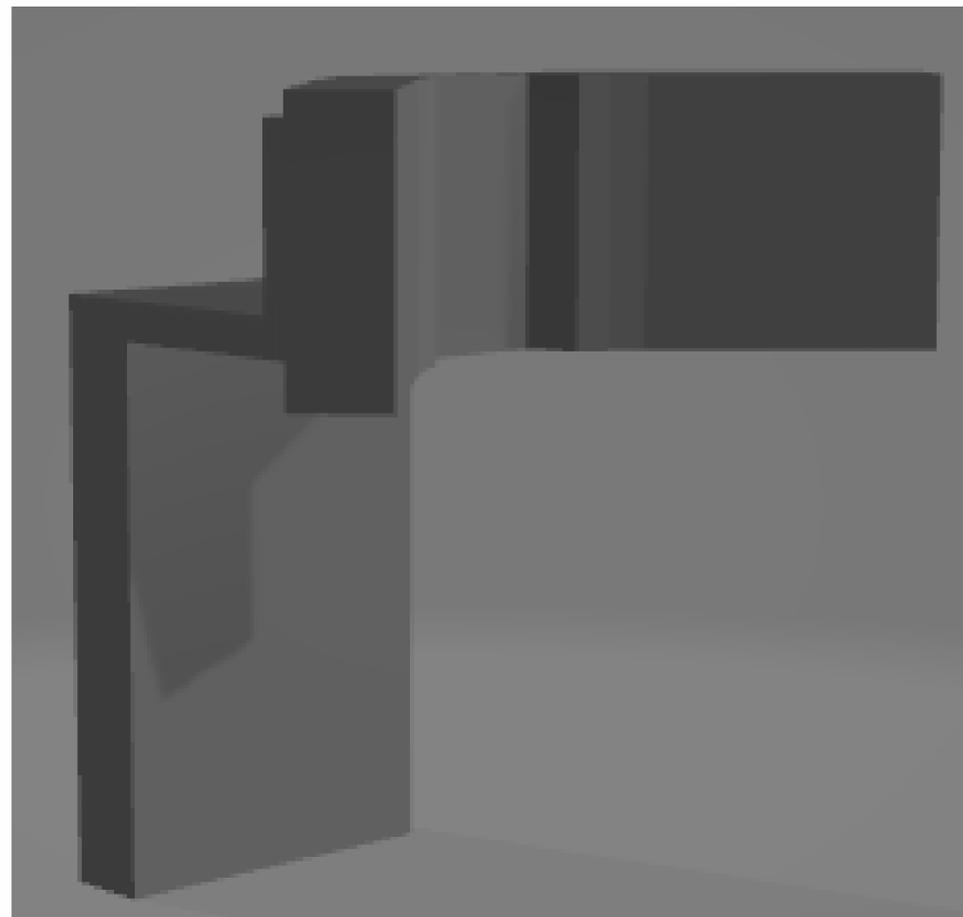
3D Modeling - Pole Master

- Communicates with smart navigators
- LED's which indicate different states



Pole Master Interaction

- Placed on the pole master and smart navigators to enable pairing mode



3D Modeling - Smart Navigator

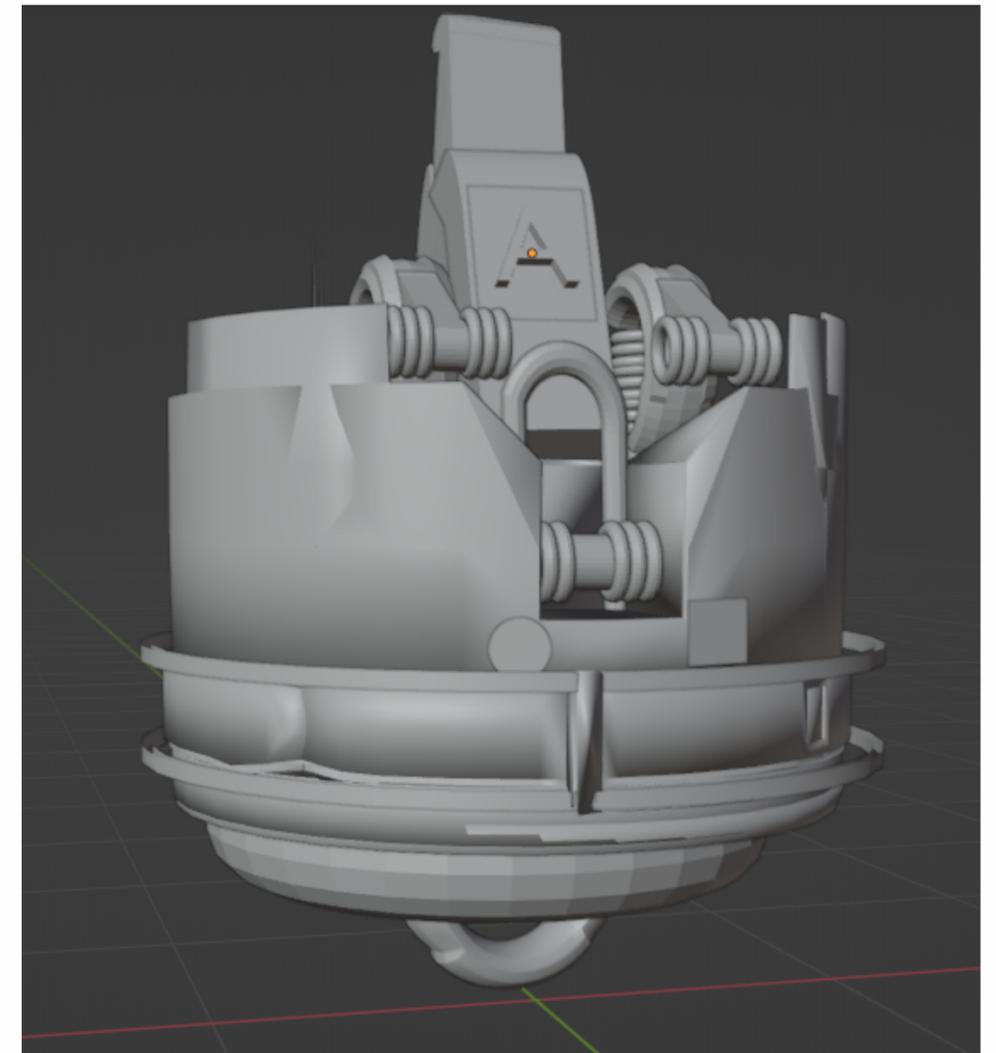
What is a smart navigator?

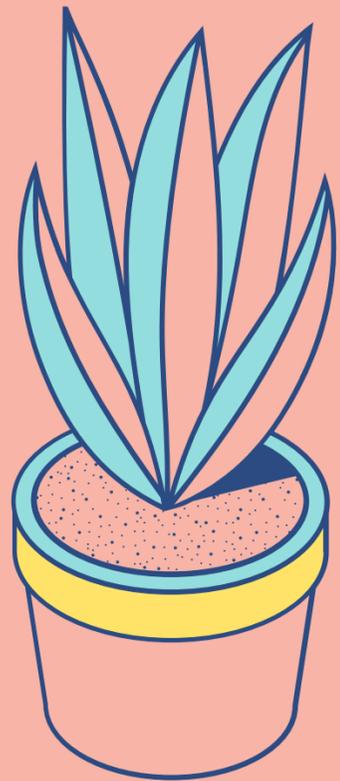
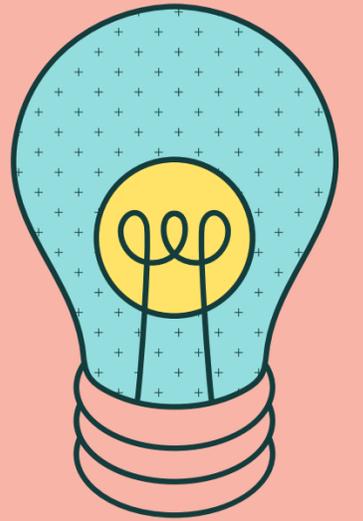
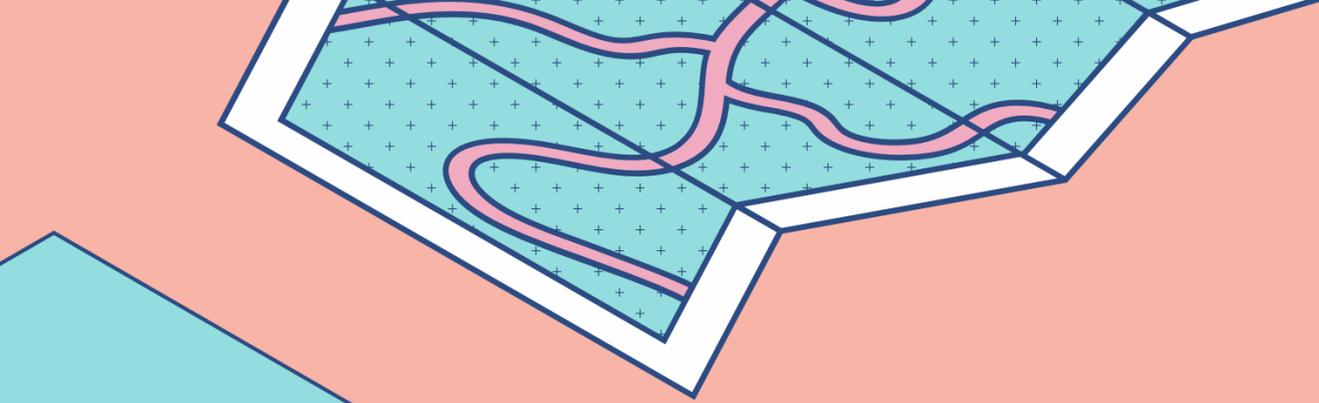
- A device that monitors the flow of electricity and helps detect faults in electrical power lines
- It is used by utility companies to reduce the time it takes to fix power outages and improve customer service.



3D Modeling - Smart Navigator

- One of the most interacted devices throughout the training
- Needed to be detailed.
- Nonexistent premade models that matched with our created environment.
- We had specific movement requirements





Unity

Unity - Smart Navigator

Smart Navigator installation:

Checking phase IDs: A,B,C on smart navs while working in a bucket.

Steps:

1. Open and attach the smart nav to the hot stick.
2. Use the hot stick as an extension to connect the smart nav to the corresponding line.
3. A clamp sound and controller vibration will indicate a successful installation.
4. Proceed to place the remaining smart navigators according to phase ID labels



Unity - User Interface

- UI helps guide user through steps of installation process
- Displays buttons to go to next or previous step
- Displays button to control audio



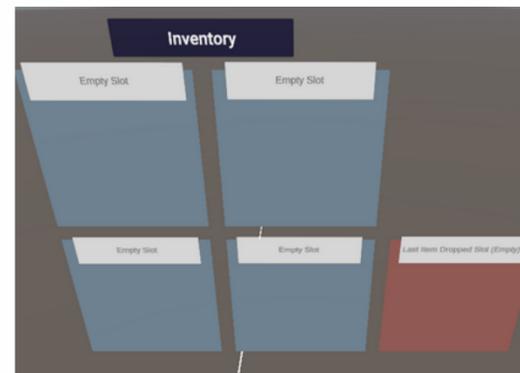
Unity - Teleportation

- Opted to use teleportation as the main mode of transportation so that the user does not have trouble knowing where to go



Unity - Inventory

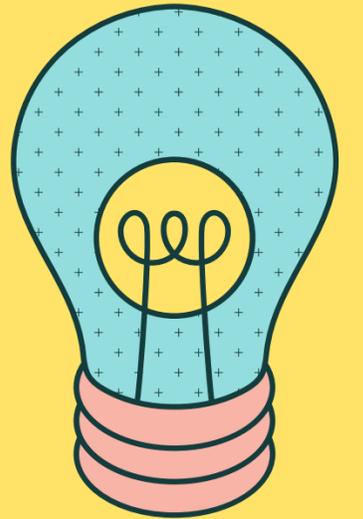
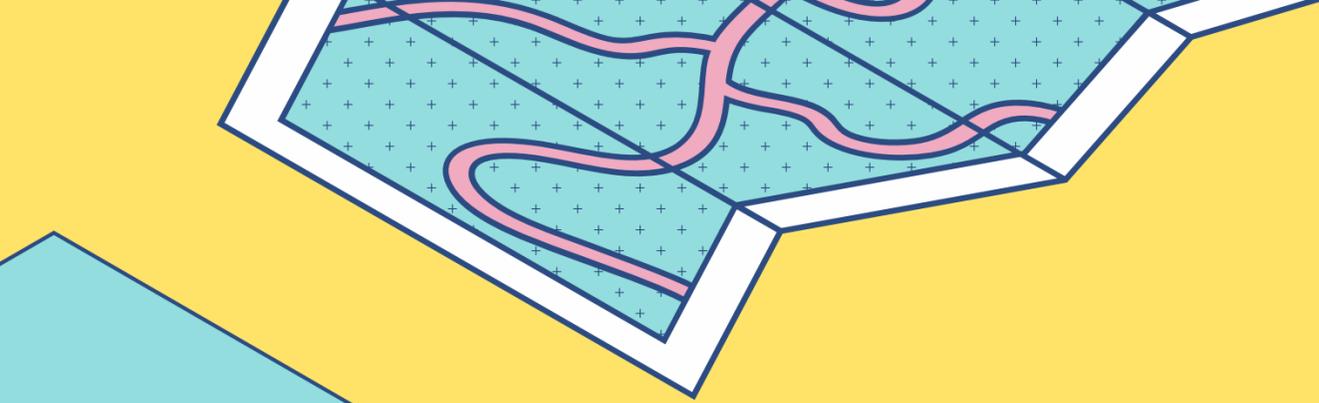
- Allows the user to bring equipment from one scene to another
- Toggled using the left secondary button
- Slot changes color and text label



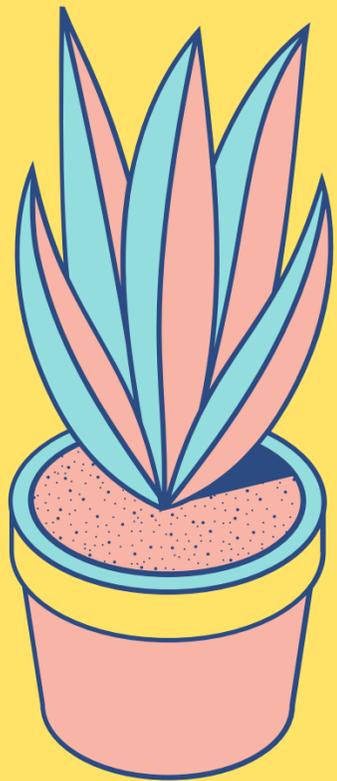
Unity - Inventory

- Dropped item gets placed into special slot in inventory





Extra Features



Extra Features- Audio

audio help the user be more immersive with the project

we use ai voice instead of an actual voice to keep it consistent

beta version did have my voice but it was opted for ai voice better for consistencies

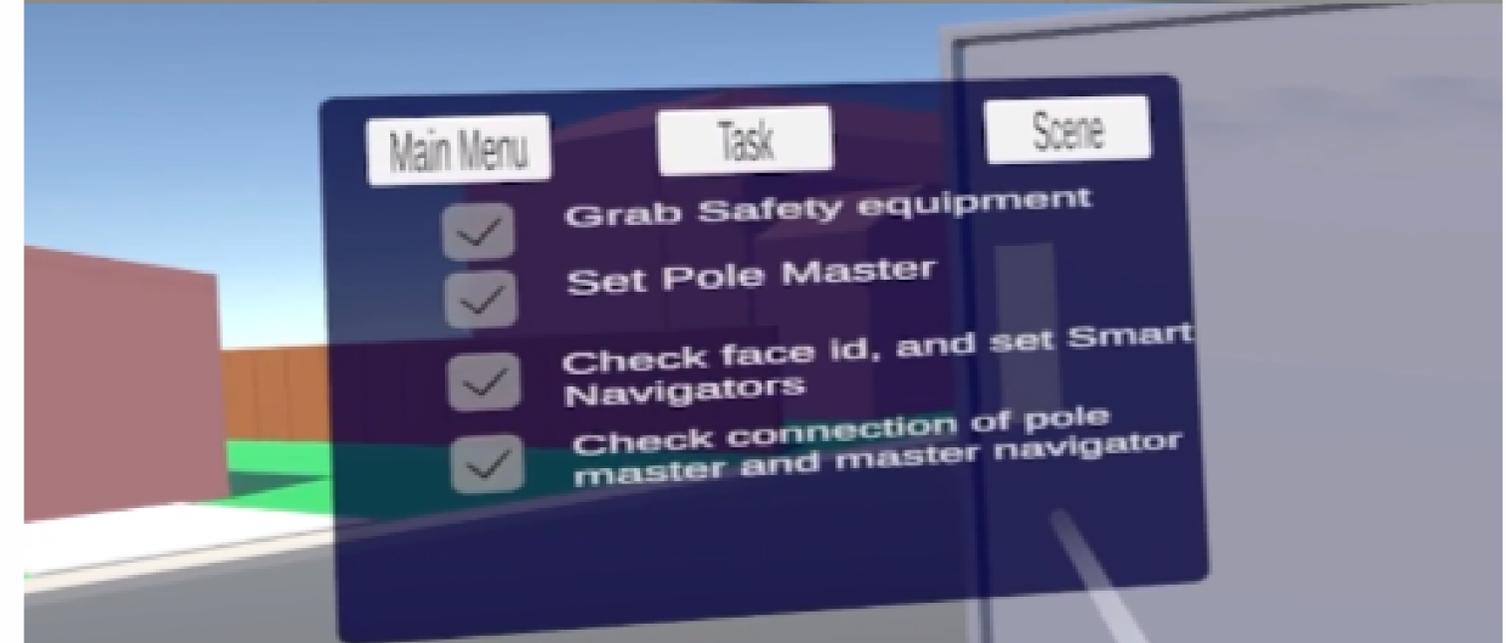
sound effects are the next step or placeholder idea right now we focus on voice feedback



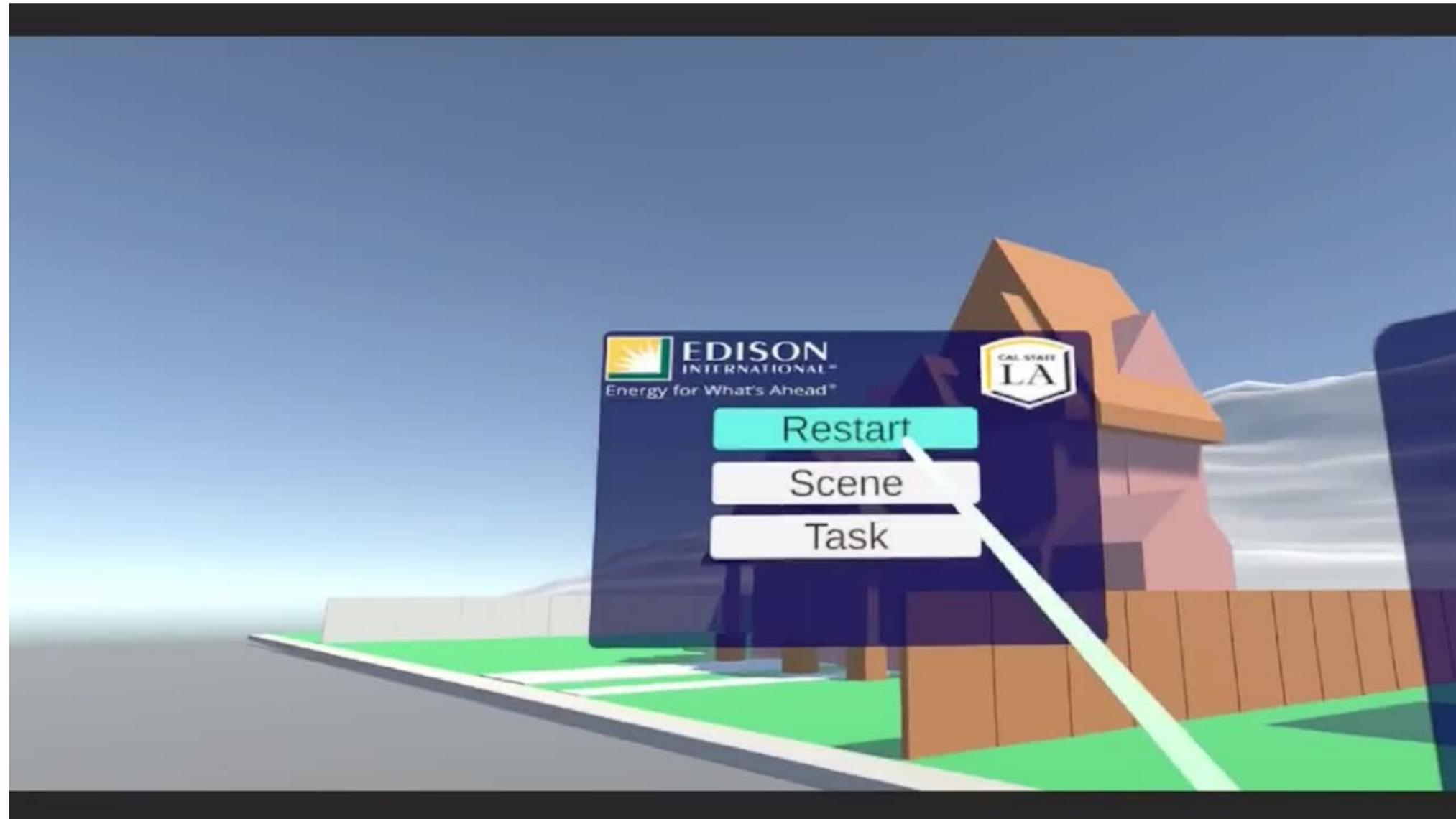
Extra Features- Implementation of Audio

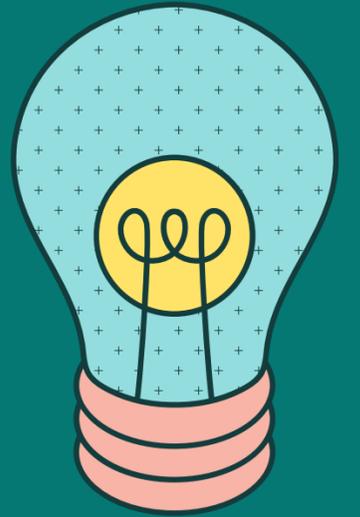
- The audio transcriptions serve as a 2nd option for the user to listen to while being interactive with the environment
- Audio effects when triggering certain things also add to the immersion for our users

Extra Features - Menu: Task

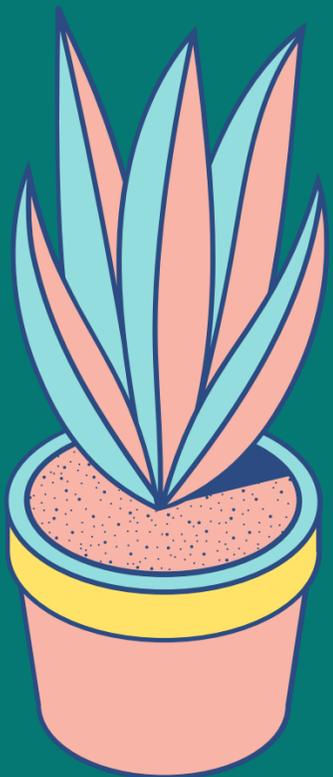


Extra Features - Menu: Scene



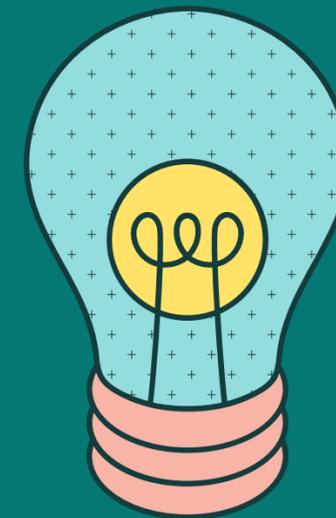
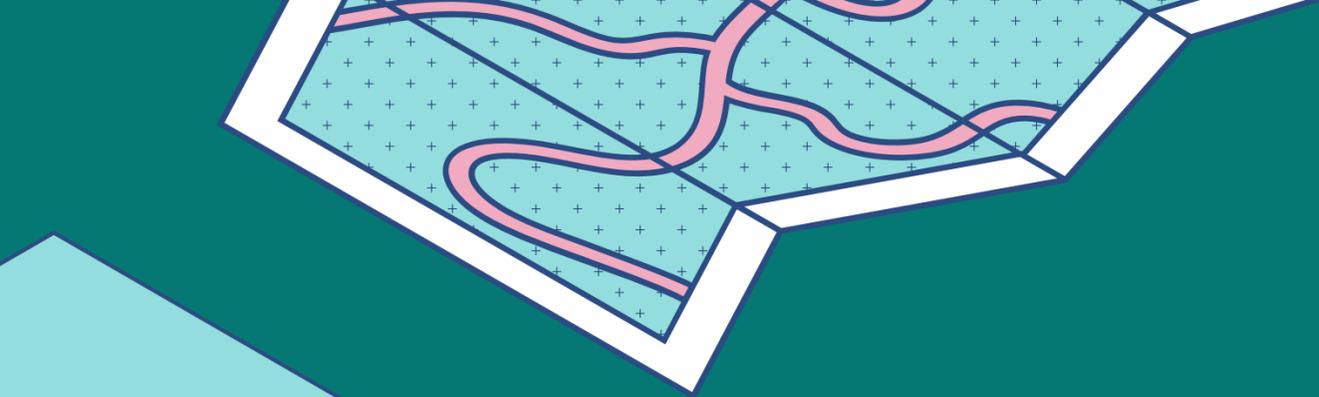


Video Demo





SoCal Edison VR Training Demo



Thank You

