VisuArt

Fire 170
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Background

The Age of Interactive Technology

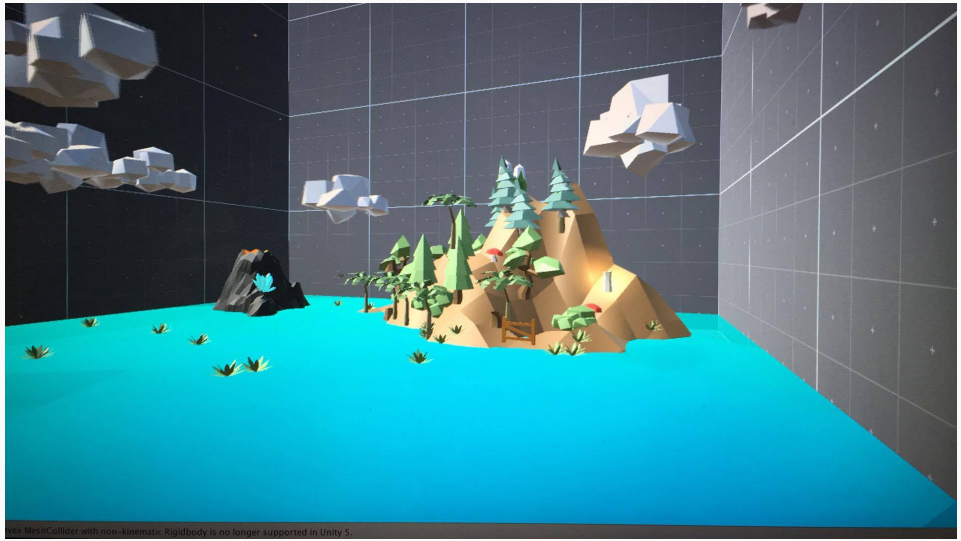
- Museums used to be passive
- New technology changes the way we interact
- Visitors want to contribute

Inspiration

- Milstein Hall of Ocean Life
  - Emersiveness
  - 3D Exhibits -> virtual environments
- Tilt Brush - Google
  - Creativity
  - Freedom
  - Interactivity

VisuArt

- ❏ Create an immersive environment
- ❏ Experience our creation
- ❏ Interact with objects
- ❏ Community



Video Demo

Development

unity 5

Development cycle

STEP 1

Painting (Zack)

- ❏ Hand-controllers to draw in 3D
- ❏ Youtube tutorial (HTC Vive)
- ❏ HTC Vive -> Oculus Rift

Exhibit (Eashaan)

- ❏ Object selection
- ❏ Object Placement (Raycast)
- ❏ 3D exhibit

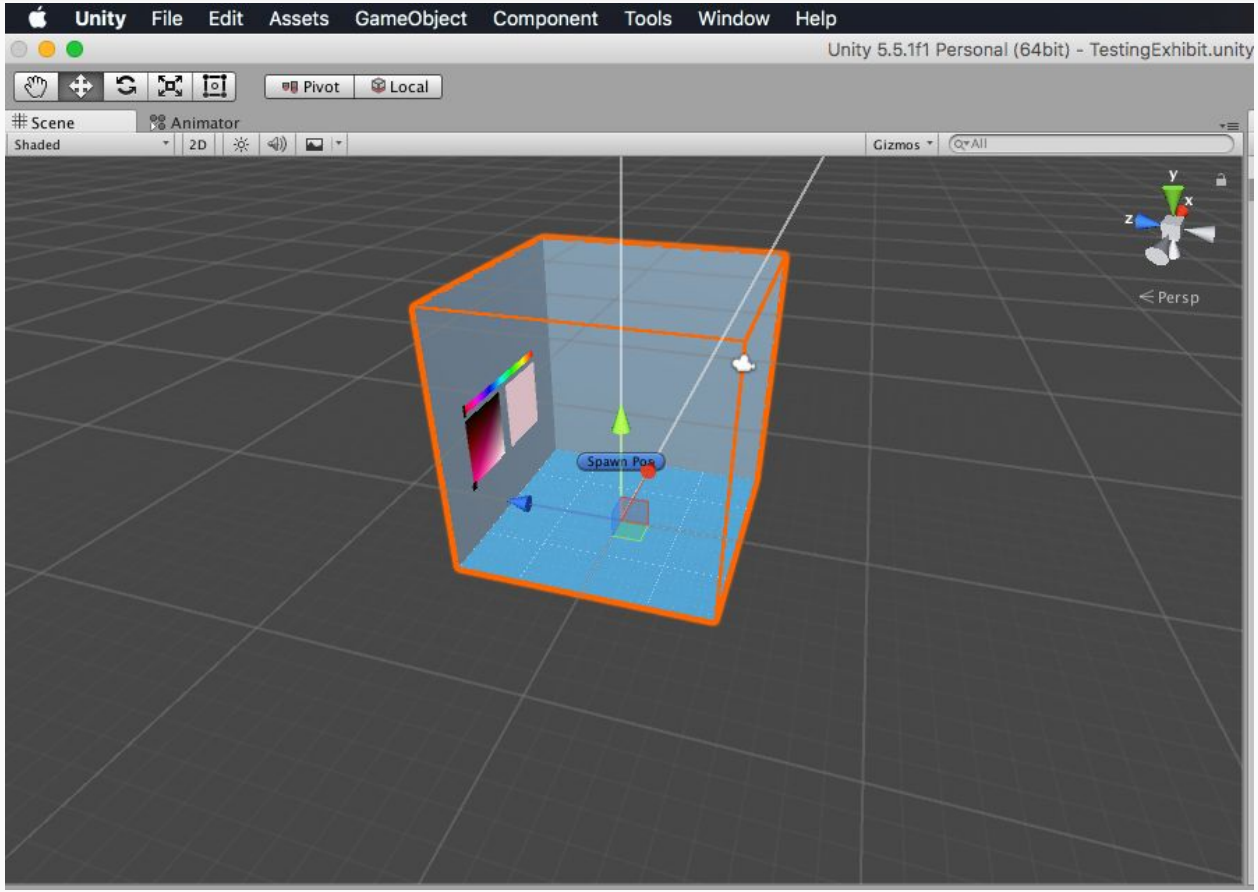
STEP 2

Merge into one project, more features.

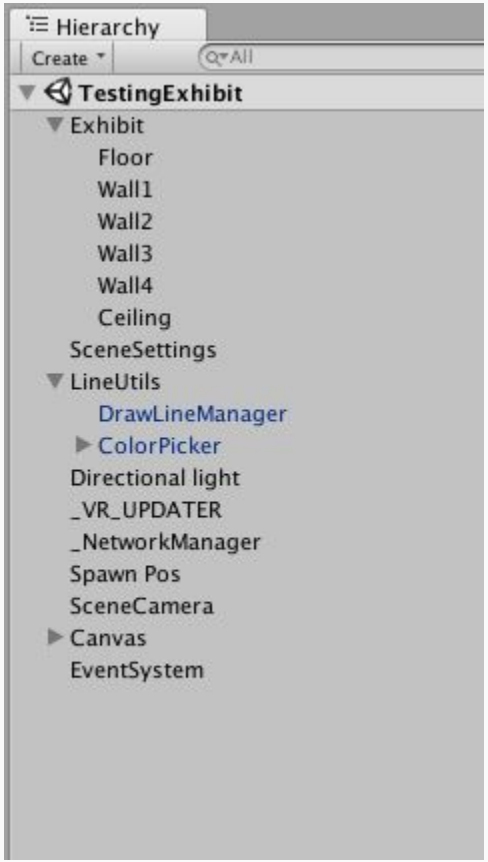
STEP 3

Final Deliverable

An exhibit

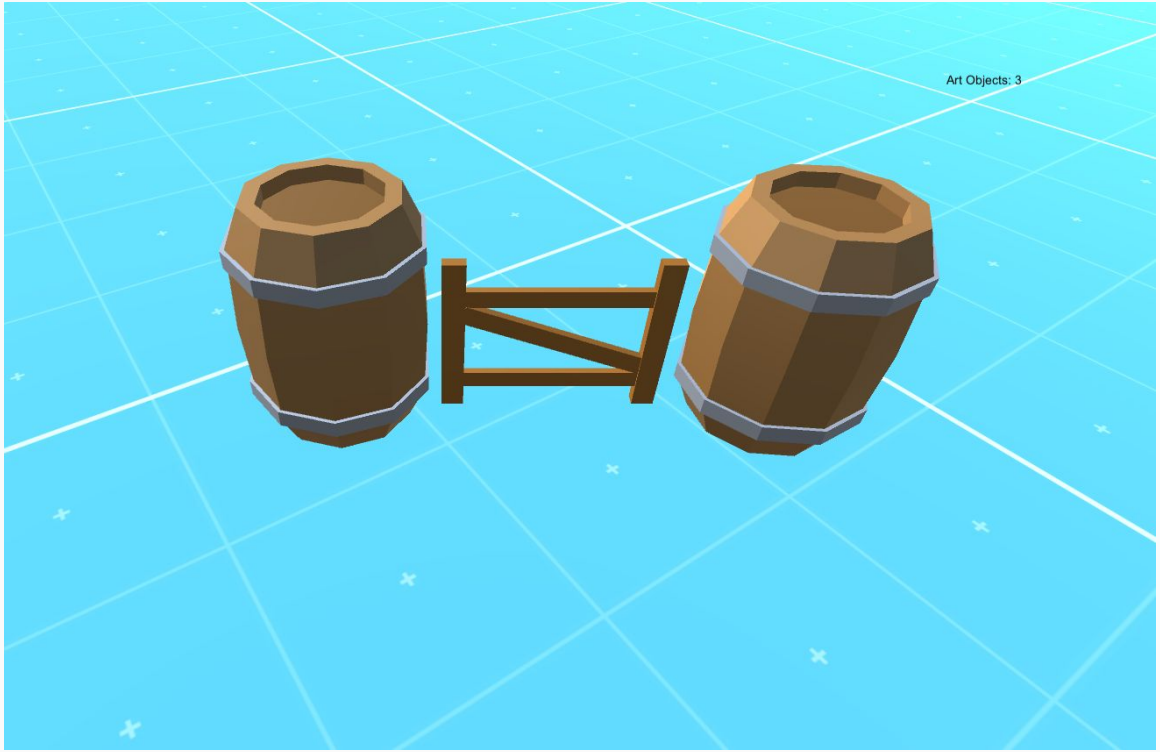

Unity File Edit Assets GameObject Component Tools Window Help
Unity 5.5.1f1 Personal (64bit) - TestingExhibit.unity
Pivot
Local
Scene
Animator
Shaded
2D
Gizmos
Persp
Spawn Pos

What makes up a scene?



Object Placement

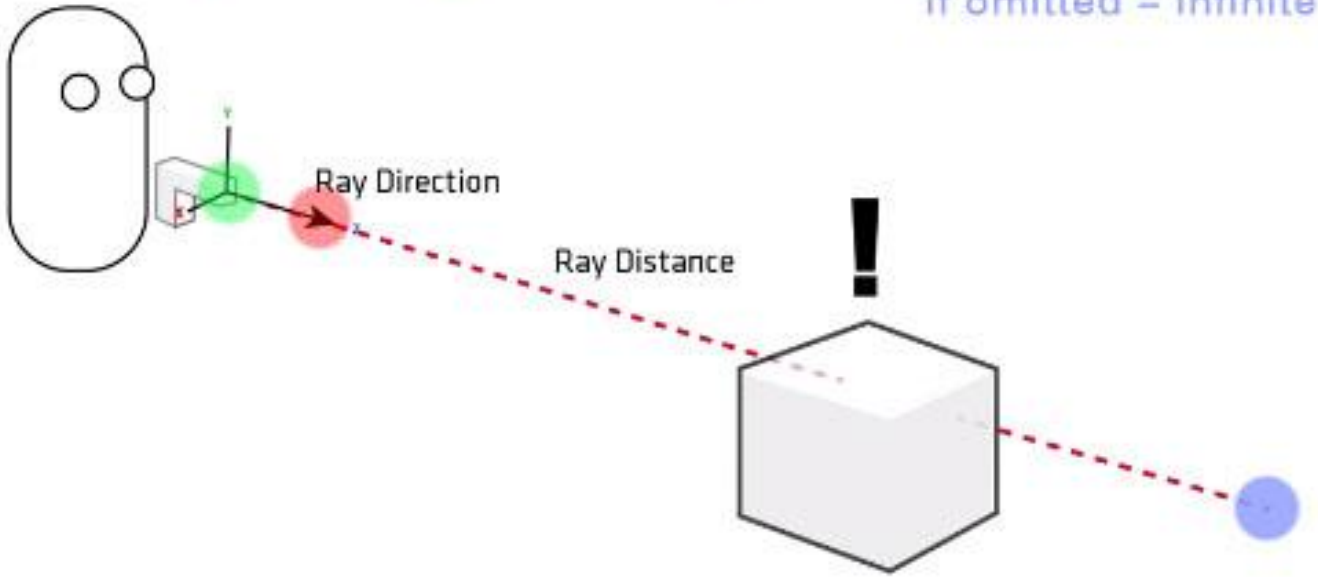
- Raycasting from Player's position in the direction of look rotation

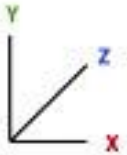


Physics.Raycast(Vector3 origin, Vector3 direction, RaycastHit hitInfo, float distance, int LayerMask);

Layer ignored

if omitted = infinite

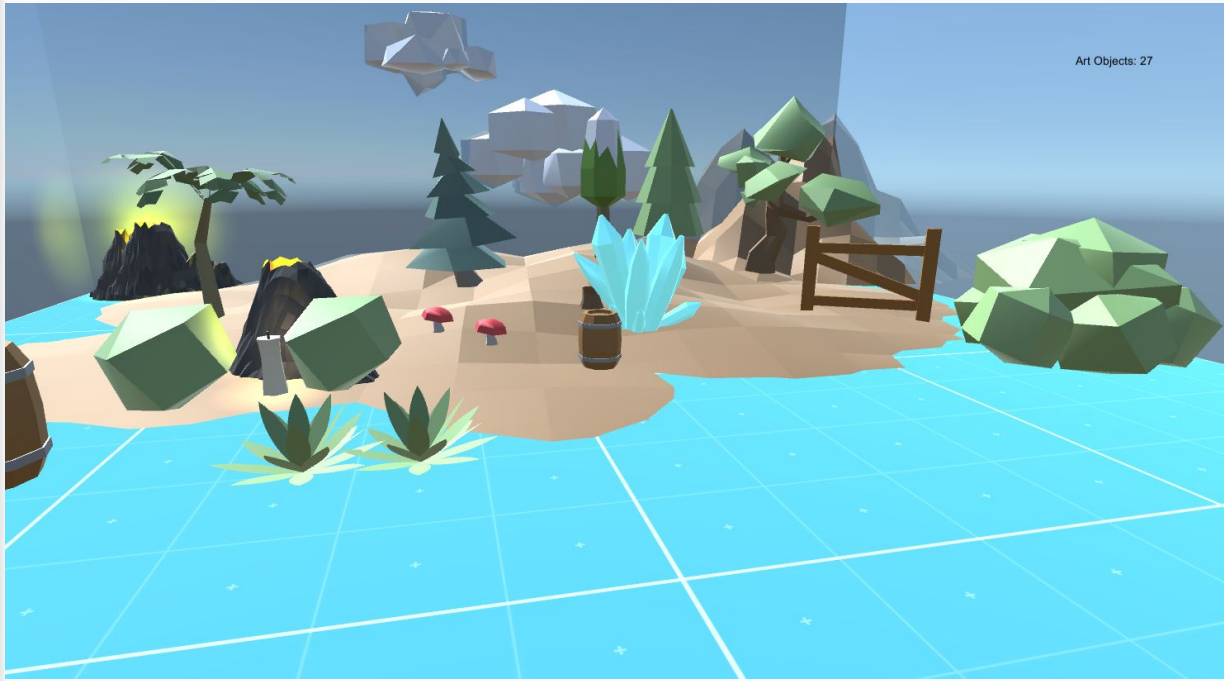




World Coordinates

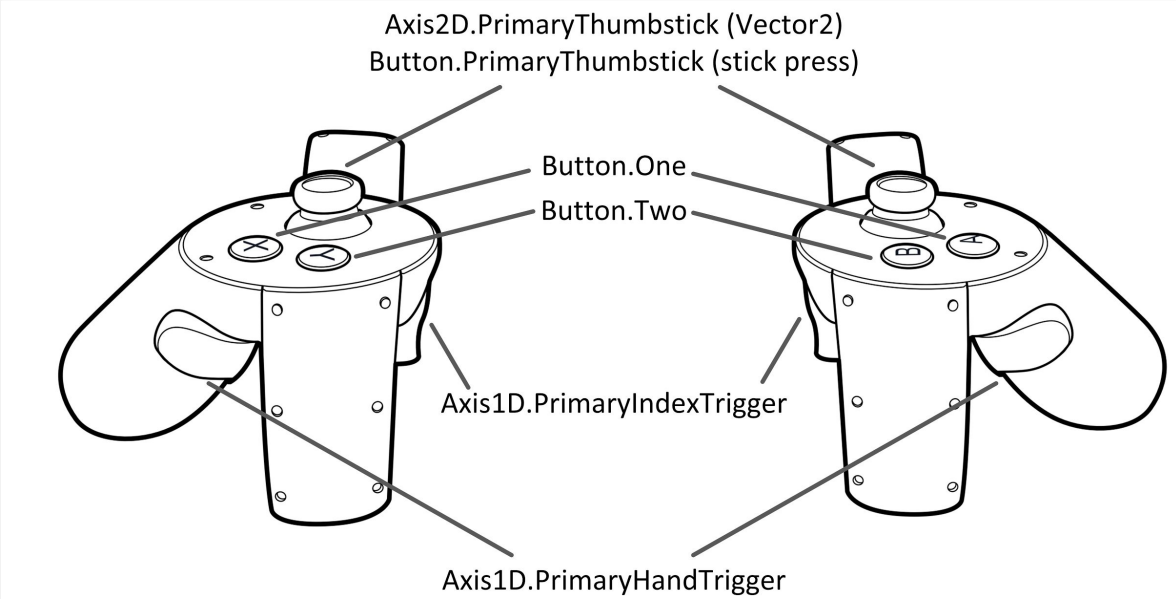
Object Selection

- Press button to bring up object selection menu
- Use joystick to select objects
- Press button to place it down



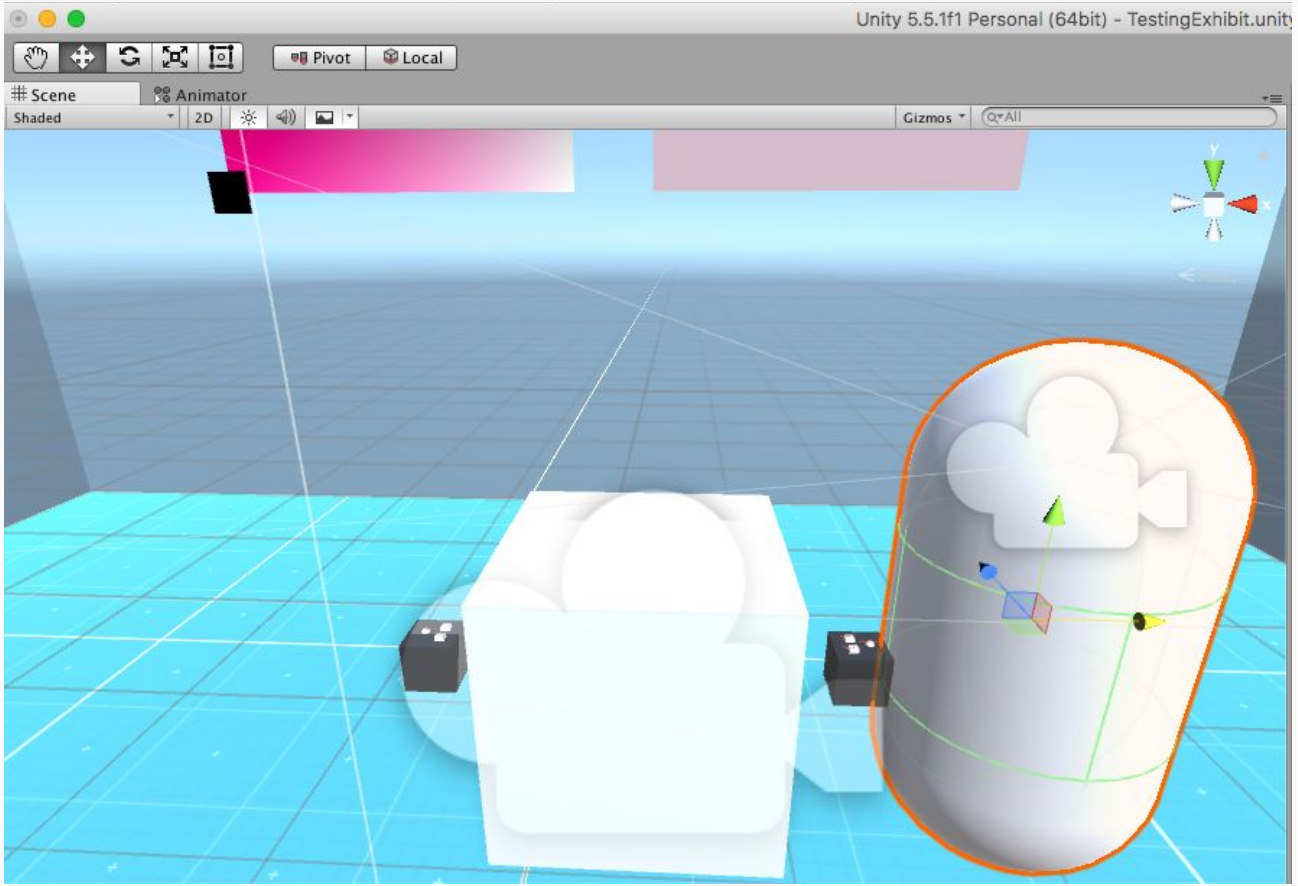
Input

- Oculus Touch Controllers
- Mapping button states to actions
  - ButtonUp()
  - ButtonDown()
  - Button() (Held)
- Easy to access
- Intuitive

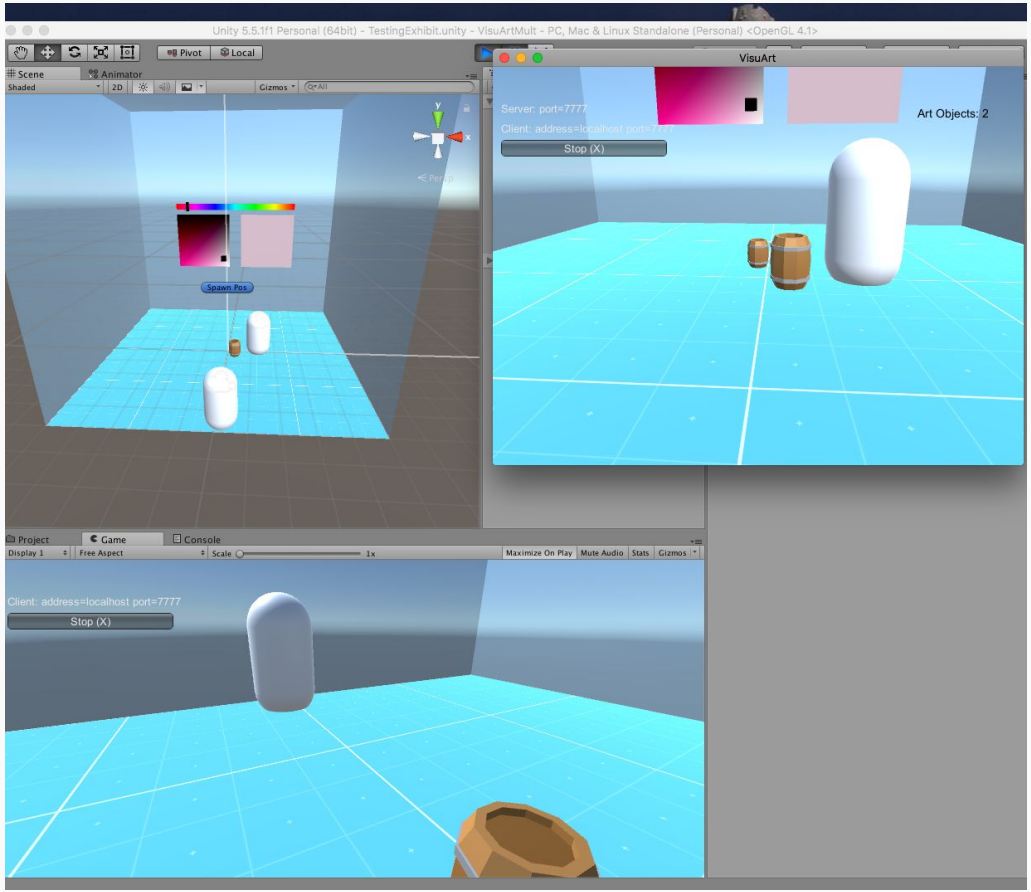


Challenges...

Offline Development



Multiplayer Networking (UNet)



Conclusion

- Attract a younger audience
- Museum visit no longer a passive activity
- Everyone can become an artist
- More immersive museum experience

Sources

Unity3D API: https://docs.unity3d.com/ScriptReference/

Raycasting: https://unity3d.com/learn/tutorials/topics/physics/raycasting

UNet: https://docs.unity3d.com/2017.1/Documentation/Manual/UNet.html

Tilt Brush: https://www.tiltbrush.com/air/artists/peter-chan/

Painting Tutorial: https://www.youtube.com/watch?v=eMJATZI0A7c

American Museum of Natural History:
http://www.amnh.org/exhibitions/permanent-exhibitions/biodiversity-and-environmental-halls/milstein-hall-of-ocean-life

Oculus SDK: https://developer.oculus.com/downloads/