SSN Institutions | Department of Biomedical Engineering

XRPANDA CANADA

WORKSHOP 2

Unity Fundamentals

Master the Unity Editor, Physics, Interaction Logic, and UI/UX Basics for XR game development.

January 23, 2025 | 7:00 - 8:00 PM

Recap & Agenda

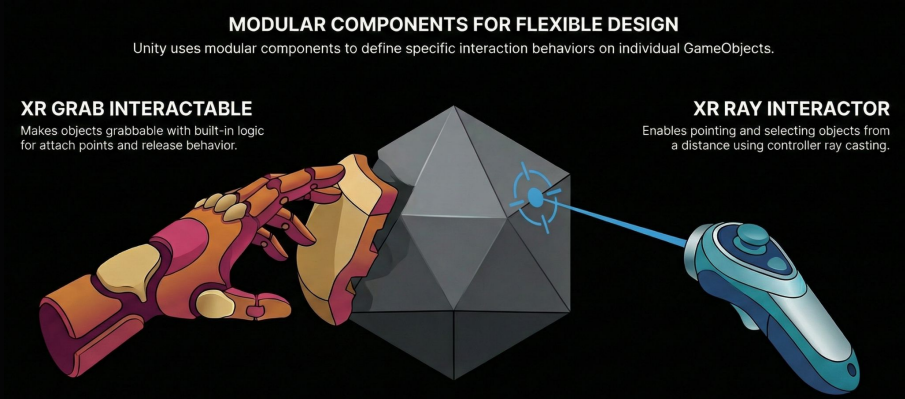
01 Covered Unity Editor basics and core workspace navigation

02 Learned component based workflow with GameObjects and prefabs

03 Understood physics and interaction fundamentals in Unity

04 Prepared and imported 3D assets from Blender into Unity

How Interaction Works in Unity



Modular Components

Unity uses modular components to define interaction behaviour on GameObjects, enabling flexible design.

XR Grab Interactable

Makes objects grabbable with built-in grab logic, attach points, and release behaviour.

XR Ray Interactor

Enables pointing and selecting objects from a distance using controller ray casting.

XR Interactions - Triggers vs Collisions

Triggers

No physics response (Pass-through)

Perfect for detection zones (Automatic door, checkpoints)

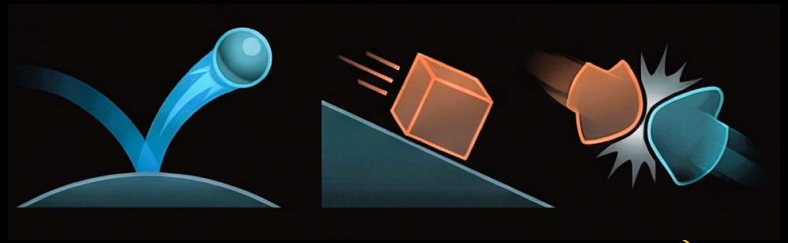
Lightweight performance

Collisions

Full physics simulation (Solid)

Realistic Object Behaviour (Bouncing, Sliding, Friction)

Haptic Feedback Support on impact



Interaction Zones

01 Define Zone Boundaries

Create a GameObject with a trigger collider marking the interaction area.

02 Configure Detection

Set up OnTriggerEnter events to detect when objects or controllers enter the zone.

03 Activate Interactions

Enable specific behaviours like grabbing, UI activation, or game logic when detected.

04 Provide Feedback

Use visual or haptic cues to confirm successful zone interaction to users.

Grabbing Objects in VR

Rigidbody

Enables physics simulation, allowing objects to respond to gravity and forces.

Collider

Defines the object's physical boundaries for interaction detection (Box, Sphere, or Mesh).

XR Grab Interactable

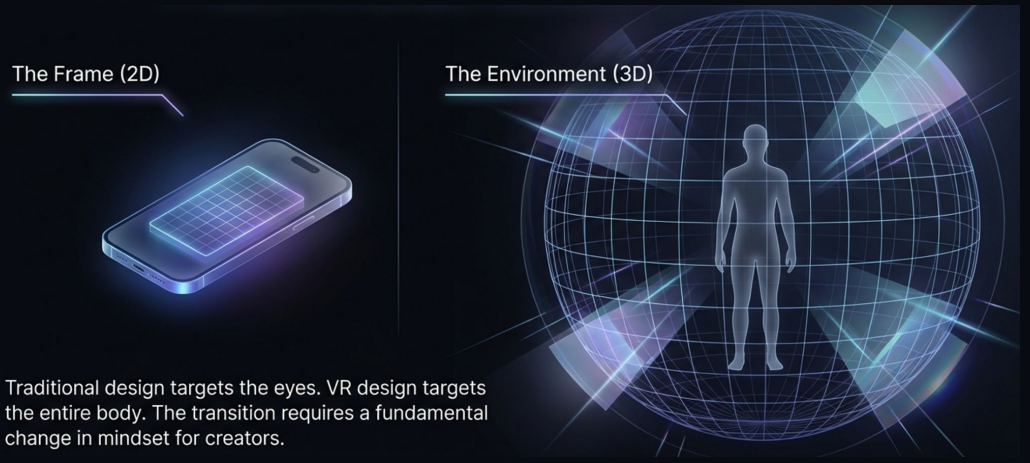
Manages grab/release events and interaction states seamlessly.

Optional enhancement: Attach Transform to specify where the object attaches to the hand/controller, ensuring natural-feeling grip positions.

Physics Basics with Rigidbody

- What is Rigidbody and Why does Physics Matter
- Gravity and Mass
- Static vs Dynamic Objects
- Colliders and Collision Behavior
- Simple Physics Demonstration

UI/UX IN VR



Traditional design targets the eyes. VR design targets the entire body. The transition requires a fundamental change in mindset for creators.

Comfortable

Interactions should feel physically natural. Comfort prevents fatigue and keeps users engaged longer.

Intuitive

Design should match real world behavior so users instantly know what to do. No instructions should be needed to interact.

Immersive

Immersion comes from uninterrupted presence in the virtual world. Smooth and predictable interactions keep users fully engaged.

Mechanics of Immersion: Good UX/UI

Visual

Highlights and glows confirm touch instantly.

Audio

Subtle sound cues reinforce the action.

Haptic

Controller vibration simulates physical resistance.

What's Next

Workshop 1: XR types, Greyboxing and basic requirements

You've mastered the basics of VR, AR and MR

Workshop 2: 3D asset, Physics, Interactions and UX-UI

Creating custom 3D models and integrate advanced XR features

Workshop 3: Materials, C# basics, Trigger, Socket, Final Build

Finally, you'll add functionality, interactivity, and polish your completed VR experience

> "This is just the beginning - the next reality starts with you."

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Thank you & Wrap-up

We'll take your questions !