OAR Converter: Using OpenSimulator and Unity as a Shared Development Environment for Social Virtual Reality Environments

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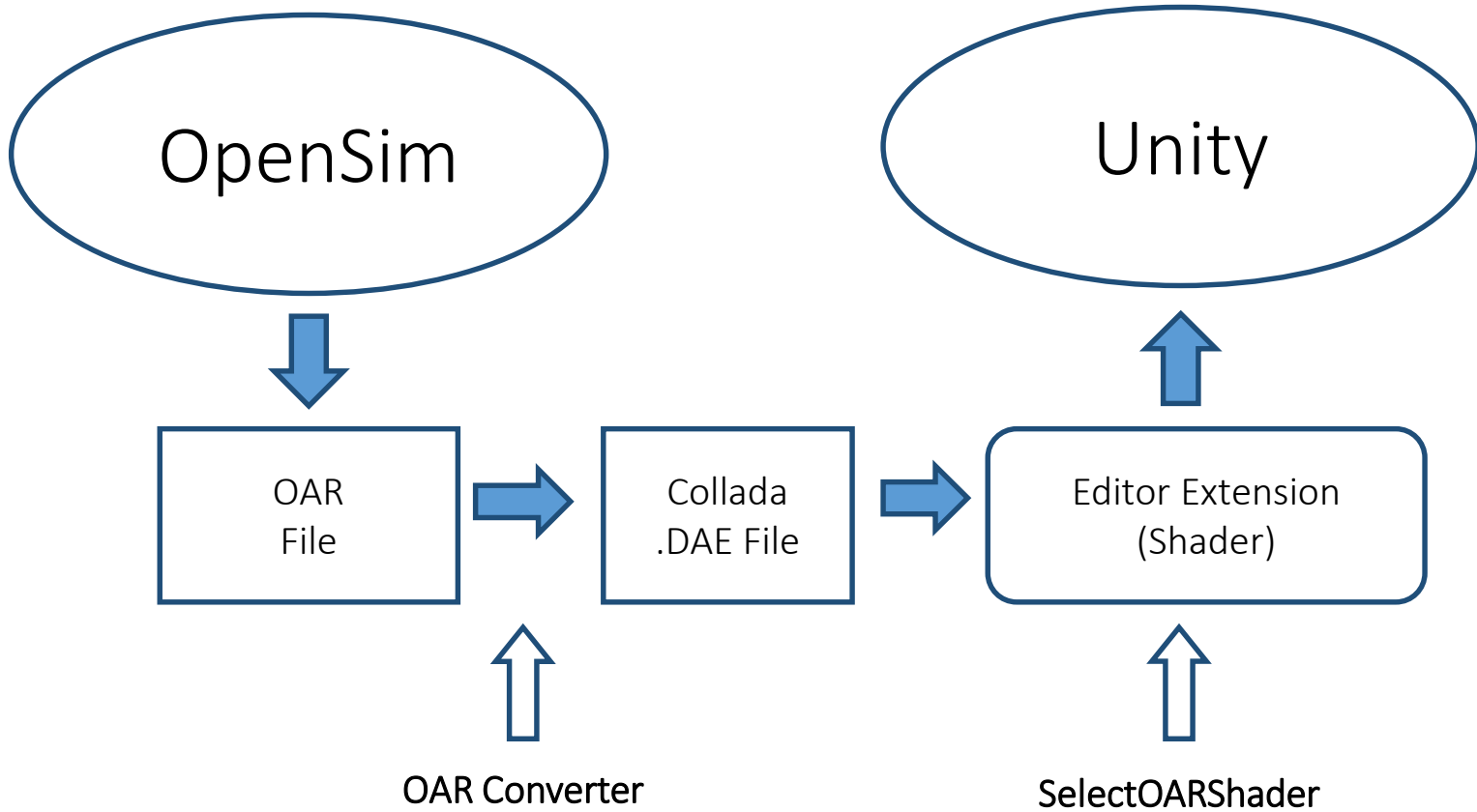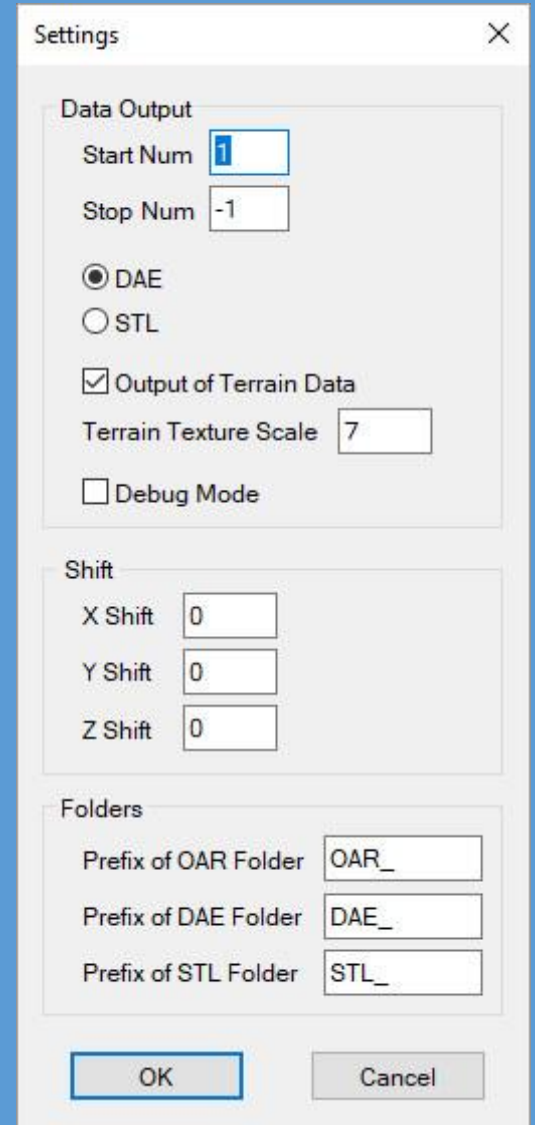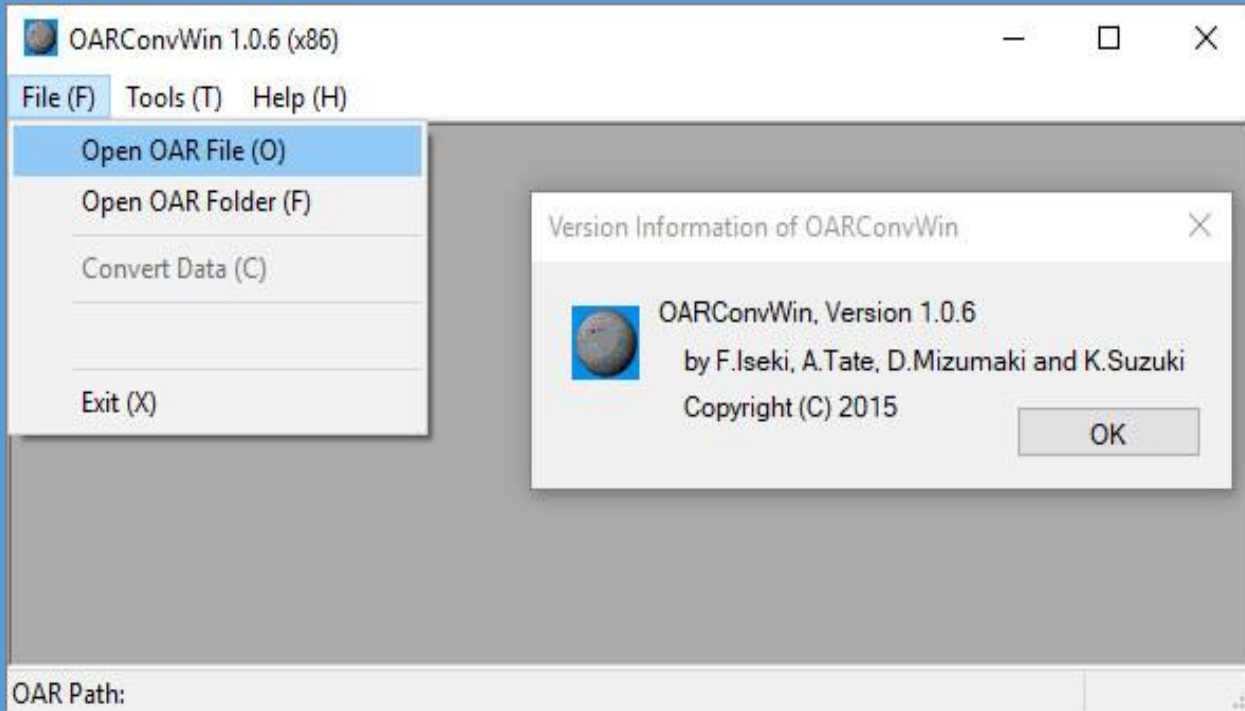Dept. of Informatics, Japan

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Japan

OAR Converter – Purpose

- OAR Converter can take an OpenSimulator Archive (OAR) and from it create textures, meshes and terrain suitable to import into Unity3D.

- OAR Converter goes from an OpenSimulator Archive (OAR) to Collada (.DAE) files for use in Unity3D.

- The software was developed by Fumi Iseki and his colleagues at the [Network Systems Laboratory of Tokyo University of Information Sciences (TUIS)](#) in Japan with support from Austin Tate at the University of Edinburgh.

- OAR Converter can run on Linux and Windows and source code is available.

- For convenience a version with Windows UI is also available as a ready to run package.

OAR Converter – Process

OARConvWin 1.0.6 (x86)

File (F)　Tools (T)　Help (H)

Open OAR File (O)
Open OAR Folder (F)
Convert Data (C)

Exit (X)

Version Information of OARConvWin

OARConvWin, Version 1.0.6

by F.Iseki, A.Tate, D.Mizumaki and K.Suzuki

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OK

OAR Path:

Settings

Data Output

Start Num　1
Stop Num　-1

◉ DAE
○ STL

☑ Output of Terrain Data
Terrain Texture Scale　7

☐ Debug Mode

Shift

X Shift　0
Y Shift　0
Z Shift　0

Folders

Prefix of OAR Folder　OAR_
Prefix of DAE Folder　DAE_
Prefix of STL Folder　STL_

OK　　Cancel

OAR Converter – Quick Start

- Place your OpenSim OAR file in a suitable directory. Using defaults, the conversions will be placed in separate directories in this same directory with names based on the OAR file name prefixed by OAR_ and DAE_

- Run the OAR Converter and using "File" -> "Open OAR File" select the OAR file you wish to convert. This will create a directory called OAR_ with the unpacked contents of the OAR file ready for conversion.

- Now select "File" -> "Convert Data" from the OAR Converter File menu. This will create a directory called DAE_ with the converted content in it.

- The DAE_ directory created will contain the DAE/Collada objects for the conversion which have colliders (are solid) and one special DAE/Collada object for the terrain (named the same as the OpenSim region name). It will also have sub-directories for all Textures and for the Phantoms (objects with no collider).
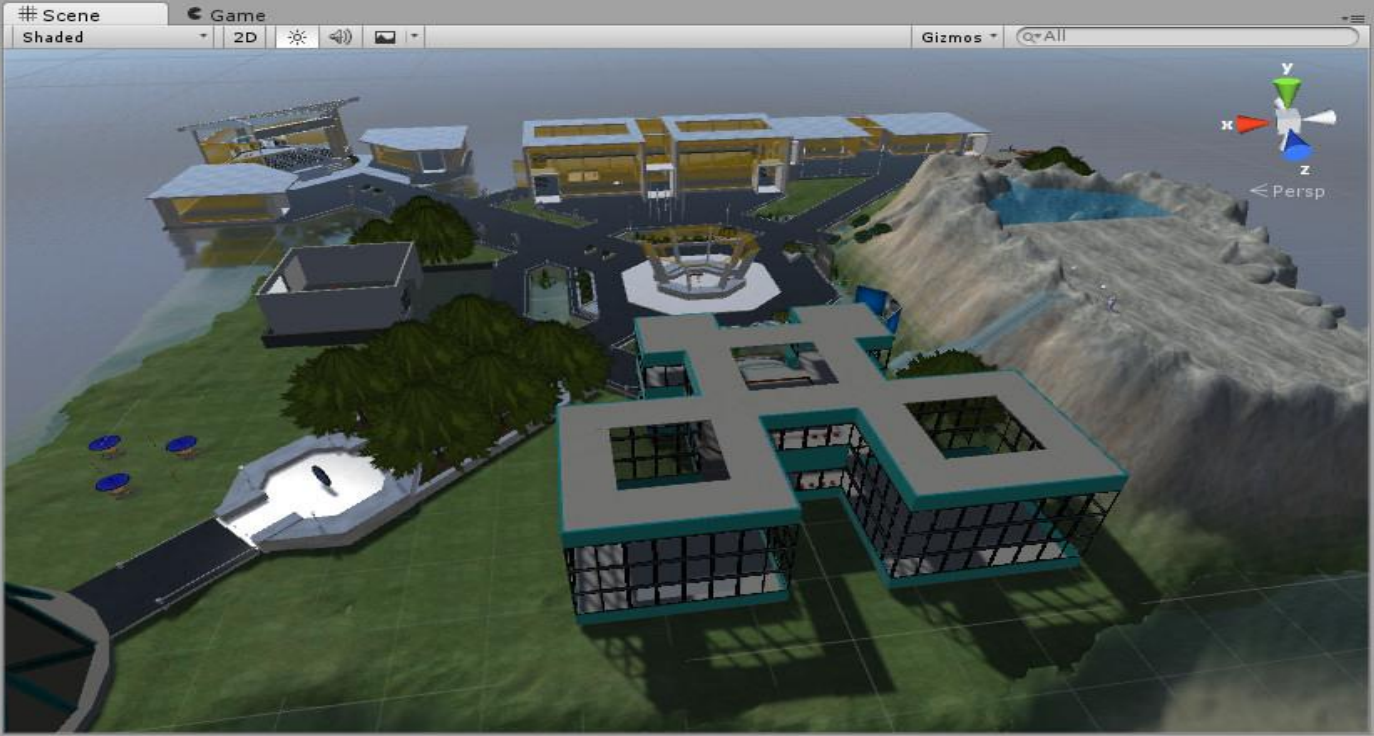
Import to Unity3D – Quick Start

- In a Unity project, add a special "Shader" Editor/SelectOARShader.cs which handles the import of the textures and material properties for imported objects.

- In your Unity project add an empty game object at 0,0,0. You could name it the same as your OpenSim region name for convenience.

- Drag the DAE_ folder in its entirety onto the Unity "Project" (Assets) panel.

- Select all the objects in the top level of this directory except the Textures and Phantoms sub-directories and drag them onto the empty game object in the Unity "Hierarchy" panel.

- Create another empty game object at 0,0,0 under the previous one. You could name it "Phantoms" for convenience.

- Select all the objects in the Phantom directory and drag them onto the "Phantoms" game object in the Unity "Hierarchy" panel.

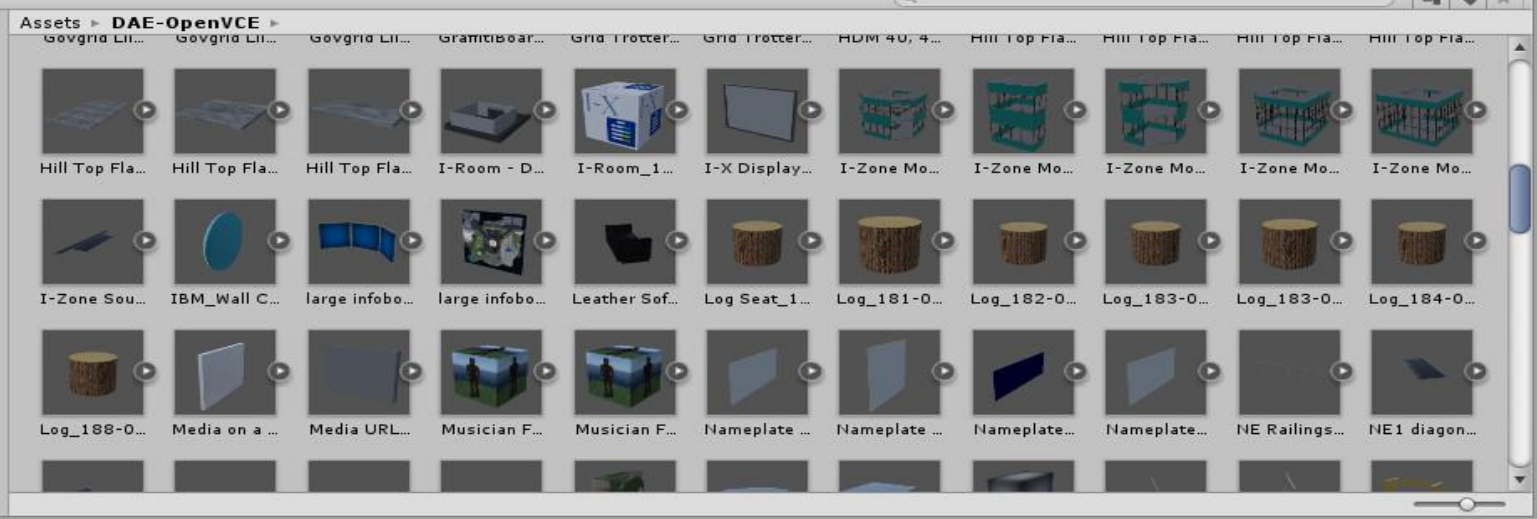- Optionally add a water layer at 0,0,0 using standard Unity assets.
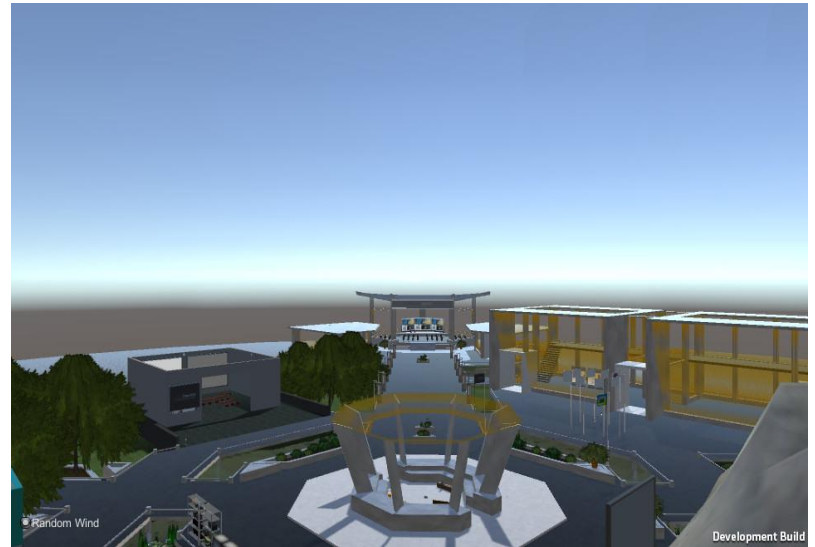
Issues that may arise

- Take care to include the customised Editor/SelectOARShader.cs in the project assets.

- You may see a warning from Unity about a mesh having more then 64K vertices or triangles indicated on loading the assets in Unity. The converted OpenSim terrain mesh has 256x256x2 triangles, but Unity itself splits larger meshes into smaller components to address this.

- During conversion the OAR Converter may report a number of errors related to texture conversion. The OAR Converter tries a number of JPEG2K libraries to do its best for conversion, but some still cannot be converted.

- The OAR Conversion process does not bring across any active scripting, particle systems (for smoke, fire, etc.) or special light sources. You need to add these again into a Unity project.

Visiting the OAR Converted Region

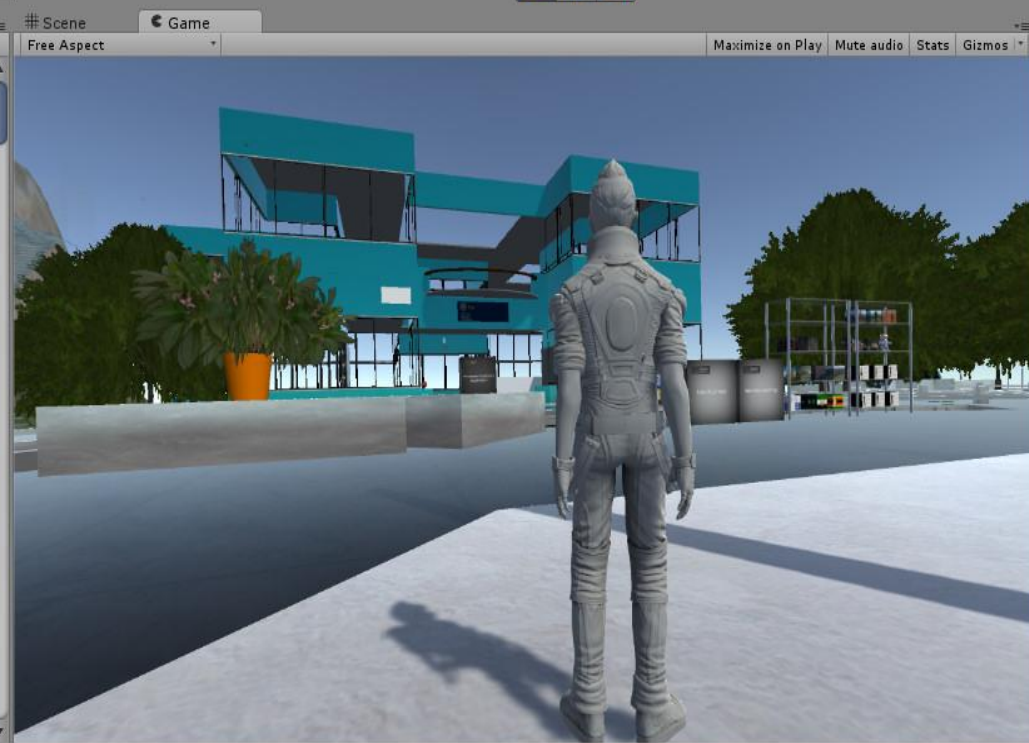- You can immediately look at the converted region content by adding a suitable "ThirdPersonController" and avatar such as the Unity "Ethan" standard asset.

- The OAR Converter distribution includes the free Unity Japan "UnityChan" character.

- Once available the Unity content can be published and used in any Unity project including via Unity-based multi-user virtual worlds such as Sinespace.

Unity Personal (64bit) - scene.unity - VR-OpenVCE - Web Player <DX11>

File   Edit   Assets   GameObject   Component   Mobile Input   Window   Help

Center   Local

Layers   ▾   Layout   ▾   Account   ▾

≡ Hierarchy
Create ▾   Q*All

Directional Light
▼ ThirdPersonController
    EthanBody
    EthanGlasses
  ▶ EthanSkeleton
    Main Camera
Plane (Remove When Complete)
WaterProDaytime
WaterProNighttime
▶ Globe Lamp_064-075-026__106a2f41-e71f-4b68-
▶ OpenVCE - diagonal rail long_078-200-022__f8c0
▶ Ginger Punk Complete Male Avatar_117-102-023
▶ OpenVCE - Lamp Post and Banner_072-168-023_
▶ triangular stand_151-140-023__689be34c-86bc-4
▶ Bench - 5 Seat - Grey_128-132-022__12af339f-2
▶ post_162-143-019__8441b573-0de9-4e91-a0c4-4
▶ Ship Wreck - Aft_230-086-019__7d8a6e85-78af-
▶ Planet - Saturn_207-112-035__53f22dcf-e1d4-45
▶ OpenVCE Presenter v3.1_140-061-026__837436a
▶ Teleport to OpenVCE Central Plaza_083-114-023,
▶ OpenVCE - Expo Pavilion - Left linked doors_096-
▶ Scuplty - Rounded Cube_132-062-022__8e0437d
▶ Log_183-055-020__4ff14624-af32-4e85-ac32-3a5
▶ Terracotta Pot_152-140-024__0ed85a2b-c671-48
▶ Scuplty - Rounded Cube_124-062-022__7536bf2(
▶ Expo Pavillion plaza rhs_144-176-022__e7d07b34
▶ post_160-103-019__3cdfc1f3-a208-430c-9534-17
▶ Posing Stand - Black_225-197-023__374e6970-1
▶ OpenVCE Flagpole_133-177-027__c2481f98-182c
▶ Scuplty - Rounded Cube-004-245-026__53a8f7b(

Scene   Game
Free Aspect   Maximize on Play   Mute audio   Stats   Gizmos ▾

▶ ‖ ▶‖

Project   Console
Create ▾

All Prefabs
All Scripts

▼ Assets
  ▼ DAE-OpenVCE
      Materials
      Phantoms
      Textures
  ▶ Editor
  ▼ Standard Assets
    ▼ Characters
      ▶ FirstPersonCharacter
        PhysicsMaterials
      ▶ RollerBall
      ▼ ThirdPersonCharacter
        ▶ Animation
          Animator
          Materials
        ▶ Models
          Prefabs
          Scripts
          Textures
    ▶ CrossPlatformInput

Assets ▸ DAE-OpenVCE ▸

Govgrid Lil... Govgrid Lil... Govgrid Lil... GraffitiBoar... Grid Trotter... Grid Trotter... HDM 40, 4... Hill Top Fla... Hill Top Fla... Hill Top Fla... Hill Top Fla...

Hill Top Fla... Hill Top Fla... Hill Top Fla... I-Room - D... I-Room_1... I-X Display... I-Zone Mo... I-Zone Mo... I-Zone Mo... I-Zone Mo... I-Zone Mo...

I-Zone Sou... IBM_Wall C... large infobo... large infobo... Leather Sof... Log Seat_1... Log_181-0... Log_182-0... Log_183-0... Log_183-0... Log_184-0...

Log_188-0... Media on a... Media URL... Musician F... Musician F... Nameplate... Nameplate... Nameplate... Nameplate... NE Railings... NE1 diagon...

● [CAPI] LibOVR module is located at C:\WINDOWS\SYSTEM32\LibOVRRT64_0_6.dll

① Inspector

☑ Main Camera   ☐ Static ▾
Tag MainCamera   ▾   Layer Default   ▾

▼ ⟰ **Transform**
Position   X -0.125050‹ Y 0.9357556 Z -1.418223
Rotation   X 0.9307408   Y 355.9899   Z 358.5201
Scale   X 1   Y 1   Z 1

▼ ⬚ ☑ **Camera**
Clear Flags   Skybox   ▾
Background   ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Culling Mask   Everything   ▾

Projection   Perspective   ▾
Field of View   ——————————●——————   60
Clipping Planes   Near 0.3
                   Far   1000
Viewport Rect   X 0   Y 0
                   W 1   H 1
Depth   -1
Rendering Path   Use Player Settings   ▾
Target Texture   None (Render Texture)   ⊘
Occlusion Culling ☑
HDR   ☐
Target Eye   Both   ▾

▼ ⬚ ☑ GUI Layer
▼ ⬚ ☑ Flare Layer
▼ ◉ ☑ Audio Listener

Add Component

OpenSim Converted Region in Unity 5 - OpenVCE

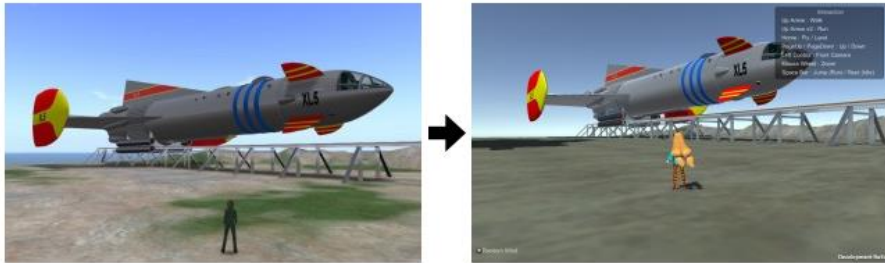

OpenSim Converted Region in Unity 5 - TUIS

OpenSim Converted Region in Unity 5 - Black Rock and Supercar

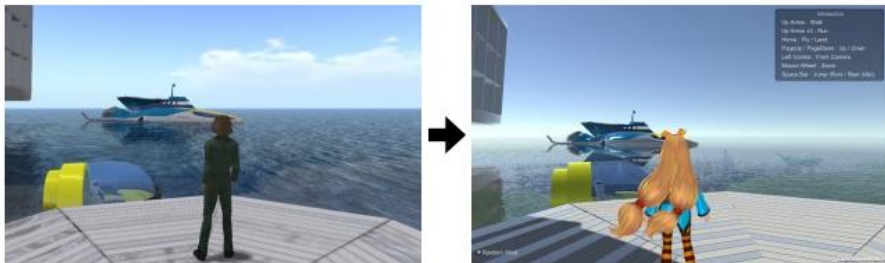## OpenSim Converted Region in Unity 5 - Oil Rig [Launch]

OpenSim Converted Region in Unity 5 - Space City and Fireball XL5

OpenSim Converted Region in Unity 5 - Epic Castle [Launch]

## OpenSim Converted Region in Unity 5 - Marineville and Stingray

OpenSim Converted Region in Unity 5 - Edinburgh/F4K/Fish4Knowledge

OAR Converter – Use with Sinespace

- Sinespace is a Unity-based multi-user virtual world platform which allows users/creators to add their own regions and experiences.

- Sinespace supports WebGL/Browser, desktop, mobile platforms and VR.

- OAR Converted regions or extracts from them can easily be used in Sinespace, but there is an issue with many repeated textures and materials due to the way that OAR Converter encodes visual properties in texture/material names leading to repeats of the (potentially large) texture files in the Unity project.

- Adam Frisby, himself an early developer of OpenSim, has provided a useful tool in the Unity Sinespace menu that allows for "OAR material Cleanup" which can be used before a Unity/OAR Converted Sinespace region is uploaded and which significantly reduces the number of repeated texture files needed.

- Vue – Virtual University of Edinburgh – 12 regions from Second Life/OpenSim brought over and moved onto the original 256mx256m grid relative positions.
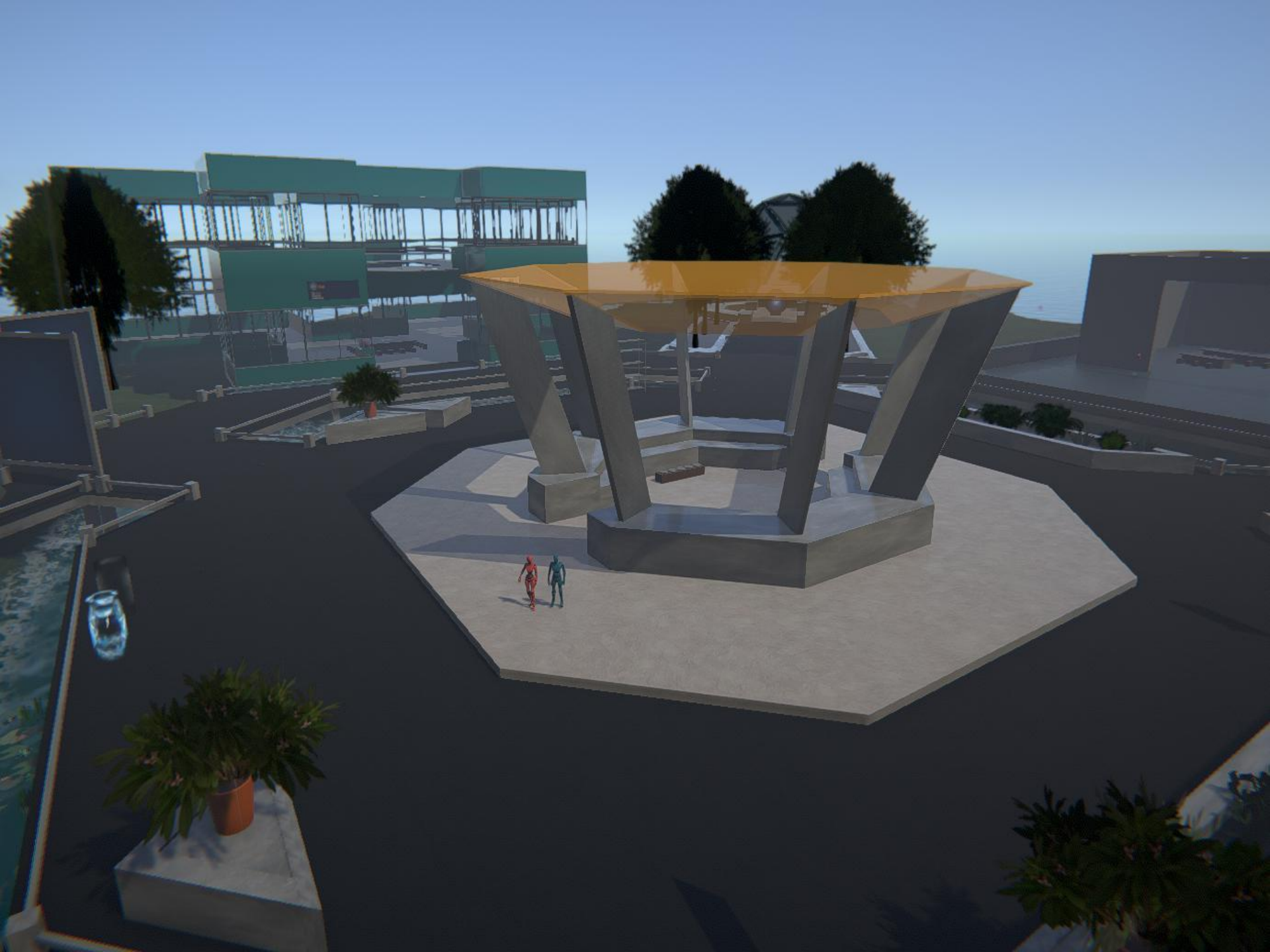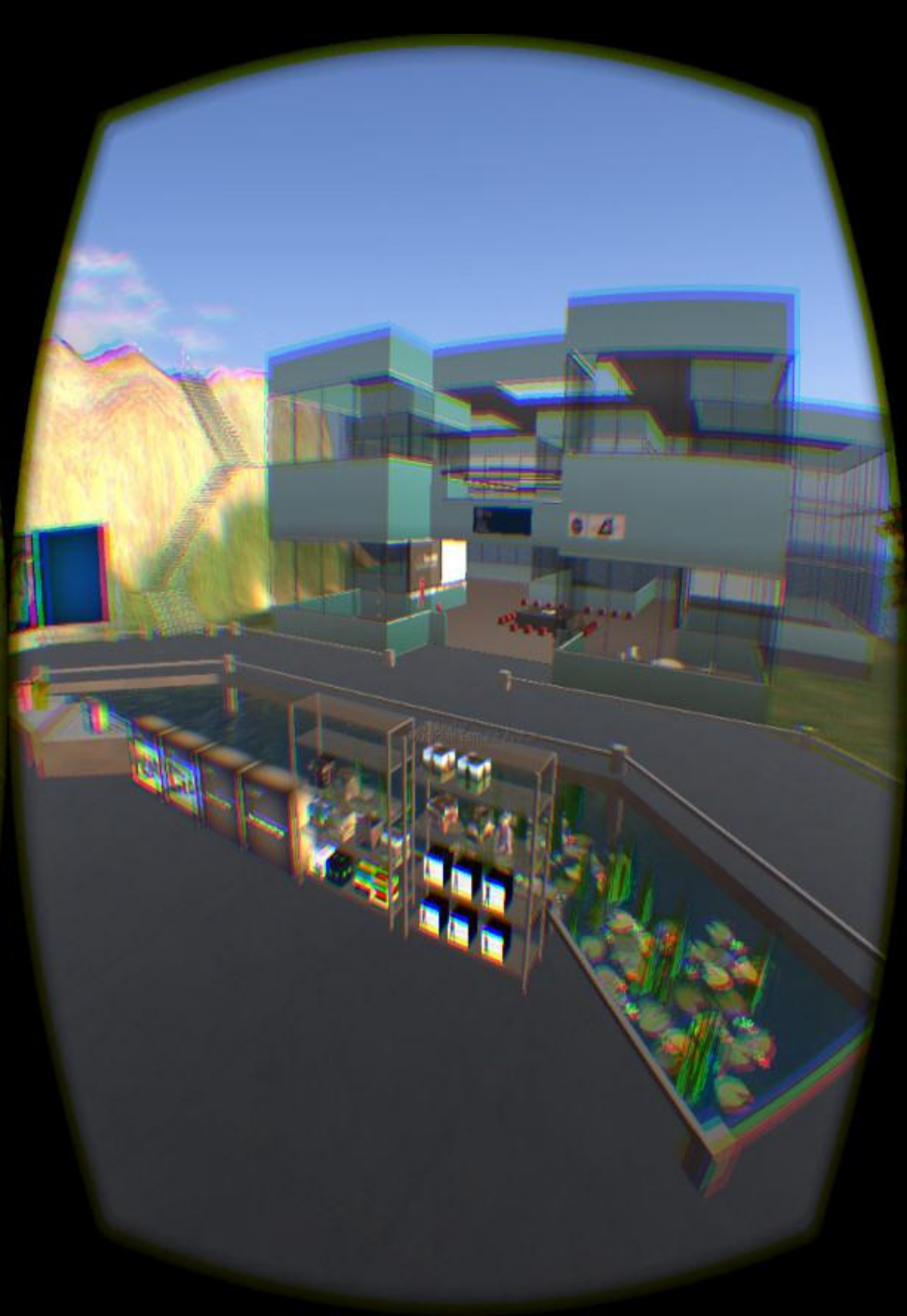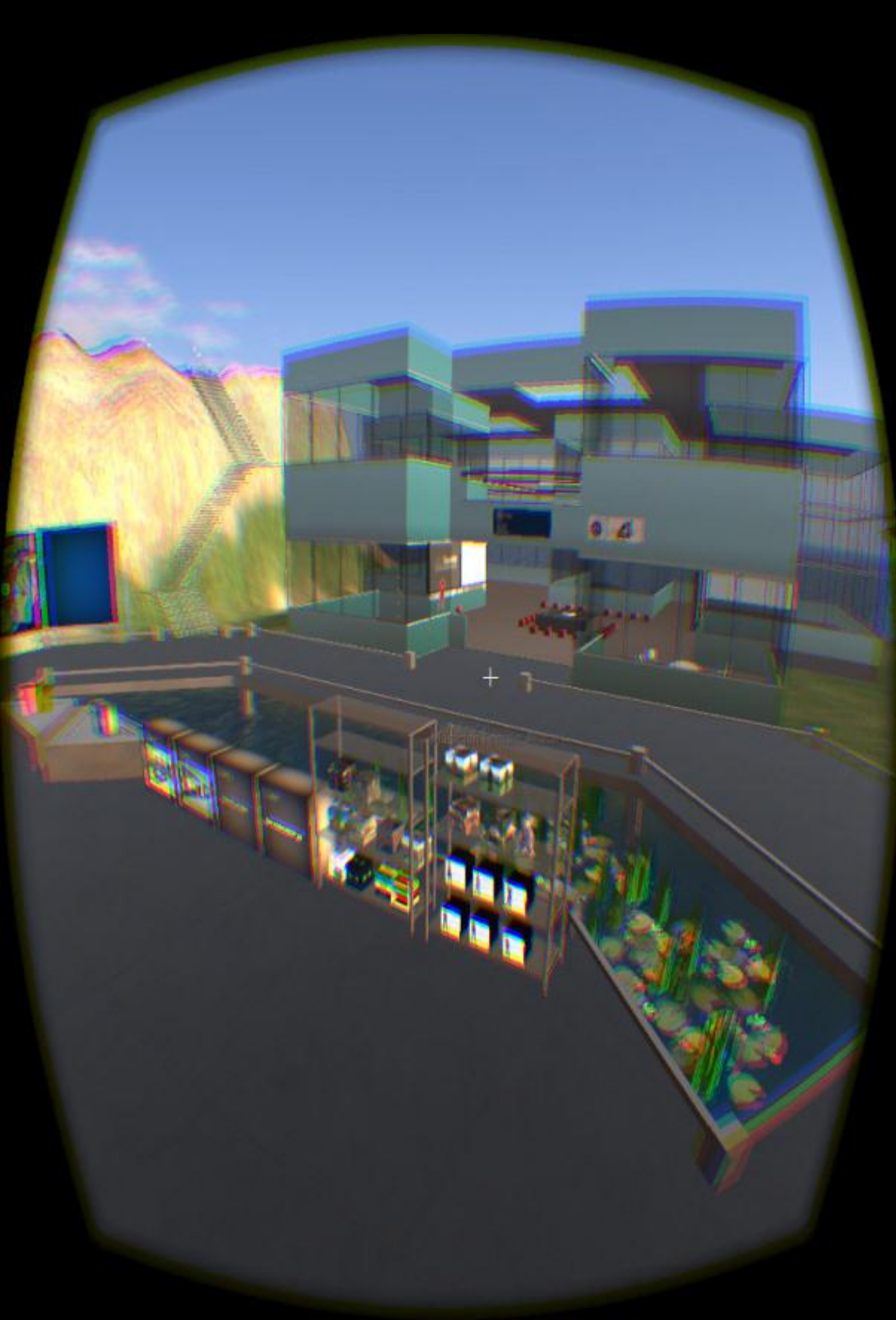
sinespace

sinespace

Vue

Virtual University of Edinburgh

OAR Converter – License
Flexible – any use with attribution

OAR Converter – More Information

- A web page with OAR Converter resources, quick start information and links is available at:

  http://blog.inf.ed.ac.uk/atate/oar-conv/

- The main distribution web page and more detailed information is available at the original TUIS site in Japan at:

  http://www.nsl.tuis.ac.jp/xoops/modules/xpwiki/?OARConvWin

Virtual World Development Paths