

# VREVAL

Prepare Audio Sources for VREVAL with Unity and Upload Asset Bundle to VREVAL Website.

Edited by

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# ABOUT MODELS FOR VREVAL

## About

The VREVAL application works with a Unity Framework.

That means, Unity has to be installed. Through Unity, the models will get prepared for the VREVAL application.

So called *Assets* will be uploaded to a desired Project at VREVAL Website.

To collect one or more models, an Asset Bundle will be created.

To create Asset Bundles in Unity the package *AssetBundles-Browser* from git must be installed.

## Install

The two following softwares have to get installed, before starting importing models to Unity and creating Asset Bundles:

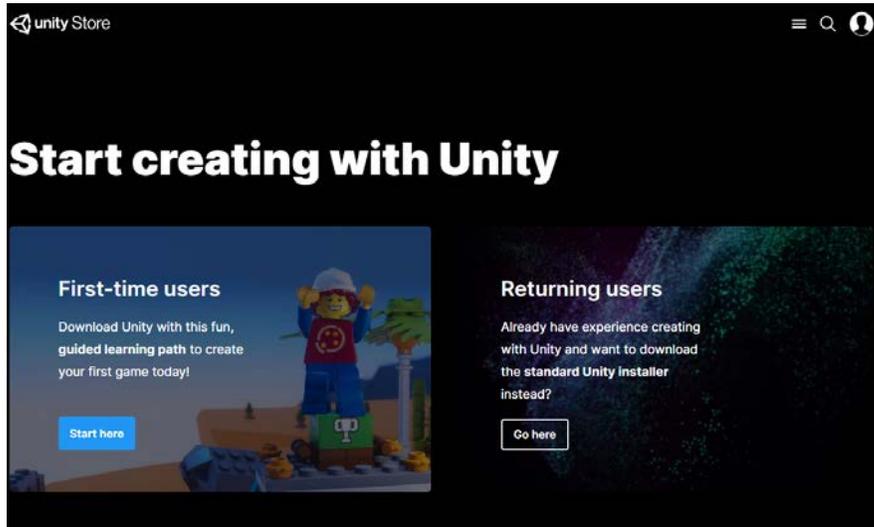
1. Unity **2020.1.13**  
(<https://unity3d.com/get-unity/download/archive>)
2. git  
(<https://git-scm.com/downloads>)

# 1. INSTALLATION OF UNITY AND GIT

## Step 1

Get Unity **2020.1.13**.

<https://unity3d.com/get-unity/download/archive>



Unity Personal is free of charge.

<https://store.unity.com/products/unity-personal>

*Eligibility: Unity Personal is for individuals, hobbyists, and small organizations with less than \$100K of revenue or funds raised in the last 12 months.*

## Step 2

Install the recommended Unity Version.

Additional modules are not required.

Finally, start the Unity Hub.

## Step 3

Download and Install git.

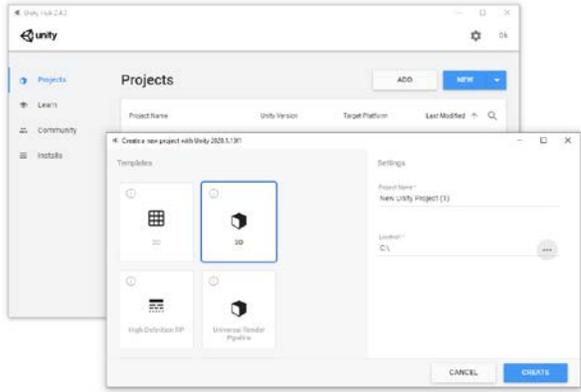
<https://git-scm.com/downloads>



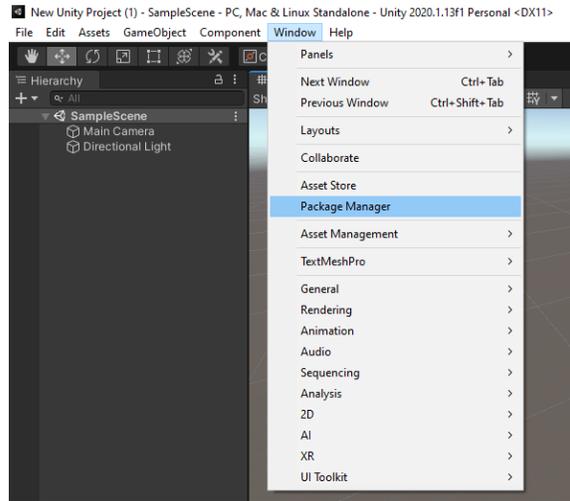
During the installation process, the default settings can be used.

# 2. UNITY - ADD ASSET BUNDLE BROWSER

Step 1  
Create a new Project.  
Select the "3D" template.

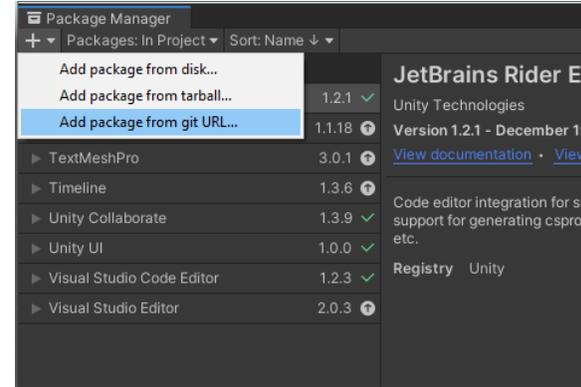


Step 2  
Open the Package Manager in the Unity Project.

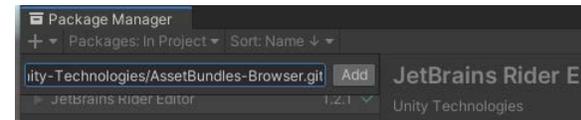


Step 3  
Add package from git URL:

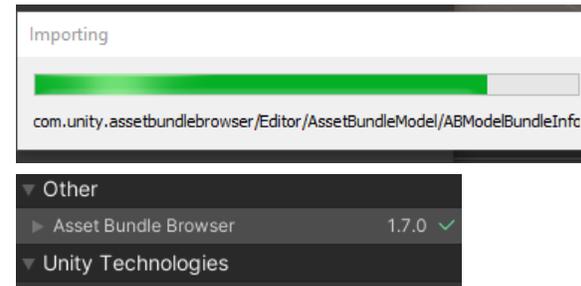
<https://github.com/Unity-Technologies/AssetBundles-Browser.git>



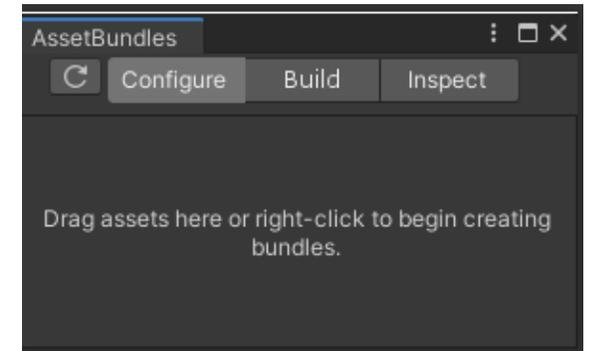
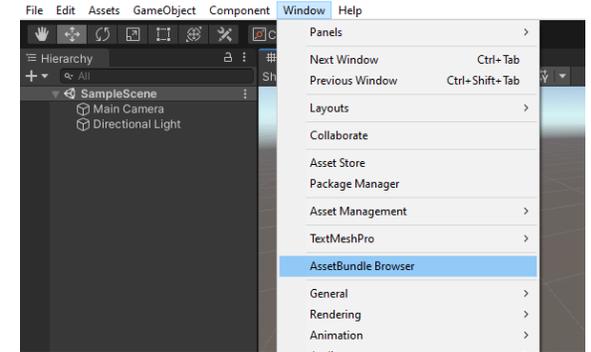
Add the package.



The package will get imported.



Step 4  
Open the Window  
AssetBundle Browser.



# 2. UNITY - IMPORT AUDIO

## Step 1

Download, Cut, Edit and Generate Audio Files.

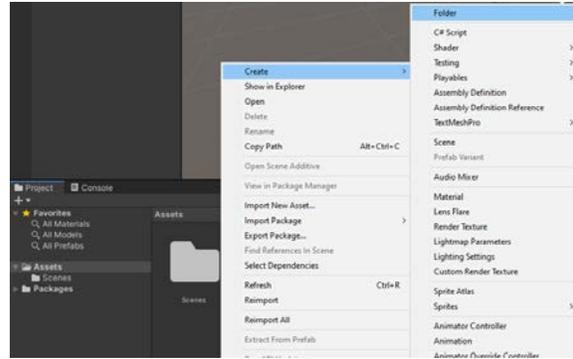
Recommended export file format is OGG or MP3 for VREVAL APP Windows.

Name	Typ
198120_potok-potoczny_park	OGG Video File (VLC)
352861_louismay1_ambience-o...	OGG Video File (VLC)
572816_klankbeeld_park-may-7...	OGG Video File (VLC)

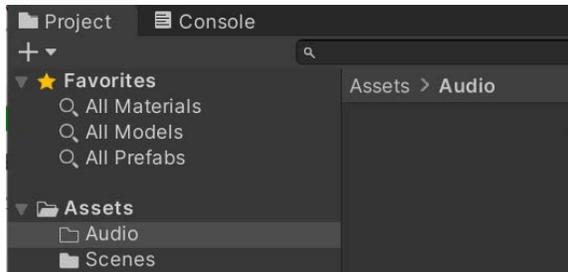
## Step 2

Create a new folder in the Asset folder.

Right click in Asset canvas.

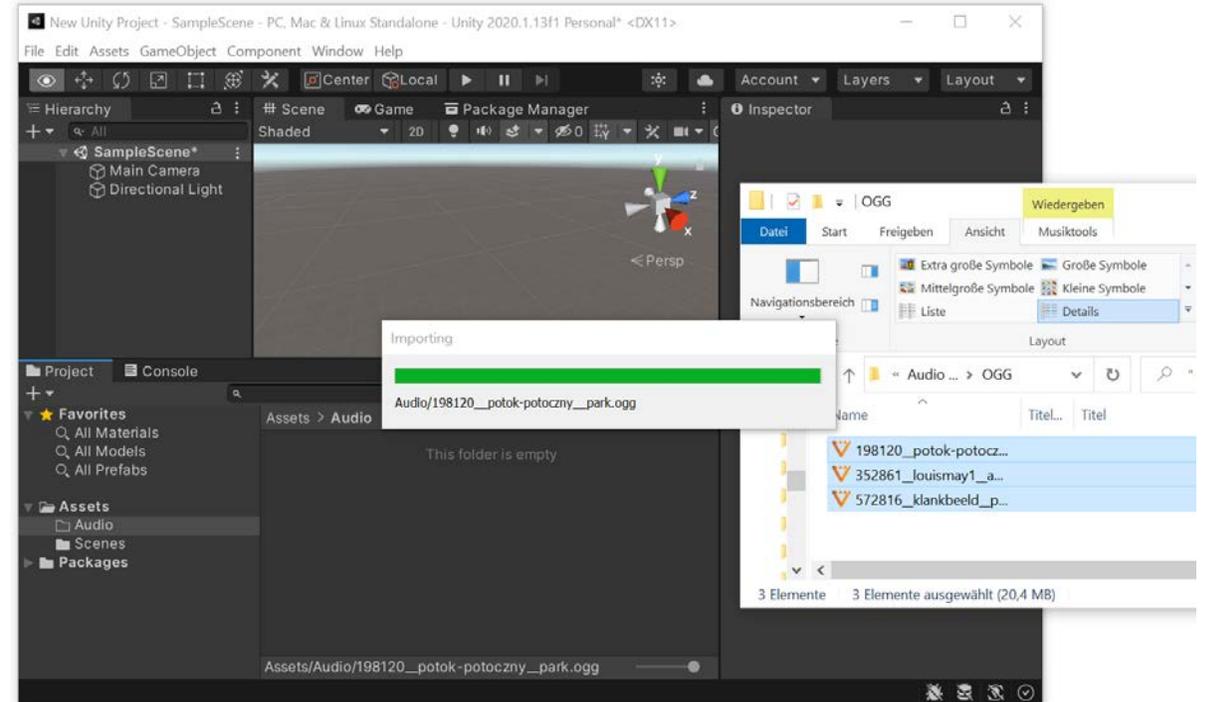


New folder ...



## Step 3

Import Audio Files via Drag&Drop.



## 2. UNITY - AUDIO SETTING

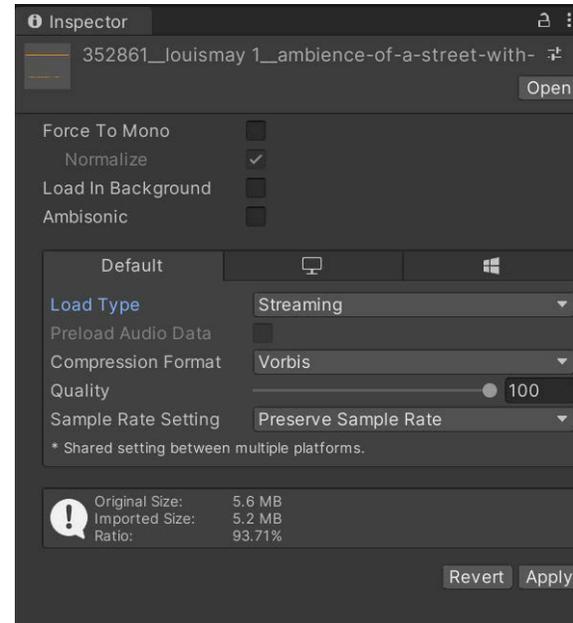
### Step 4

There are two major types of audio. First, there are voices. **Voices** are played back as **2D** stereo sounds.

Second, there are **ambient** sound. Ambient sound is played back as **3D** sound and can be handled as **mono** audio files.

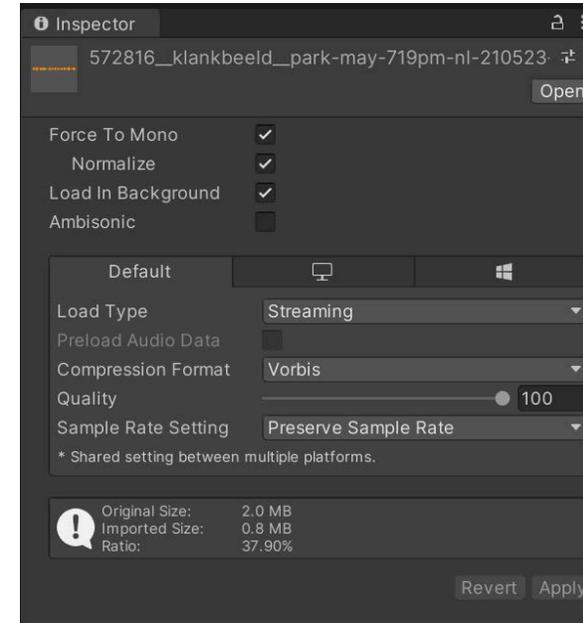
### Step 5.1 Voices

Recommended Audio Settings for Voices.



### Step 5.2 Ambient Sound

Recommended Audio Setting for Ambient



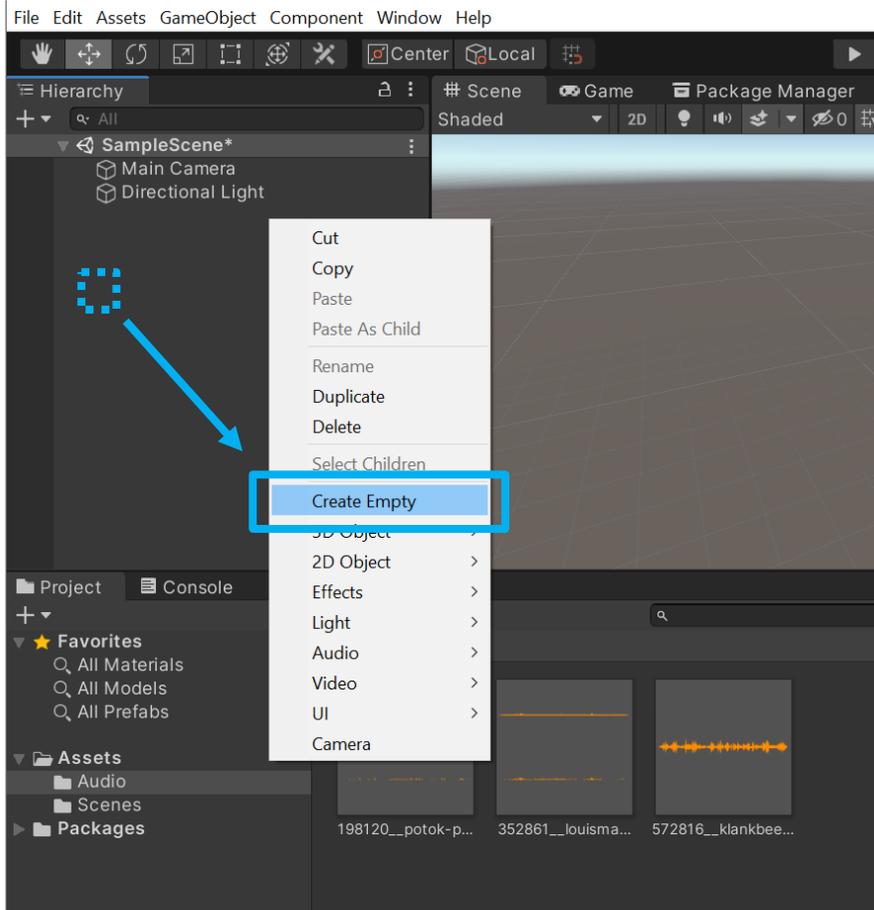
Unity Documentation  
<https://docs.unity3d.com/2021.2/Documentation/Manual/class-AudioClip.html>

# 2. UNITY - AUDIO LOCATION FROM VREVAL WEBSITE

## Step 6

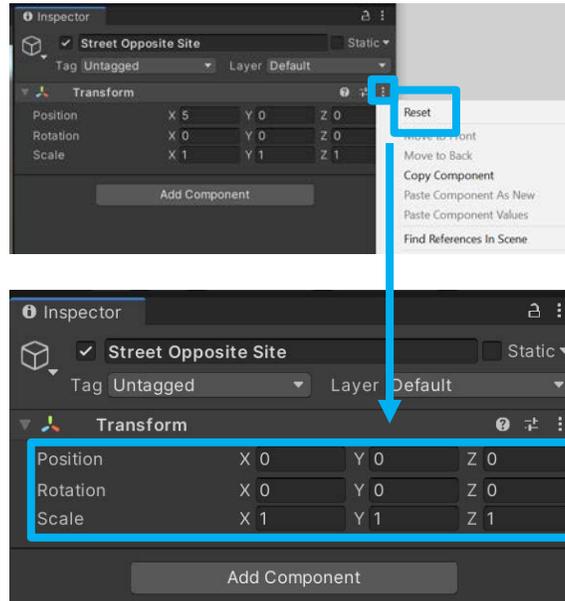
The location of the Audio has to be defined in Unity.  
An Audio Source must be created.

First, create an empty object.  
Rename the Object



## Step 7

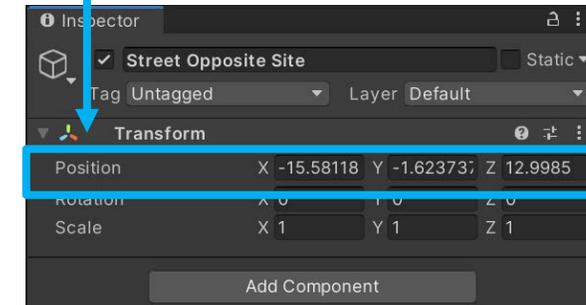
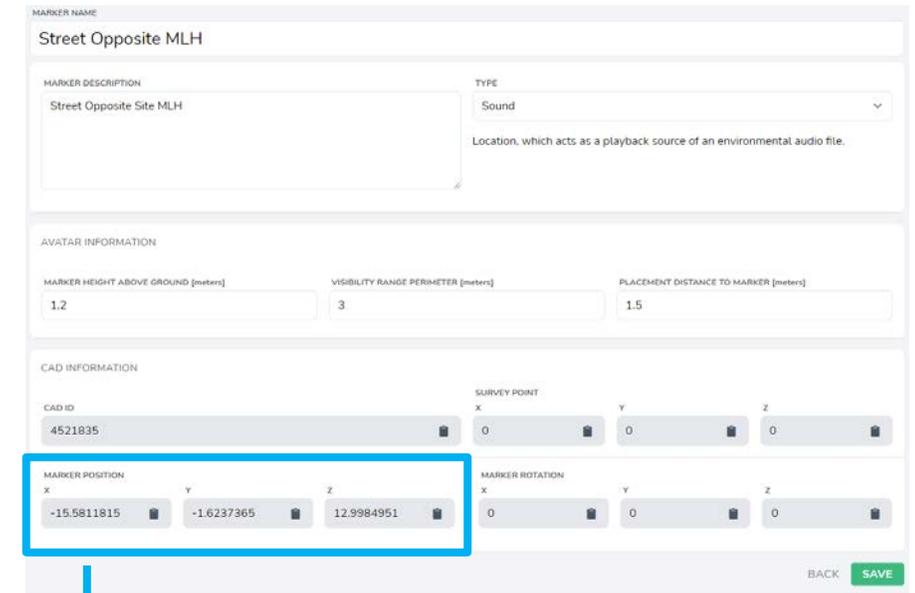
Reset position of object.



## Step 8.1

Set position of object (Unity Coordinate System)

Copy Coordinates Sound Marker from VREVAL Website.



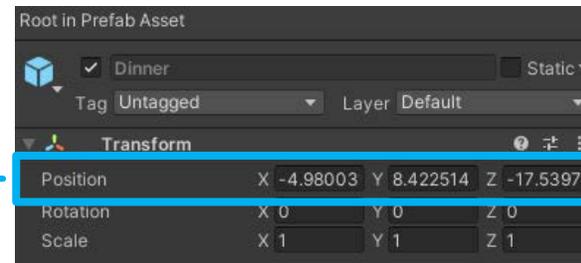
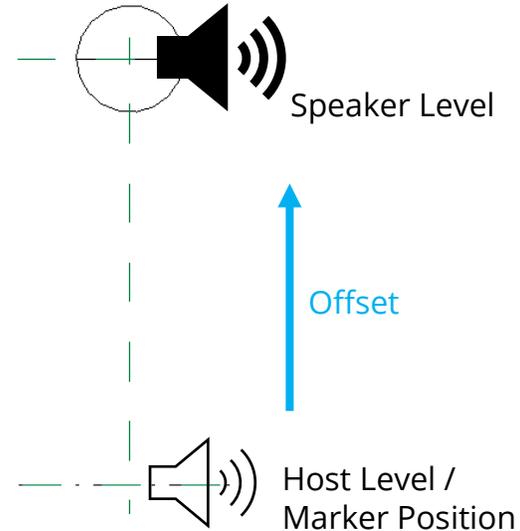
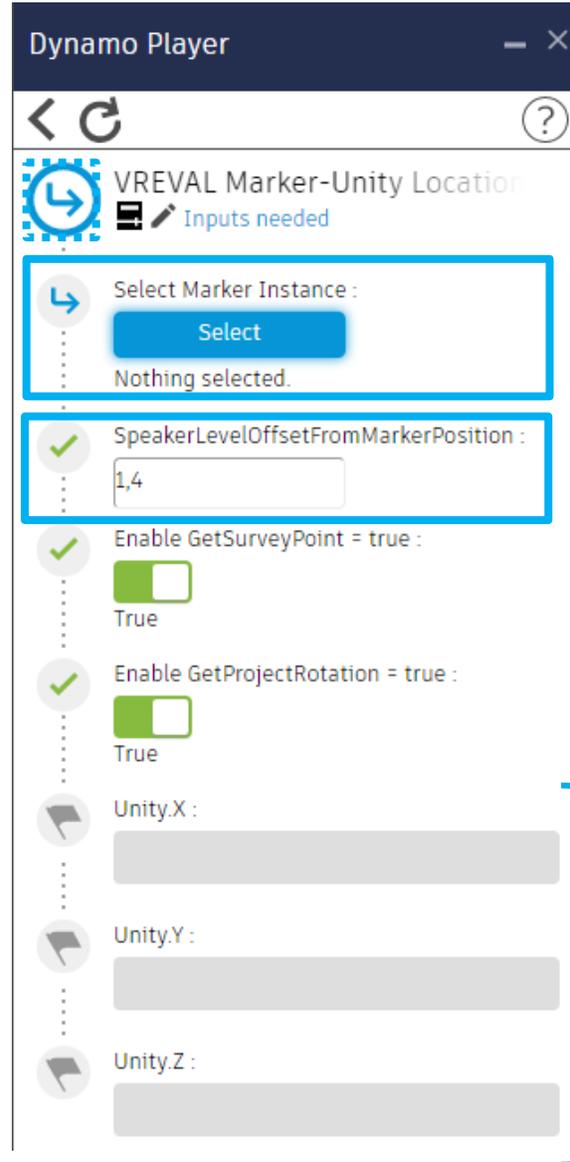
## 2. UNITY - AUDIO LOCATION FROM REVIT

### Step 8.2

Set position of object in Unity Coordinate System

The position can be extracted directly from Revit with a Dynamo Player Script. The Revit Coordinates get transformed to the Unity Coordinate System.

1. Select the Marker.
2. Change Audible Source Height from Host Level to Speaker Level.
3. Copy the calculated coordinates and paste it into the Unity object position fields.



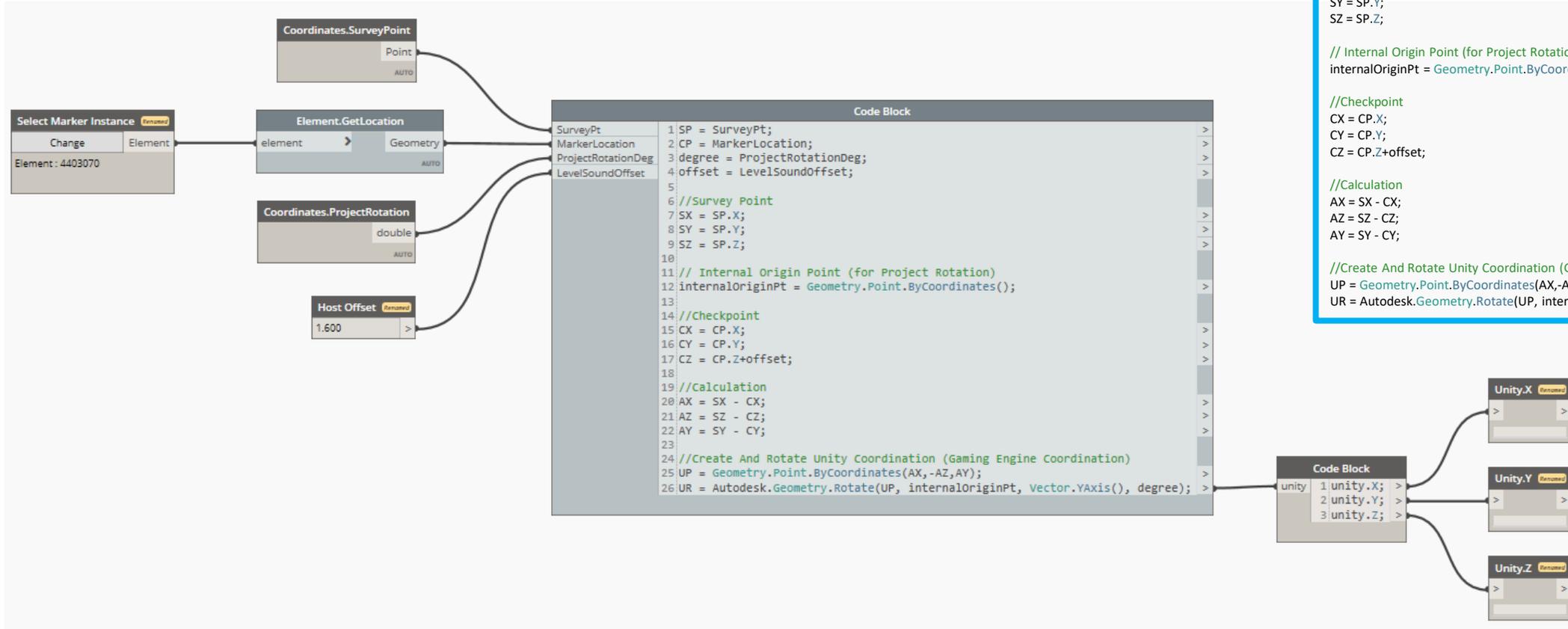
Root in Prefab Asset			
Position	X	-4.98003	Y 8.422514 Z -17.53974
Rotation	X	0	Y 0 Z 0
Scale	X	1	Y 1 Z 1

Speaker Level will not be consider, if positions are copied from VREVAL Website

# 2. UNITY - AUDIO LOCATION FROM REVIT

## Step 8.2

### Dynamo Script



```
SP = SurveyPt;
CP = MarkerLocation;
degree = ProjectRotationDeg;
offset = LevelSoundOffset;

//Survey Point
SX = SP.X;
SY = SP.Y;
SZ = SP.Z;

// Internal Origin Point (for Project Rotation)
internalOriginPt = Geometry.Point.ByCoordinates();

//Checkpoint
CX = CP.X;
CY = CP.Y;
CZ = CP.Z+offset;

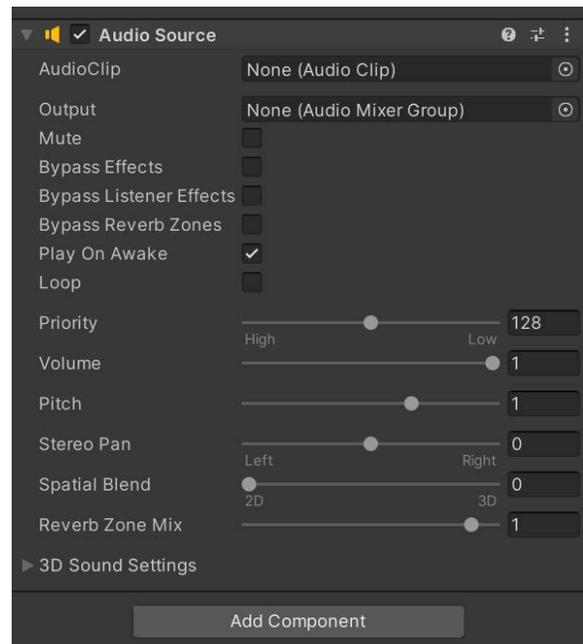
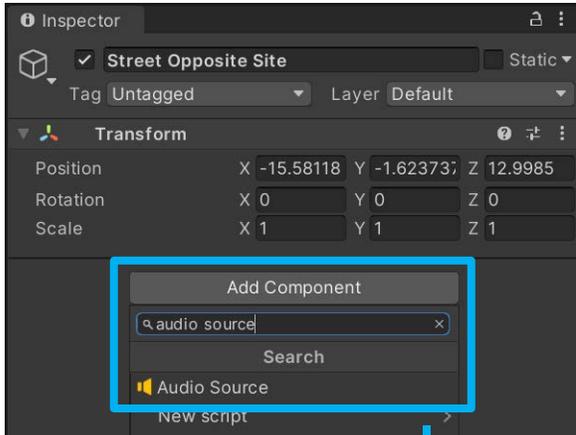
//Calculation
AX = SX - CX;
AZ = SZ - CZ;
AY = SY - CY;

//Create And Rotate Unity Coordination (Gaming Engine Coordination)
UP = Geometry.Point.ByCoordinates(AX,-AZ,AY);
UR = Autodesk.Geometry.Rotate(UP, internalOriginPt, Vector.YAxis(), degree);
```

## 2. UNITY - AUDIO FILE

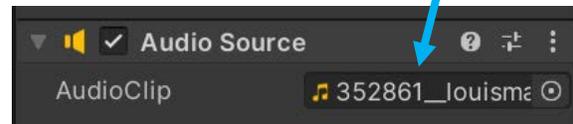
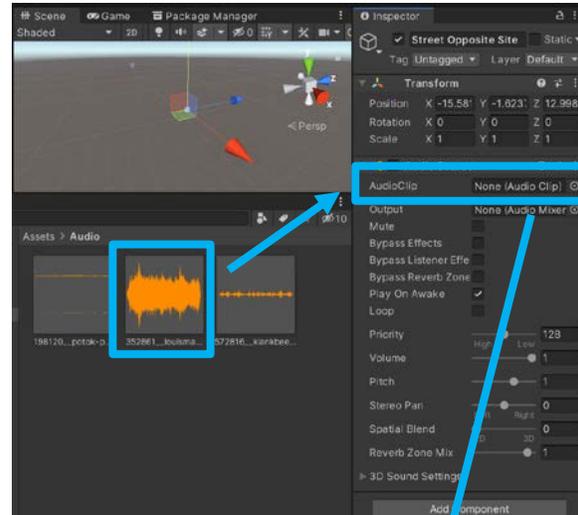
### Step 9

Add a new component to the object.



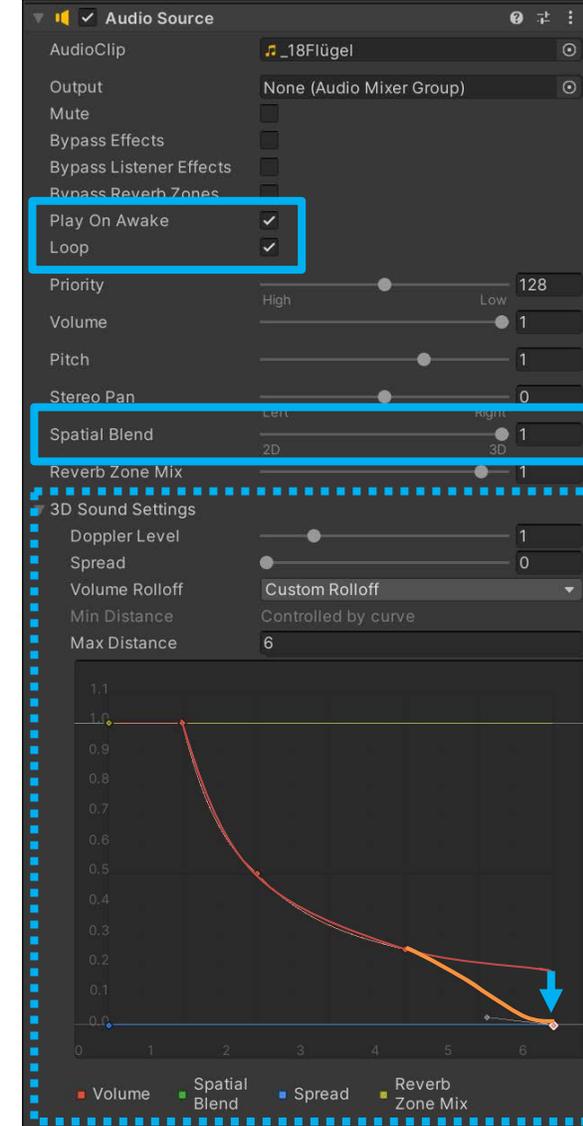
### Step 10

Drag Audio file to AudioClip.



### Step 11

Setup Audio Source



Unity Documentation

<https://docs.unity3d.com/2021.2/Documentation/Manual/class-AudioSource.html>

*Play On Awake:* Play the sound when screen loads.

*Loop:* Set the source to loop.

*Spatial Blend:*

- 2D – Sound Source at participant avatar. No 3D sound affect.
- 3D – Sound Sources are affected by spatial position and spread.

3D Sound Settings

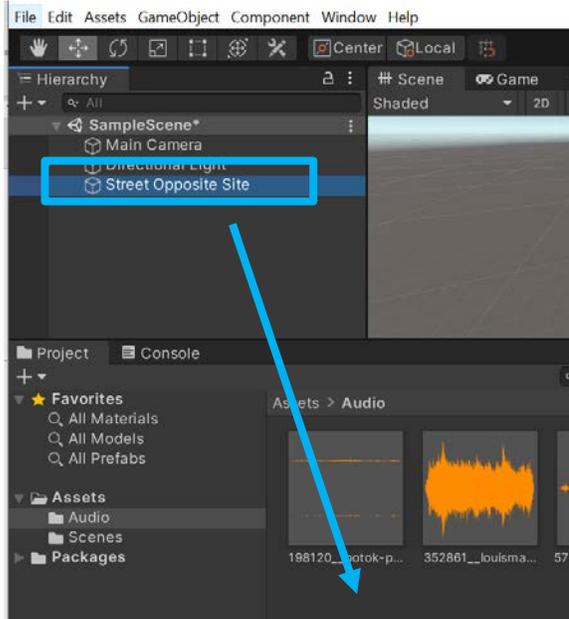
- If logarithmic rolloff used and sound should not be audible extend of max distance, last part of rolloff curve must go to 0. (orange curve)

Audio off = 0.0

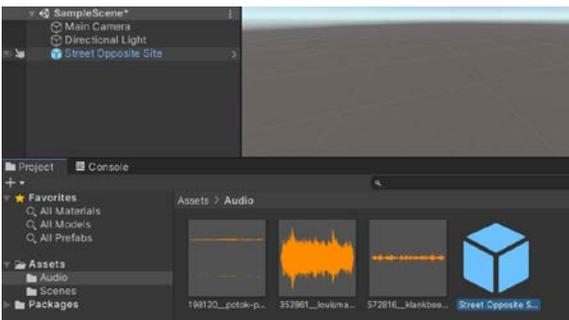
## 2. UNITY - AUDIO FILE

### Step 12

Drag the object from the Hierarchy into the Project folder.

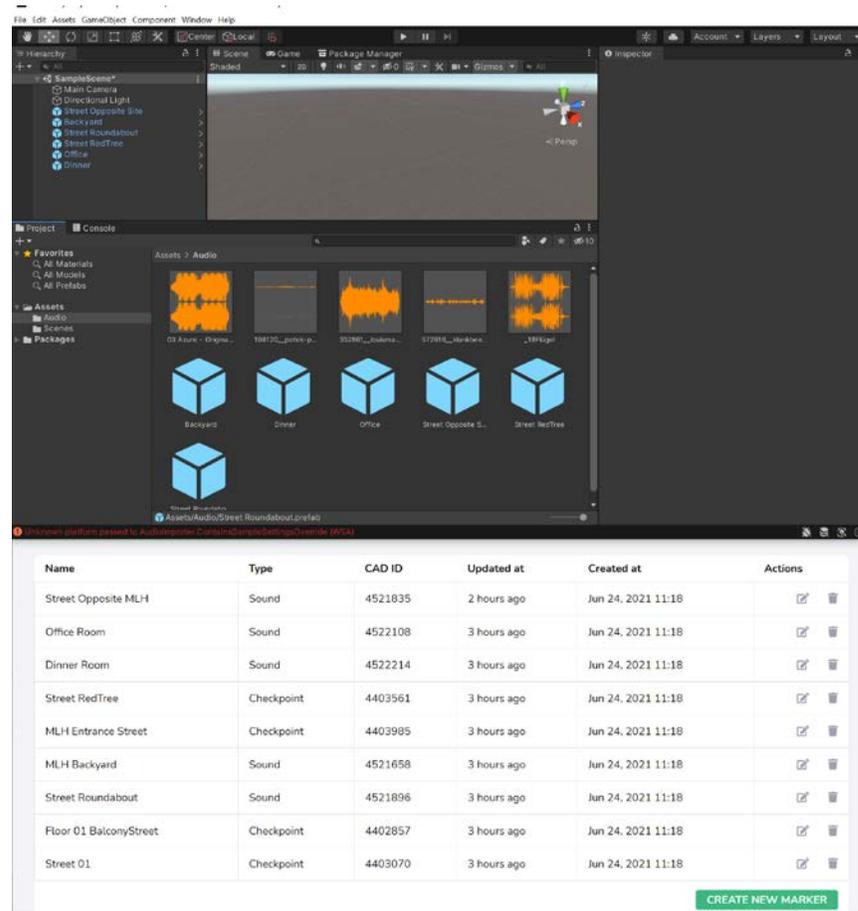


The object will turn blue.



### Step n

Repeat the previous steps to add more audio/sound to the environment.



... Unity and VREVAL Website

## 2. UNITY - EXPORT ASSET BUNDLE

### Step 13

Add audio objects to an Asset Bundle.

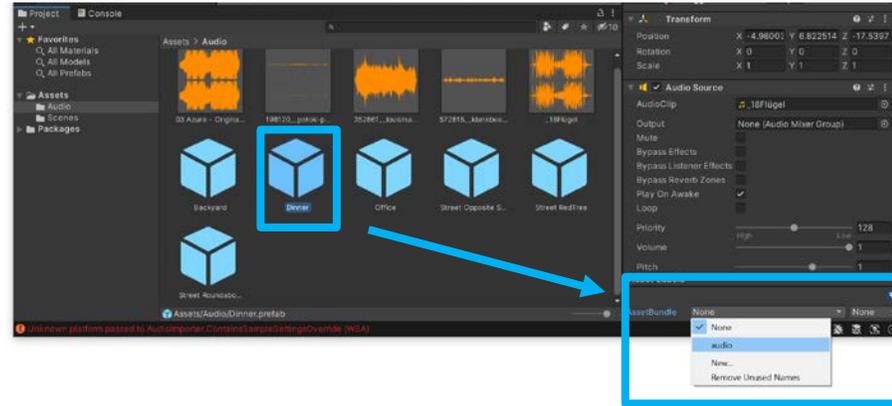


### Step 14 (optional)

Add additional audio to an existing Asset Bundle.

Select audio objects.

Select the AssetBundle *name*. Audio object(s) will be added.

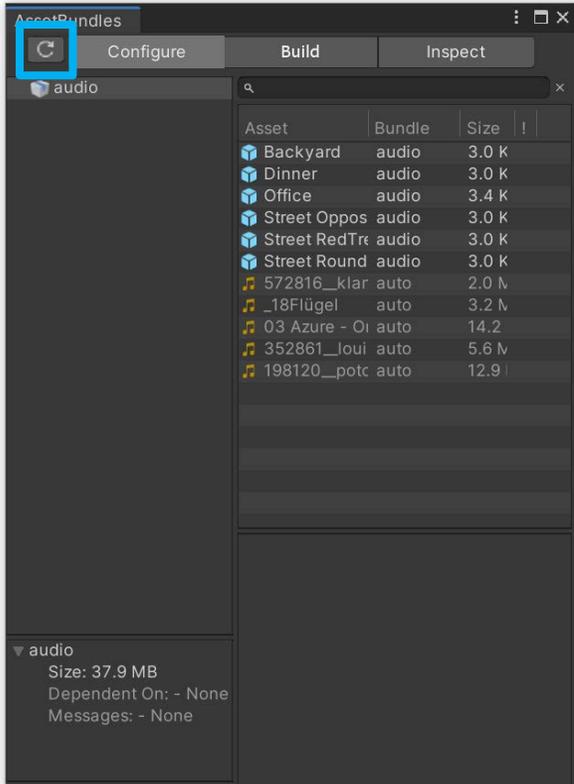


**Do not use Period "." (dot) in Asset Bundle Name!  
If used, VREVAL project gets corrupted after Bundle upload.**

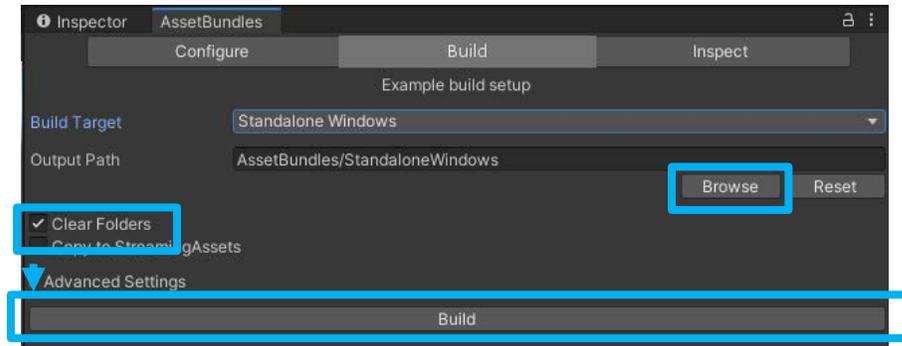
## 2. UNITY - EXPORT BUNDLES

**Step 15**  
Open the AssetBundles Browser.

Refresh the tab *Configure*. Select the *name* of the AssetBundle to export.



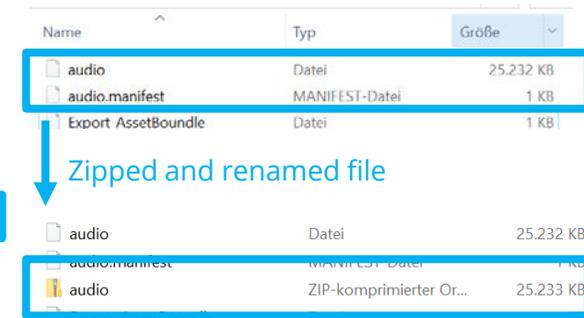
**Step 16**  
Open the tab *Build*.



1. Browse and select the save (build) location.
2. If previous builds should be deleted, enable *Clear Folders*.
3. Select *Build* to start the AssetBundle builder.

**Step 17**  
Zip the new created files (**defined AssetBundle name in Unity**) for upload to the VREVAL Website.

The following files get zipped.  
(AssetBundle Name + ~.manifest)



**Exclude** the files  
*Export\_AssetBundle* **and**  
*Export\_AssetBundle.manifest*  
in the zipped file.

**Include** asset named files.  
In this case,  
**audio** and **audio.manifest** get zipped.

## 2. UPLOAD THE ASSET BUNDLE TO VREVAL WEBSITE

### Step 1

Open the VREVAL Website.

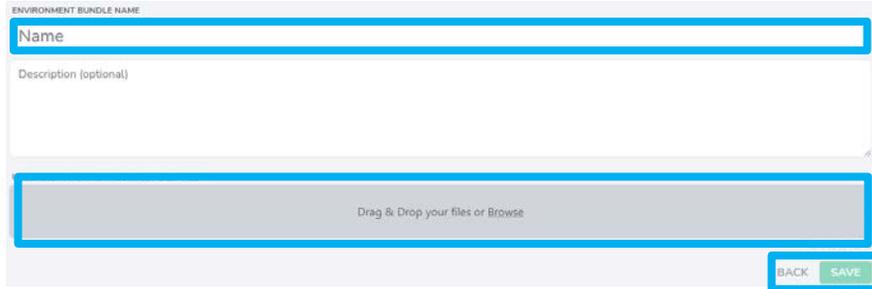
Navigate to the project and the section *Environment Bundles*.

Create new Environment Bundle.



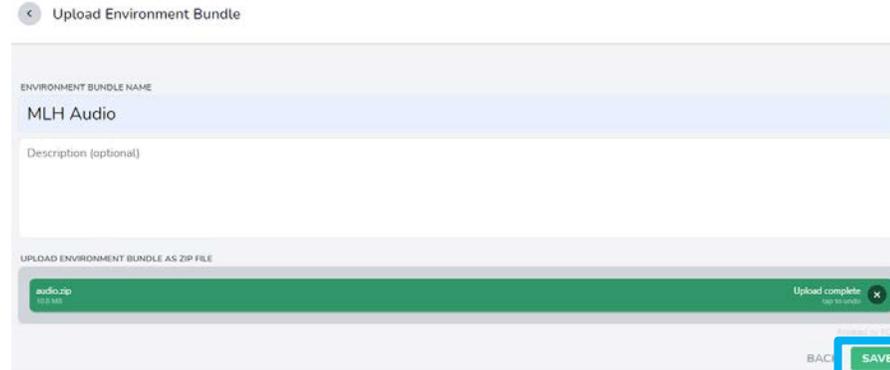
Change the *Name* of the Environment Bundle.

Drag & Drop the file or Browse the location. The zipped file will be uploaded automatically.



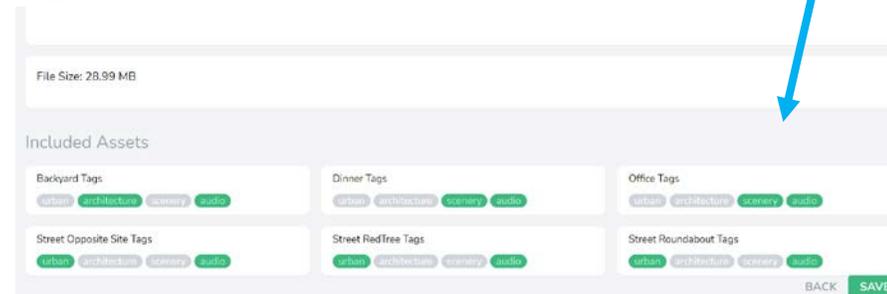
### Step 2

Save the uploaded Environment Bundle.



**Wait with Save, until Upload is completed.  
Only one click for Save.  
If not, projects gets corrupted.**

Tag your environments (filter).



### Step 3

Test the models and audio with the VREVAL application.

Select models and audio for the Task Environment.

