Sound Sense PRO

with multiplayer support



Sound Propagation System: Realistic Sound Simulation for Unforgettable Stealth Games!

Introducing the Sound Propagation System, a plugin designed to add depth and realism to your project through advanced sound propagation simulation. Perfect for stealth games where every detail matters, and understanding who hears what and how is crucial.

Key Features and Benefits:

Immersive "Sound Sense" Mode:

Visual representation of sound wave vibrations.

A visible "sound thread" indicates the source, distance, and intensity of the sound through color and vibration frequency.

If a direct path is blocked, the system displays a curved thread, showing the actual sound propagation route.

Flexible Sound Intensity Adjustment:

Every sound effect includes intensity settings, determining how far the sound can travel.

Material absorption of walls and other objects is accurately calculated to decide whether the sound reaches its target.

Mechanics where guards only react to sufficiently loud noises can be easily implemented.

Unique Use Cases:

Sound Reflection: Wall materials have absorption properties. Sound can bypass obstacles through open windows, doors, etc.

Enhanced NPC Interaction: Any actor can be equipped with a sound receiver component to "hear" sources and react accordingly.

Realistic and Engaging Stealth Gameplay:

Open windows allow sounds to pass through, creating diverse situations and sound pathways.

NPCs can not only detect incoming sound but also its source—for example, noticing an open window.

Multiplayer Support and Optimization:

All calculations are handled server-side, reducing client-side load.

Reliable and accurate system performance in networked games.

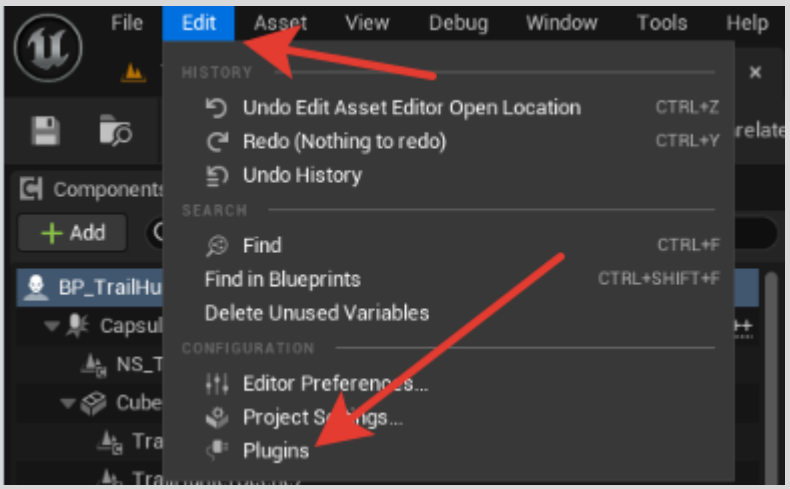
The Sound Propagation System is a cutting-edge tool for realistic sound simulation, adding mystery and strategic depth to your project. Take control of sound effects, surprise players with dynamic sound paths, and make your stealth game truly unforgettable!

Here's a key feature list for your plugin:

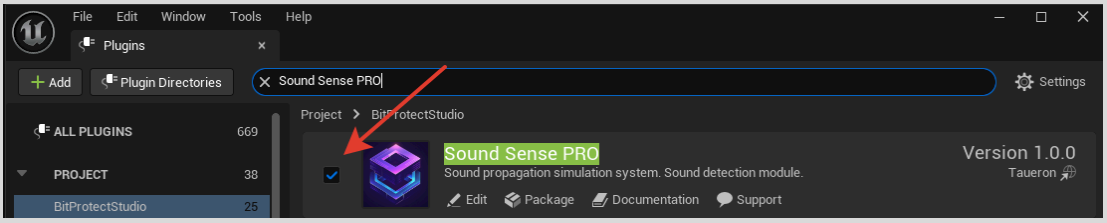
1. **Easily integrated into your project**
2. **Easy to configure and use**
3. **Multiplayer support**
4. **Cool effects**
5. **Great gameplay feature, especially for the stealth genre**
6. **Flexible settings for your project**
7. **Free support in our discord server**

Setup

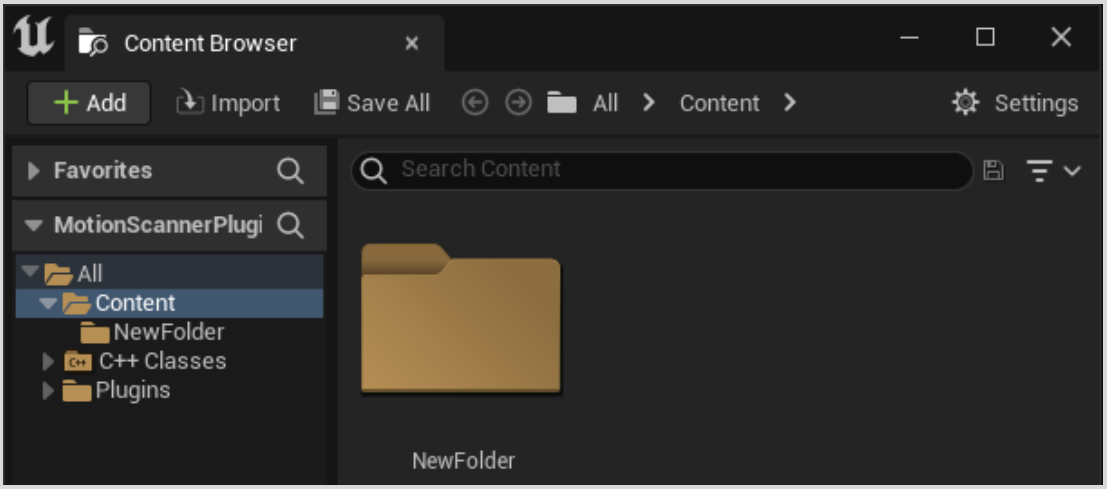
1. **Install plugin from Epic Store Launcher**
2. **Open your project**
3. **In the Edit menu, select Plugins.**



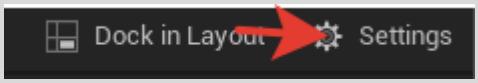
4. Find and enable the Sound Sense PRO



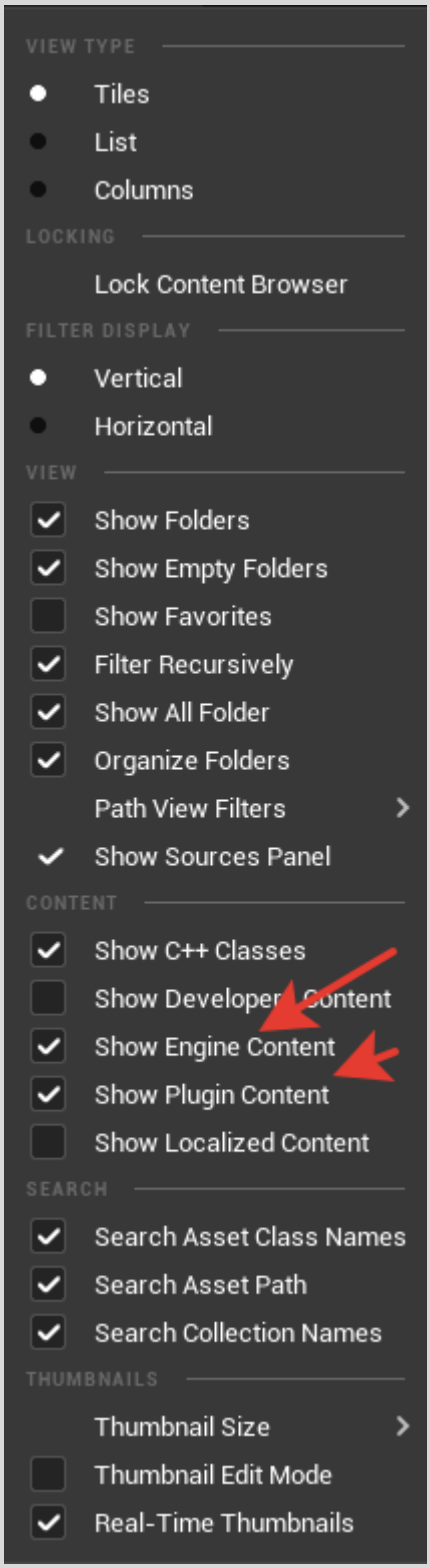
5. Select “Content Browser”



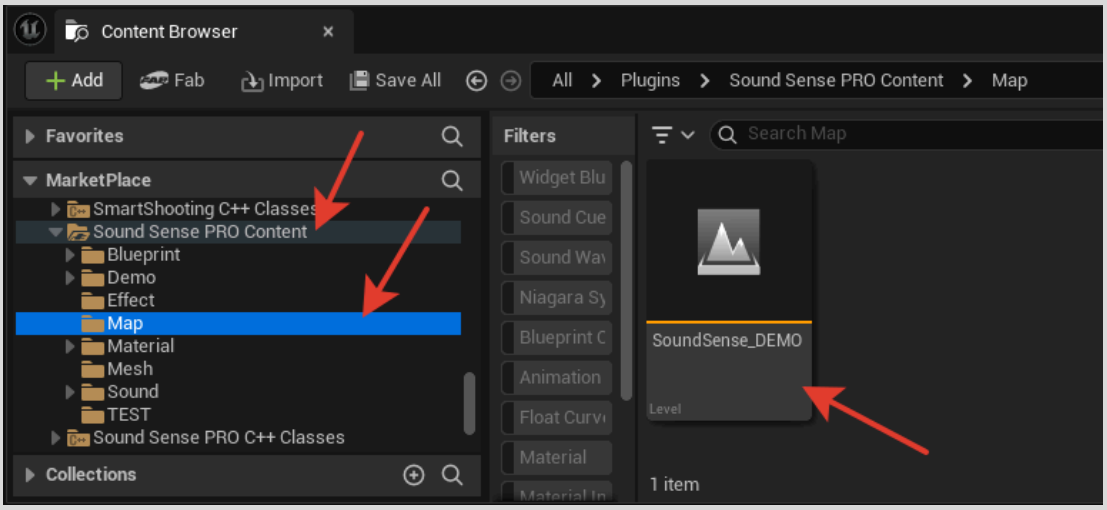
6. Select “Settings”



7. Select “Show Plugin Content” and “Show Engine Content”



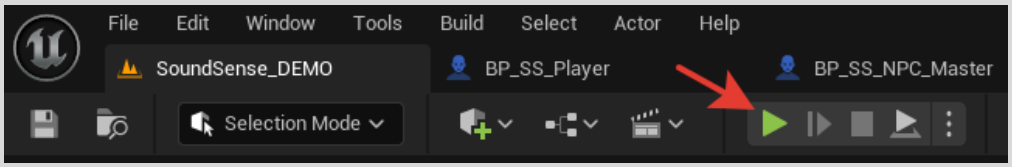
8. Go to “SoundSensePRO Content\Map”



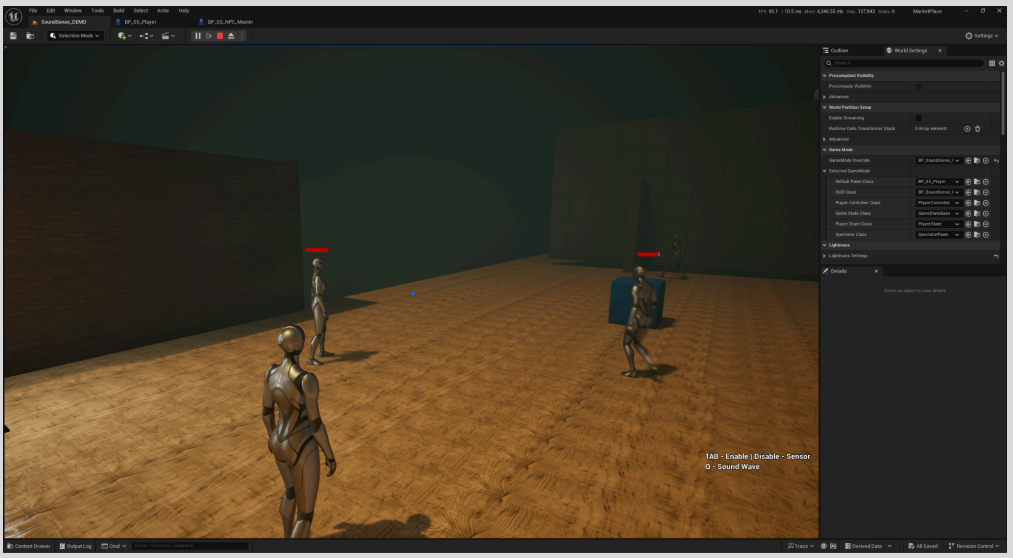
9. On the SoundSense_DEMO map you can check the plugin's functionality. And also use it for your project.

Now let's try to see the features of this plugin.

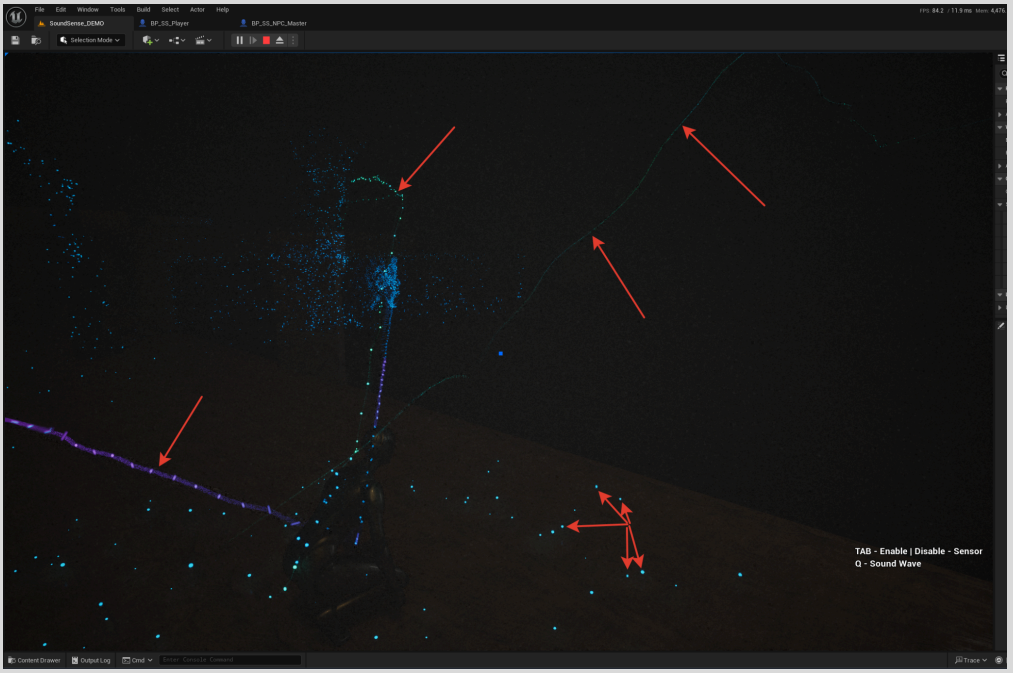
1. Press play.



2. Above the NPC you can see a scale if you get closer, it determines the volume of sound they hear from the player.



3. Press Q to enter Sound Sense mode



In this mode:

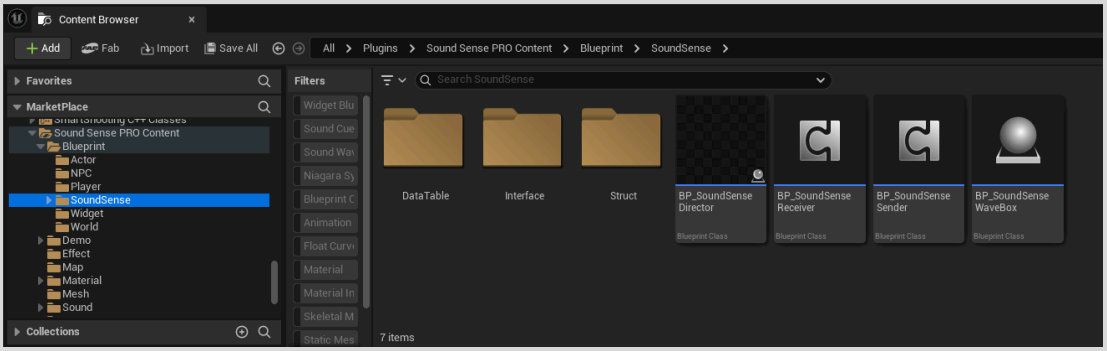
Blue dots are reflections of sound from the surface.

Purple line is sound that came directly.

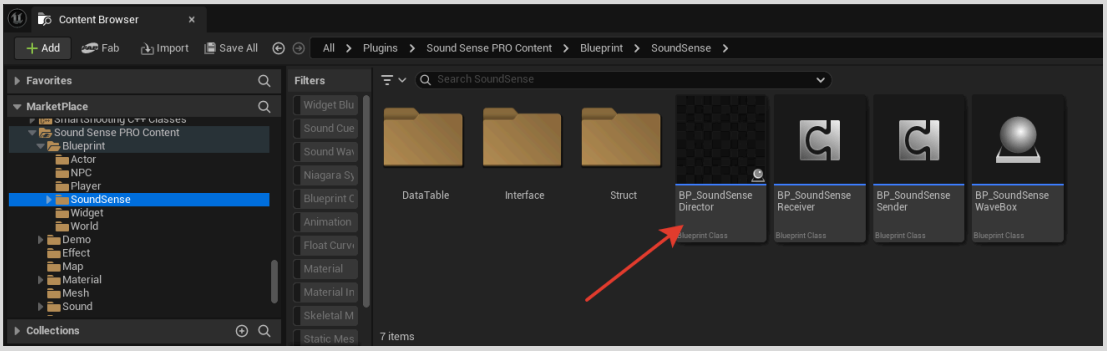
Greenish line is sound that could not come directly, but found a way through the simulation of sound propagation.

Now let me explain how to integrate the plugin into your project.

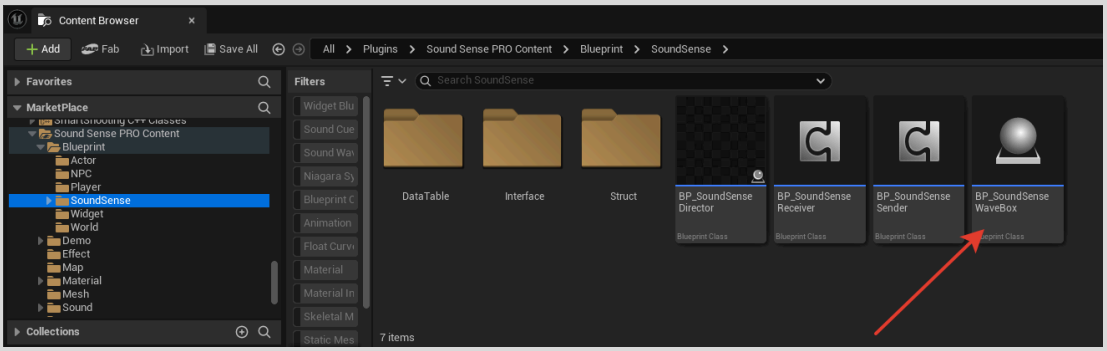
1. Go to “/SoundSensePRO/Blueprint/SoundSense”



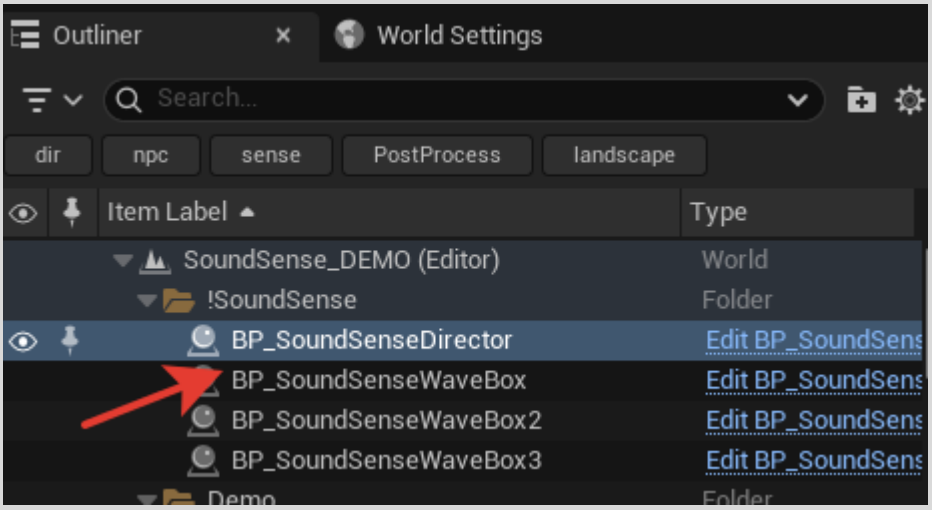
2. Drag and Drop BP_SoundSenseDirector in your scene.

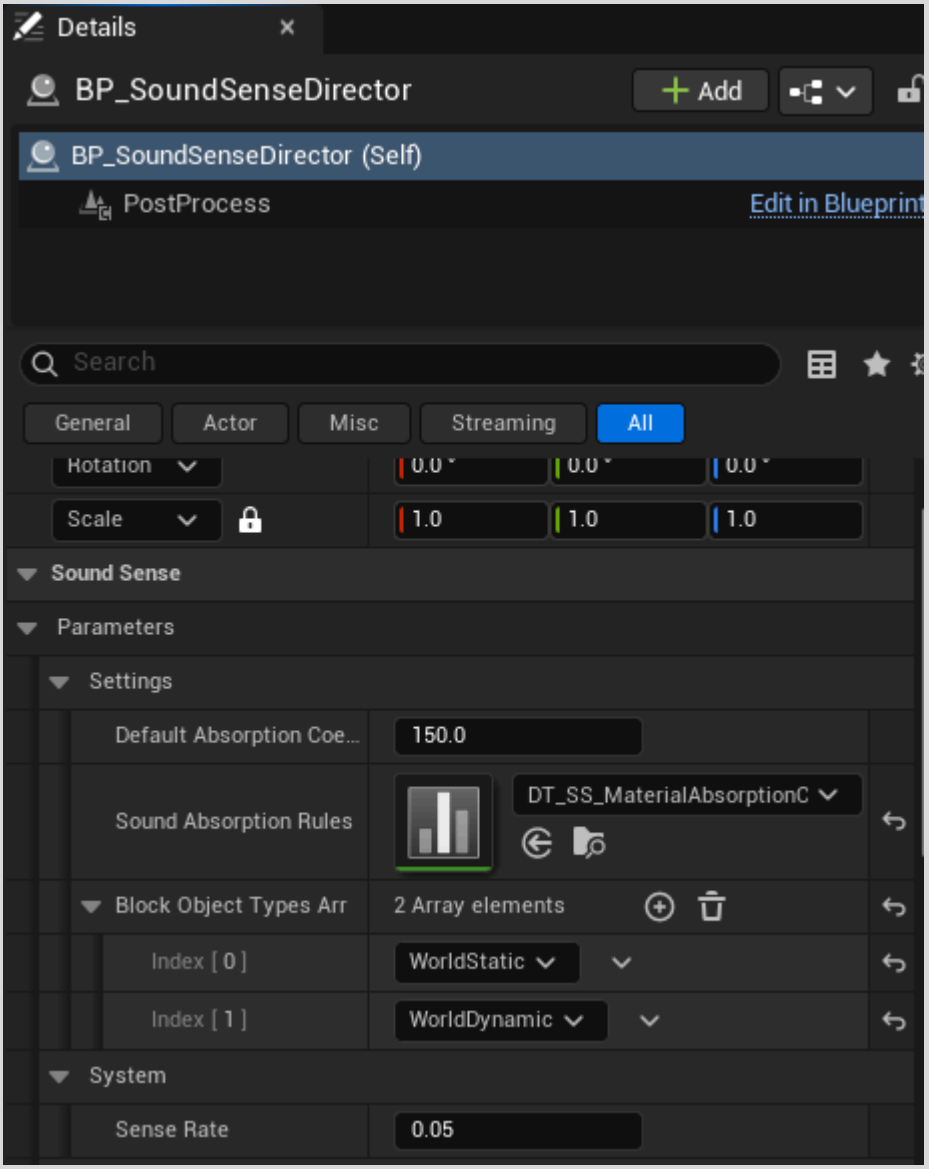


3. Drag and Drop BP_SoundSenseWaveBox in your scene.



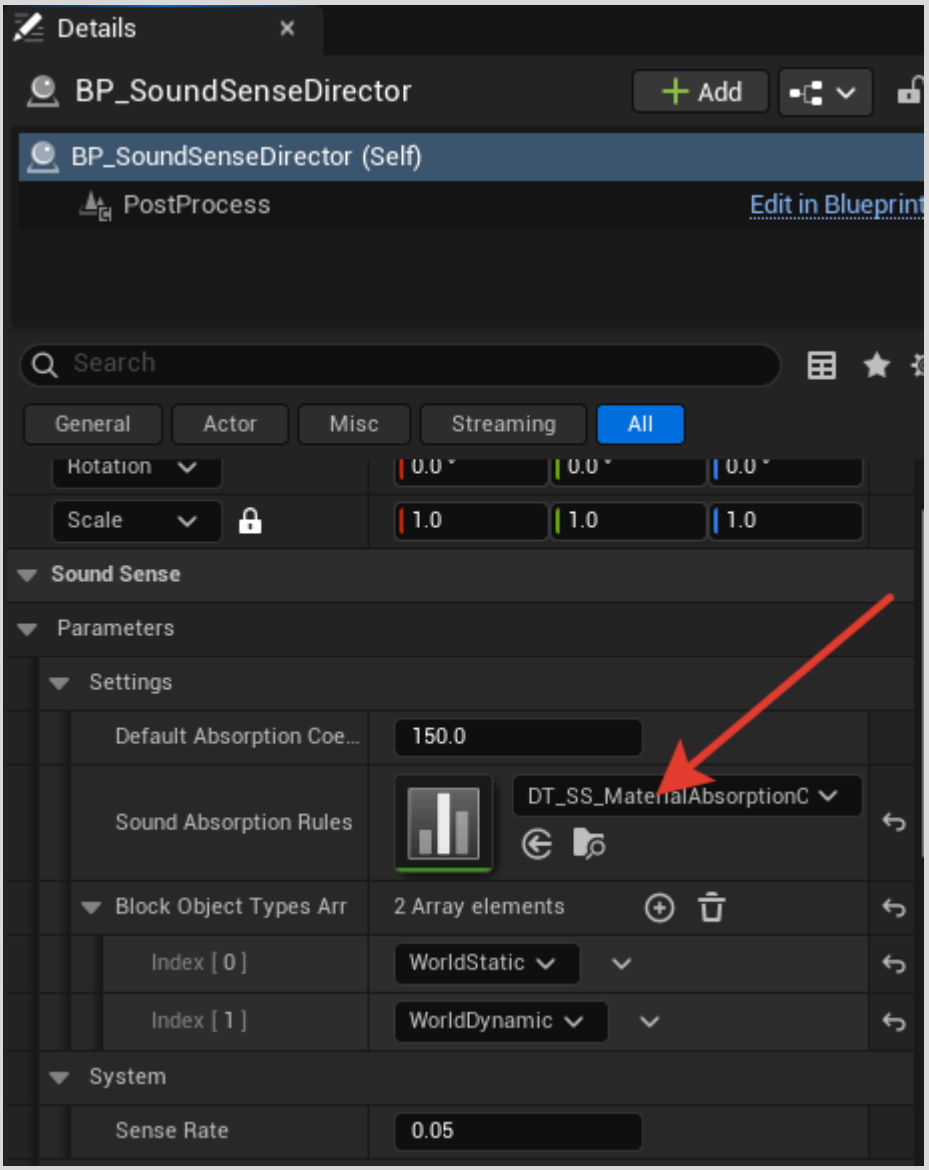
4. Select BP_SoundSenseDirector in the scene and choose the parameters you need.

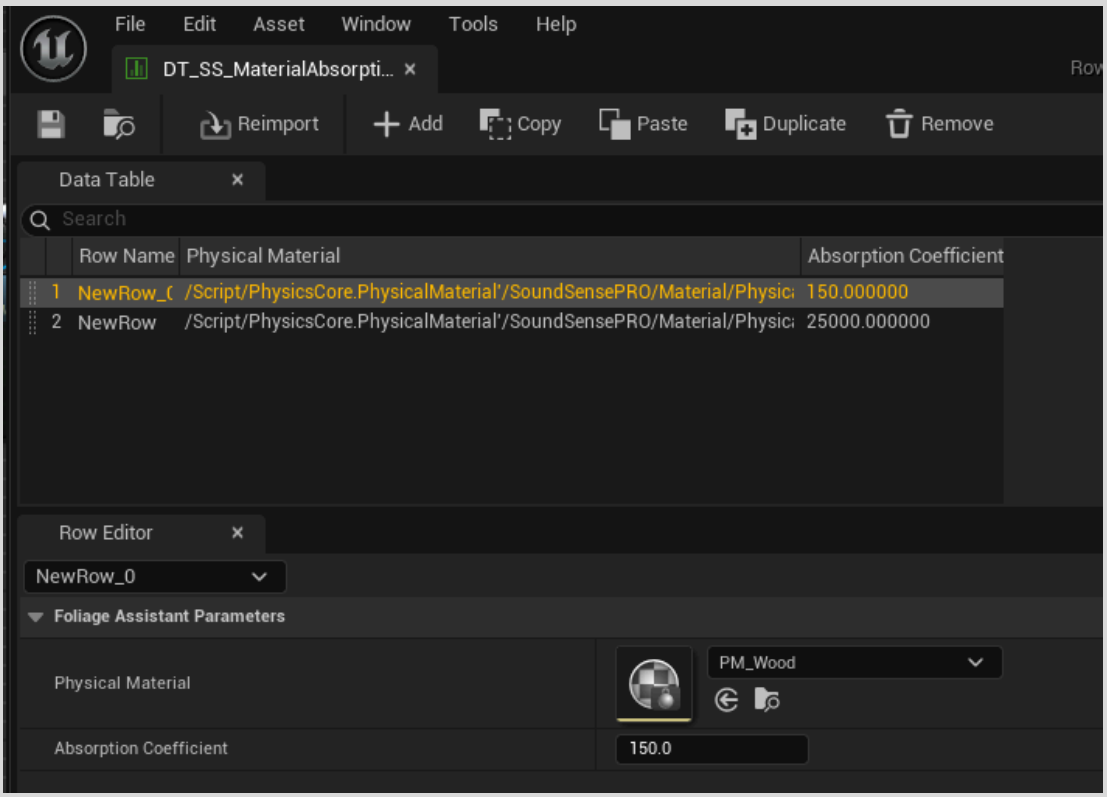




defaultAbsorptionCoefficient - Default sound absorption coefficient. Applied if no rule is found for the material.
soundAbsorptionRules - Sound absorption rule table for material based on Physical Material.
blockObjectTypesArr - The type of collision of objects that will participate in the sound propagation simulation system.
senseRate - Time rate. Each sound is added to the array and processed once per senseRate, after which it is removed from the array.

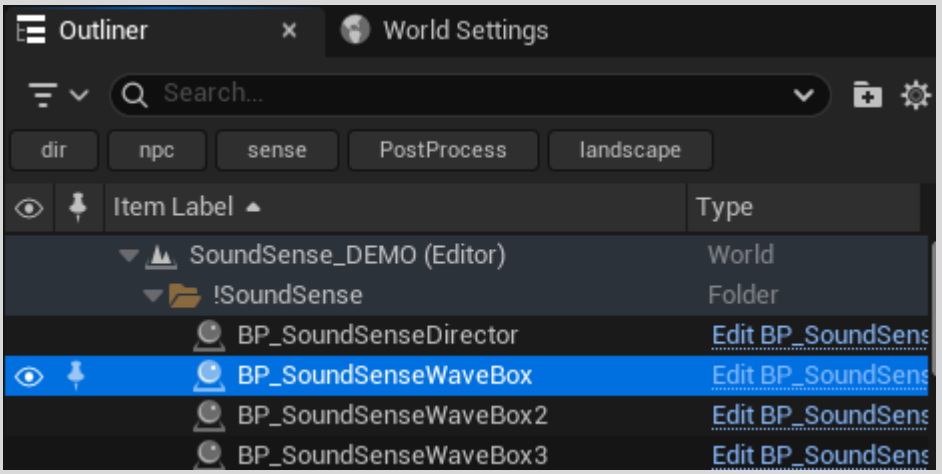
5. Let's look at what the table of rules for sound absorption looks like.

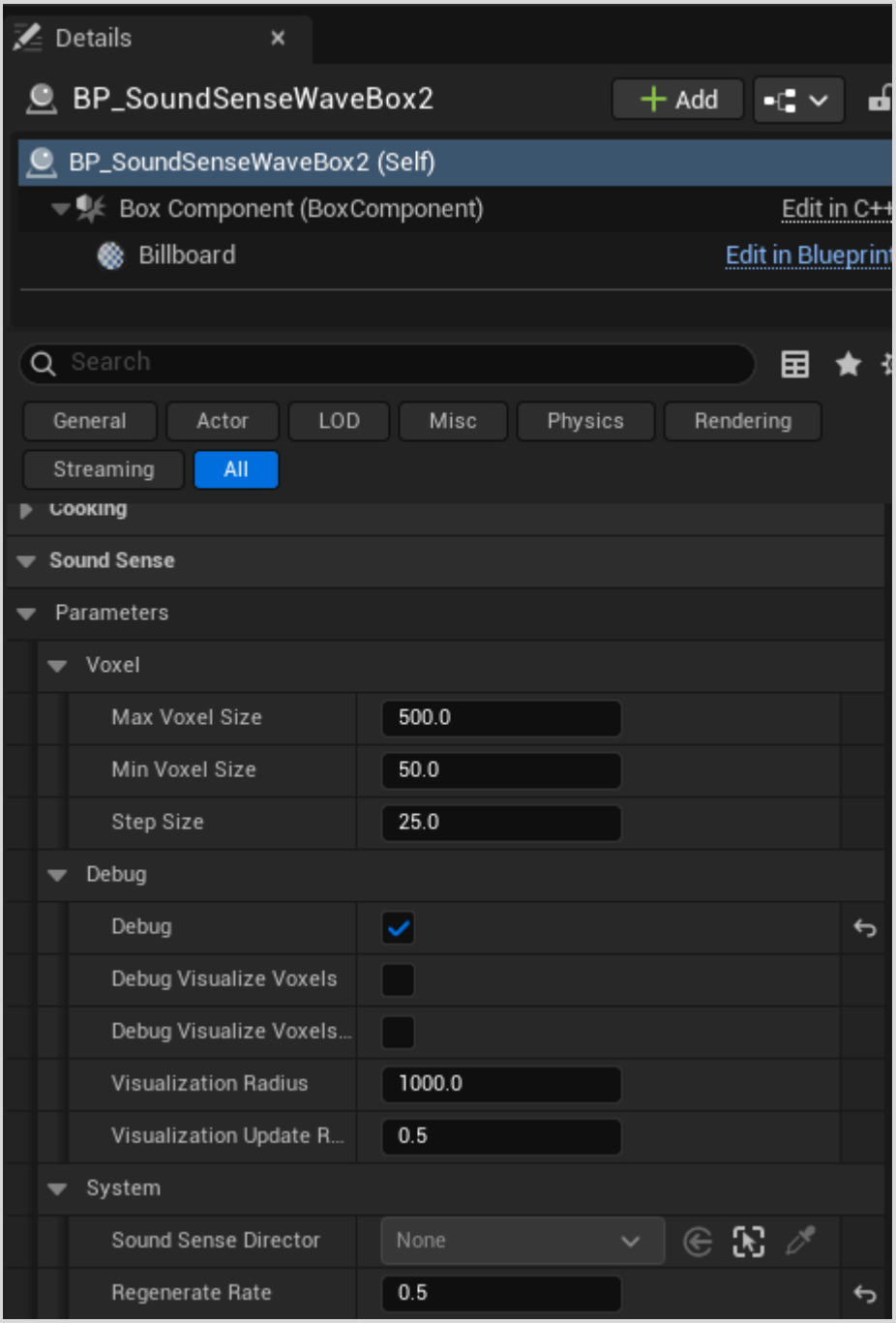

Details
BP_SoundSenseDirector
Add
BP_SoundSenseDirector (Self)
PostProcess
Edit in Blueprint
Search
General
Actor
Misc
Streaming
All
Rotation
Scale
1.0
1.0
1.0
Sound Sense
Parameters
Settings
Default Absorption Coe...
150.0
Sound Absorption Rules
DT_SS_MaterialAbsorptionC
Block Object Types Arr
2 Array elements
Index [0]
WorldStatic
Index [1]
WorldDynamic
System
Sense Rate
0.05



Physical Material - Specify your Physical Material that you use in your material.
Absorption Coefficient - Absorption coefficient for a given material.

6. Select BP_SoundSenseWaveBox in the scene and choose the parameters you need.



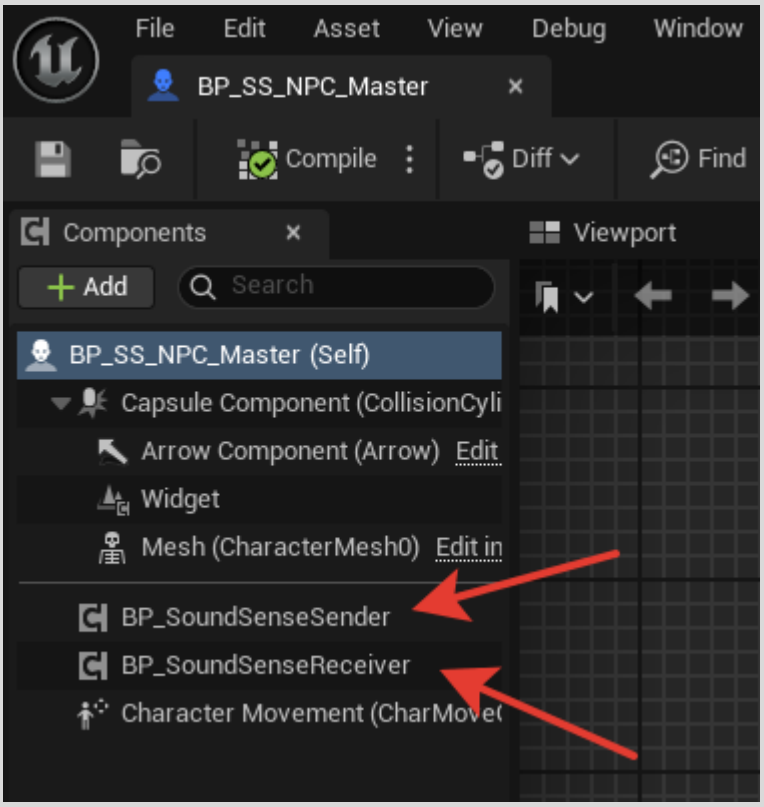


maxVoxelSize - Maximum voxel size.
minVoxelSize - Minimum voxel size.
stepSize - The step at which voxels are split from large to small if a large one cannot fit.
regenerateRate - Voxel regeneration buffer. You can send too many regeneration requests, so regeneration will happen once per regenerateRate and only if required.

Some tips:

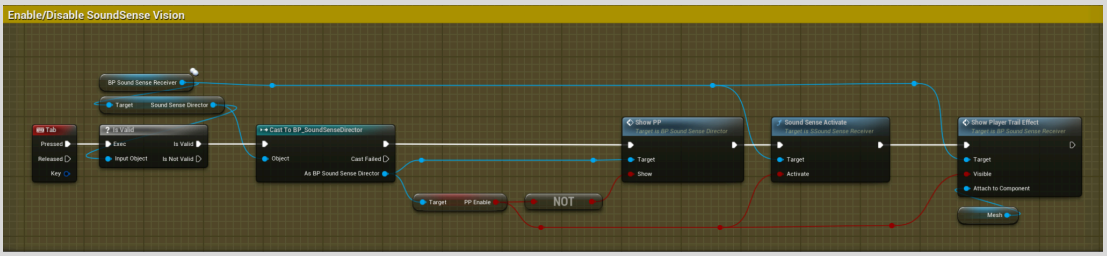
- Don't use very small voxel size on a large area.
- Sound is calculated only inside one WaveBox. If someone is outside the WaveBox, no sound propagation calculations will occur for them.
- It's better to use several WaveBoxes in the right places. Keep this in mind when building a level.

7. Let's add components to your NPCs
8. Open your NPCs blueprint and add the following components BP_SoundSenseSender and BP_SoundSenseReceiver

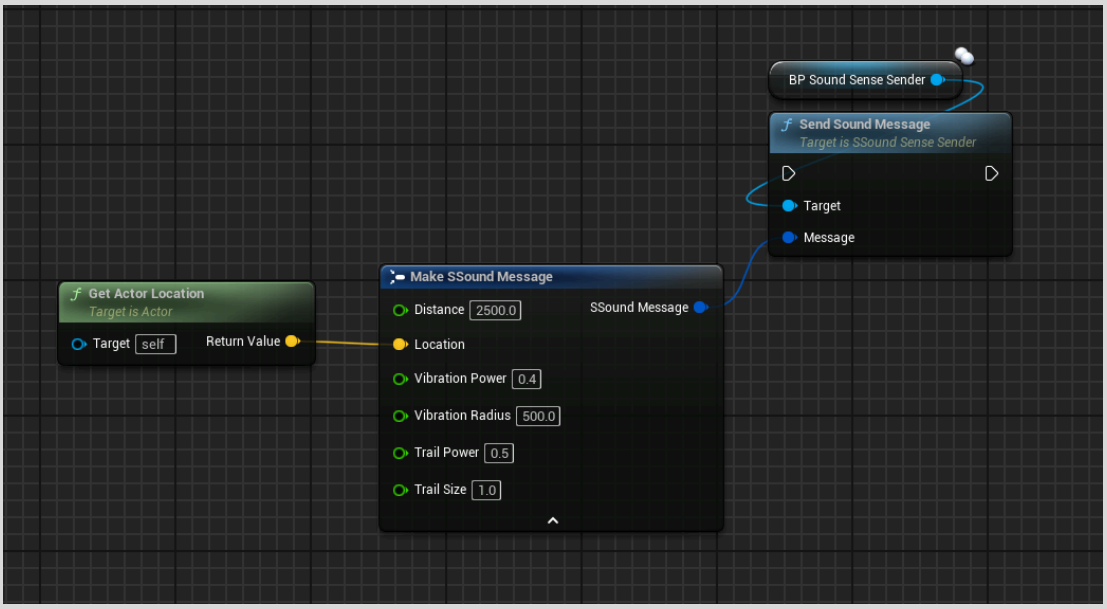


9. To enable and disable Sound Sense mode, use the following code. You can see an example of the code in the character class (BP_SS_Player) in the example. BP_SoundSenseReceiver->soundSenseDirector->Cast (BP_SoundSenseDirector)->ShowPP

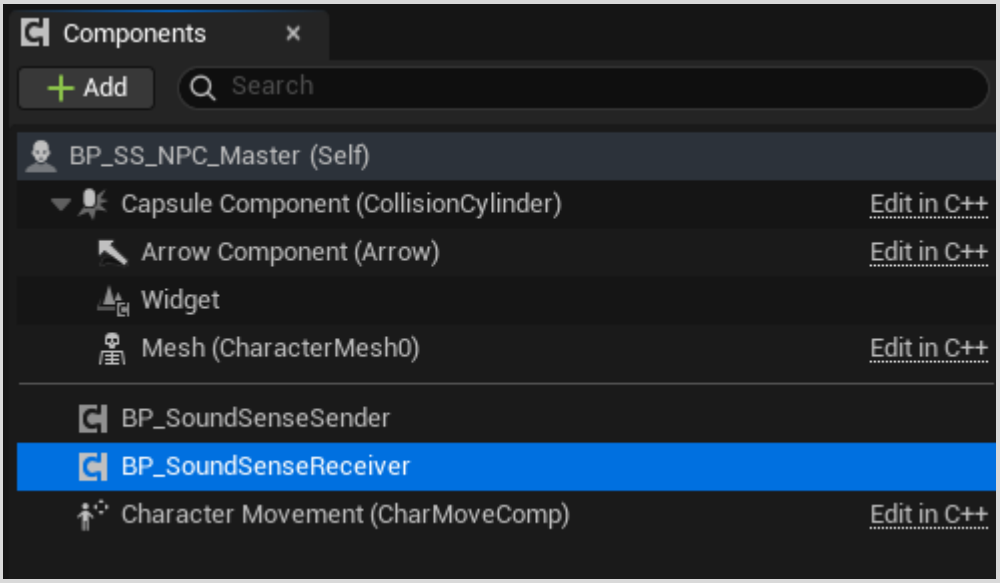
BP_SoundSenseReceiver->SoundSenseActivate
BP_SoundSenseReceiver->ShowPlayerTrailEffect

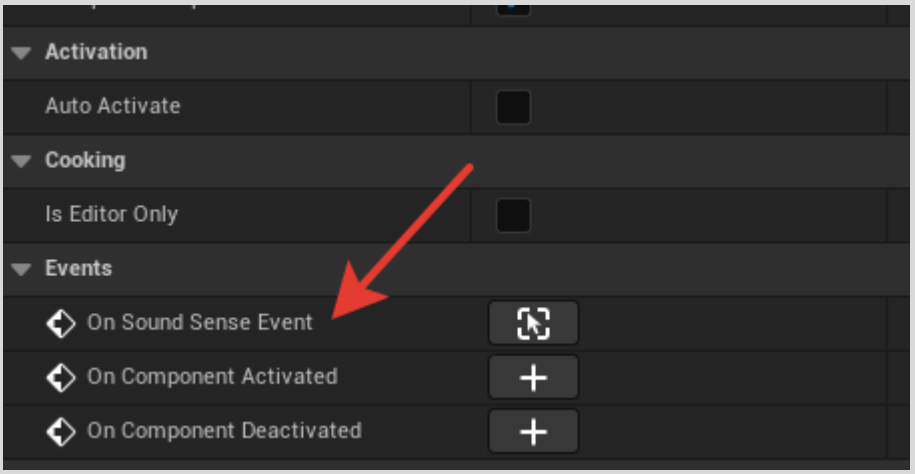


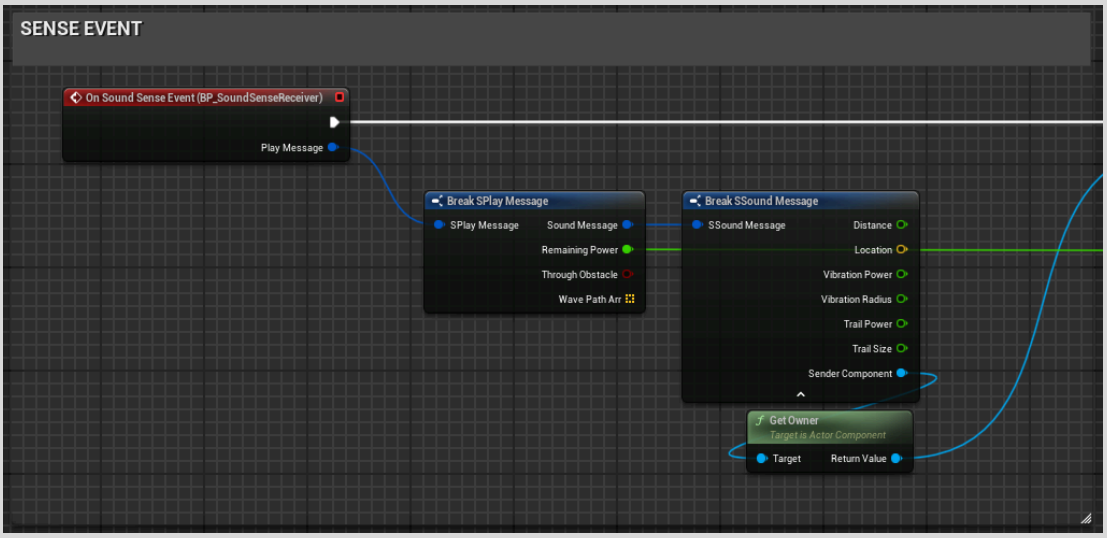
10. To send a message to the system using the following code.
SendSoundMessage



11. Use BP_SoundSenseReceiver to receive data.
OnSoundSenseEvent



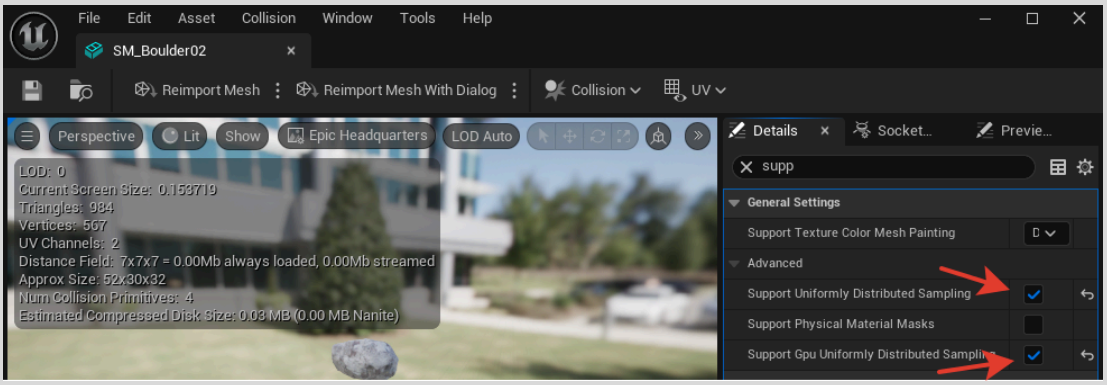




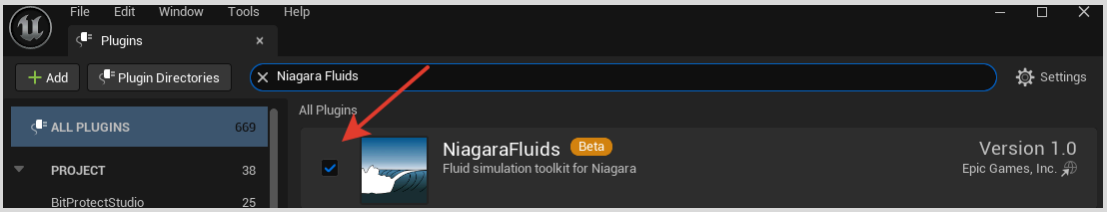
General recommendations and additions:

1. For some meshes, it is better to enable these options. This

will allow the vibration effect of the particles to be properly distributed over their area.



2. It is required to enable the Niagara Fluids Plugin in the plugins



3. Do not use very large bags. For example, a floor of several hundred meters. Since the particles melt by copying the shape of the mesh, this introduces limitations for Niagara and may also affect performance.

4. Vibration effects do not work with Instance Static Mesh.

You can always view code examples in the demo level included in the plugin.

That's all. If you need help, we are waiting for you in our discord channel.

[Discord Support]