Welcome!

Thank you for choosing Audio Sync Pro! I hope you'll find it a convenient and smooth solution to all your audio synchronisation needs!

In this documentation, you'll find everything you need to get started, from installation to feature explanations and usage tips

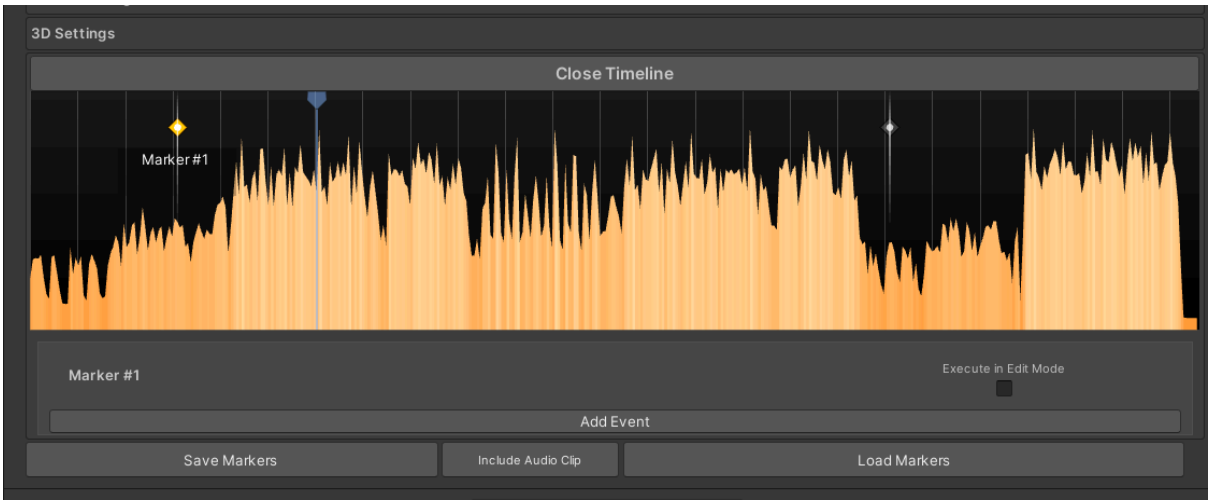
Let's dive in!

What is Audio Sync Pro?

Audio is an essential component of any game, but in Unity, it is often passive and simply triggered rather than actively influencing the game world. Audio Sync Pro changes this by enabling audio to interact with game mechanics, affecting environments, gameplay elements, and more. With this tool, sound becomes a dynamic part of your game's design, unlocking creative possibilities beyond Unity's default capabilities.

Audio Sync Pro accomplishes this through two integrated systems:

The Audio Timeline

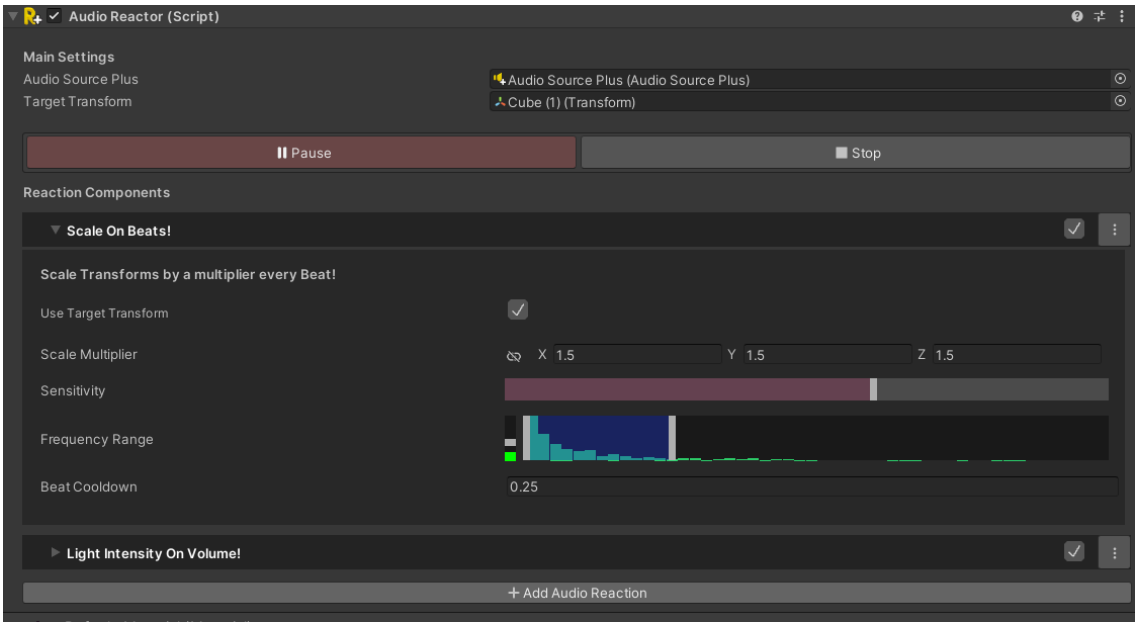


The Audio Timeline is automatically generated whenever you add an AudioClip to an AudioSourcePlus component. If you have experience with audio or video editing software, the functionality of the Timeline will feel familiar. You can preview, scrub, and zoom through your audio with precision by dragging the playhead along the waveform or using the mouse wheel to scroll.

The main feature of the Timeline is the **Marker System**. With Markers, you can place events precisely at any point on the timeline, allowing you to trigger them exactly on the audio beats you envision.

Further details about the Timeline and Marker System will be provided later in the documentation.

Audio Reactors



Audio Reactors form the second core feature of Audio Sync Pro. While the Timeline is designed for precisely timed events, Audio Reactors provide dynamic, fluid effects that intuitively respond to your audio.

Need an object to bounce to the beat? Want a character to 2D lip-sync dynamically to a voice clip? Audio Reactors handle these tasks effortlessly. They are highly configurable, enabling users to create as many custom Audio Reactors as needed for any purpose.

More information on Audio Reactors will be provided later in the documentation.

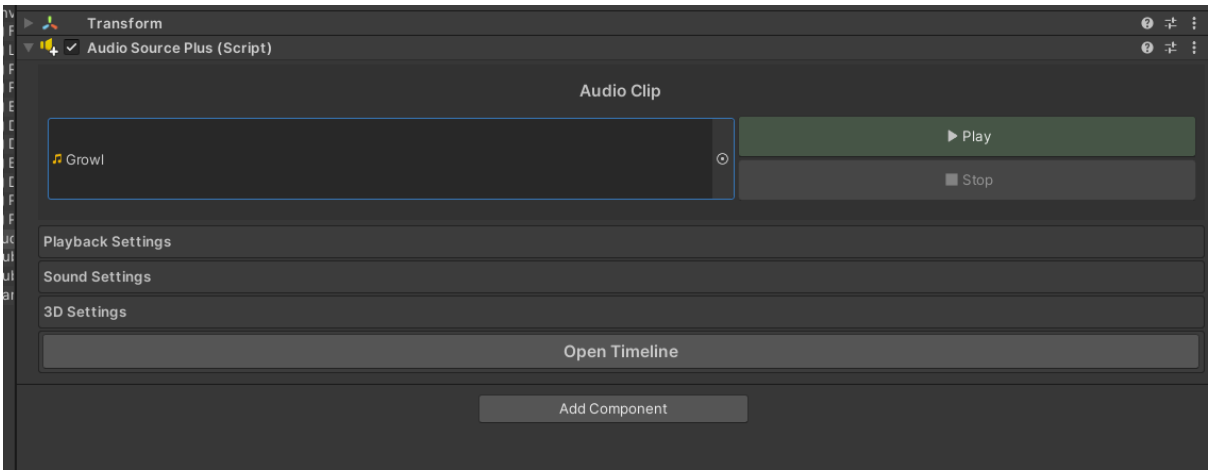
Installation

Getting started is easy! Simply import the asset from the Package Manager, and you'll have immediate access to the full Audio Sync Pro Suite. The folder can be found under `External/TelePresent/Audio Sync Pro`.

How To Use

Once installed, you'll have access to two new components that can be added to your GameObjects: the **AudioSourcePlus** component and the **AudioReactor** component.

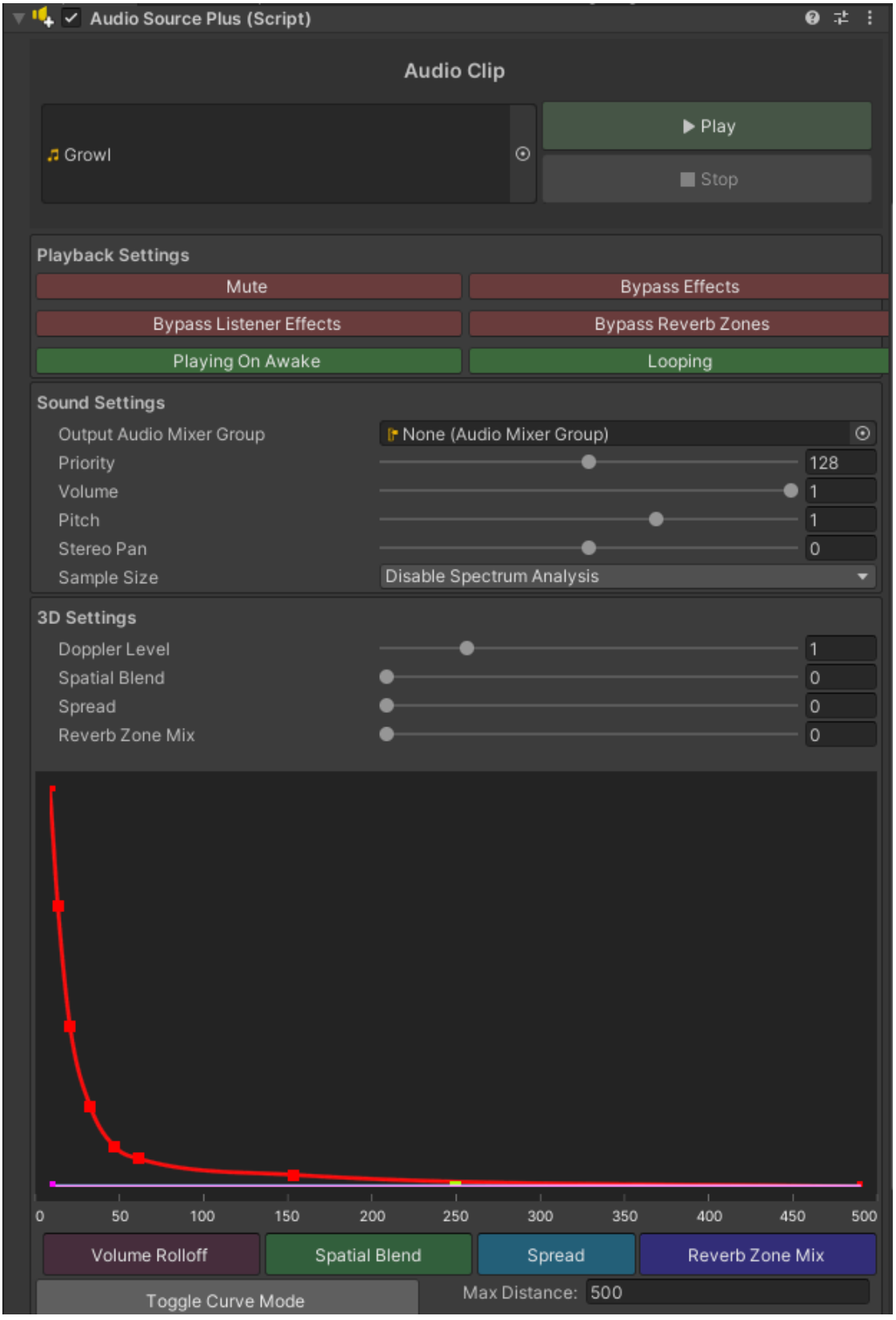
The AudioSourcePlus Component



When you want to play a sound in Unity, you typically use an **AudioSource** component. However, with Audio Sync Pro, the **AudioSourcePlus** component replaces the standard AudioSource, offering several enhanced utilities. AudioSourcePlus allows you to preview sounds directly in the inspector, access the Timeline and Events, and enables Audio Reactors to respond dynamically as the audio plays.

To get started, simply add an **AudioSourcePlus** component to your GameObject and assign a sound. You can then start adding audio events—just press "Open Timeline"!

AudioSourcePlus Properties

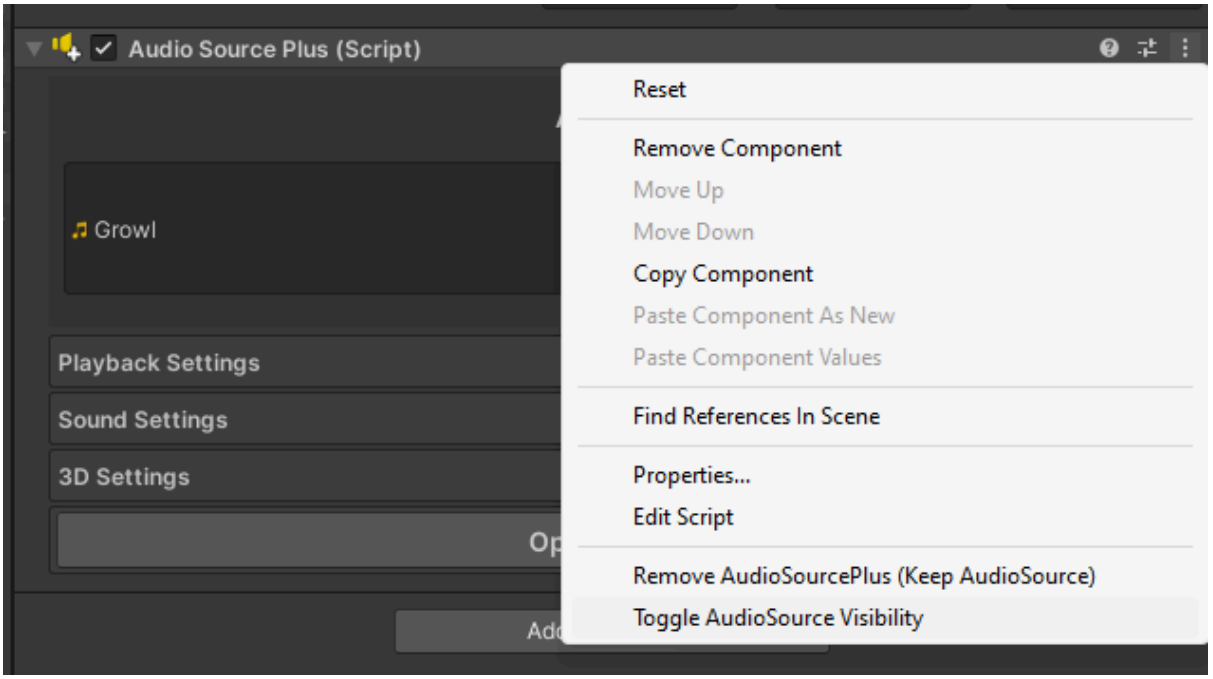


The **AudioSourcePlus** component includes all the settings found in a standard **AudioSource** component, neatly organised into three dropdown sections: **Playback Settings**, **Sound Settings**, and **3D Settings**.

The settings within these sections are identical to those on a standard **AudioSource** component, except for the "Sample Size" dropdown found in **Sound Settings**. This dropdown controls how many samples will be analysed during playback. Keep in mind that higher values can lead to greater performance overhead. If you don't plan on using Beat Reactors for a specific sound, consider disabling spectrum analysis on the **AudioSourcePlus** to optimise performance.

Hiding/Unhiding the base AudioSource

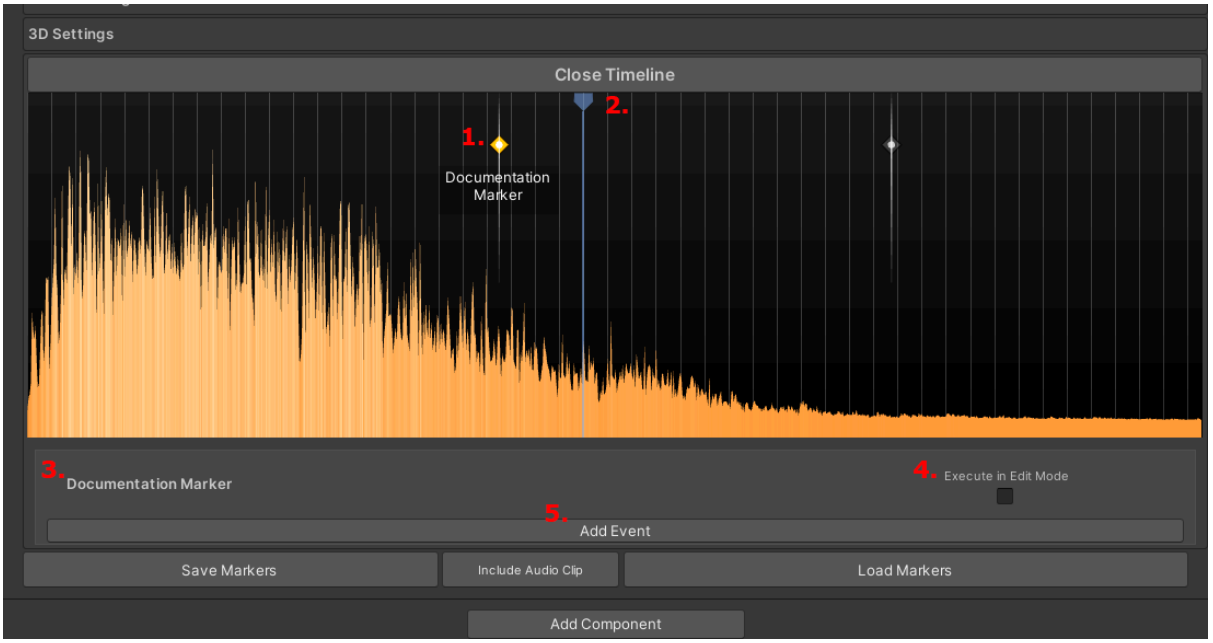
By Default, an AudioSourcePlus Component will hide its corresponding AudioSource, as the AudioSourcePlus Component holds all the same features and more. However, should you wish to unhide the AudioSource, then simply press the components context menu, and select the "Toggle AudioSource Visibility" Option:



Preserving Base AudioSource

By Default, removing an AudioSourcePlus Component will also remove its corresponding AudioSource. If you wish to keep the AudioSource upon deleting the AudioSourcePlus, simply press the context menu on the component, and selected the "Remove AudioSourcePlus (Keep AudioSource) option.

The Audio Timeline



The Audio Timeline provides a waveform view of your Audio Clip along with all the controls needed to start creating Audio Events.

General Controls:

- **Play/Pause Audio**: Press **Space** while the Timeline is selected in the Inspector Window.
- **Stop Audio**: Press **Backspace** while the audio is playing.

Marker Events:

A Marker Event is an event trigger placed along the Audio Timeline, allowing the specified event to occur at an exact point on the timeline.

Controls:

- **Add Marker**: Double-click anywhere on the Timeline with the **Left Mouse Button (LMB)**.
- **Select Marker**: Click any Marker with **LMB** or use the **Arrow Keys** to navigate between Markers.
- **Move Marker**: Hold and drag **LMB** to move the Marker left or right along the timeline.
- **Delete Marker**: Right-click the Marker or press **Delete** on the selected Marker.

Tip!

Need to select multiple markers? Use the Box Select feature! Click and drag on an empty spot on the Timeline to highlight all the markers you want to select.

The Playhead

The Playhead indicates the current progress within the audio clip. You can move the Playhead freely along the track to listen to specific parts of the sound.

Controls:

- **Move Playhead**: Hold and drag the Playhead with the **Left Mouse Button (LMB)**.
- **Skip to Next Marker Position**: Use the **Arrow Keys**.

The Marker Name

This label shows the name of the currently selected Marker. It is recommended to rename your markers to keep them organised.

Controls:

- **Rename Marker**: Click on the Marker Name and enter a new name.

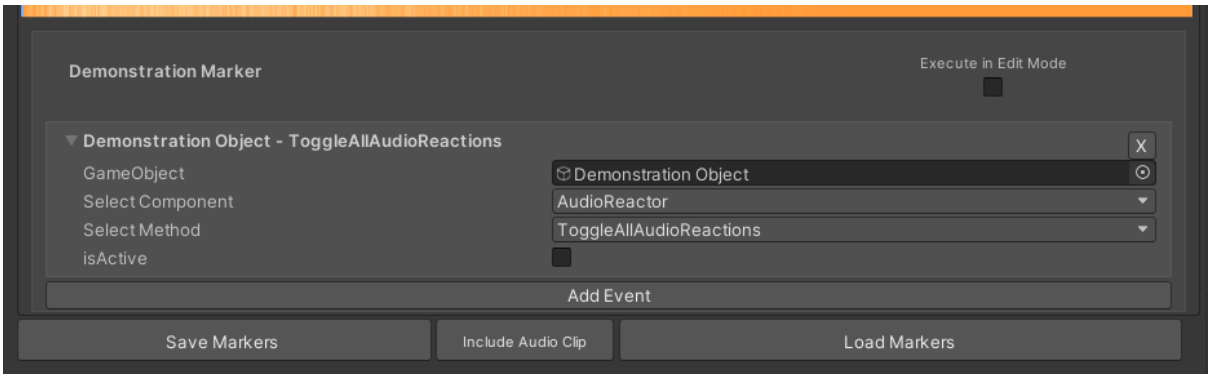
Execute in Edit Mode Toggle

This toggle determines whether a marker event will run in the editor outside of Play Mode. It is generally recommended to leave this off, as the system will not revert the effect when the preview stops.

Add Event

This section allows you to add any number of Marker Events, where you can configure all your method calls.

Audio Event UI



If you're familiar with the Unity Event System, this will feel familiar! With **Audio Events**, you select the GameObject you want to affect, choose the Component that contains your desired method, and then pick the Method from the dropdown menu.

Unlike the Unity Event System, Audio Events support multiple parameters and offer a wider range of parameter types!

Once set up, your events will be triggered whenever you play your audio!

Marker Profiles:

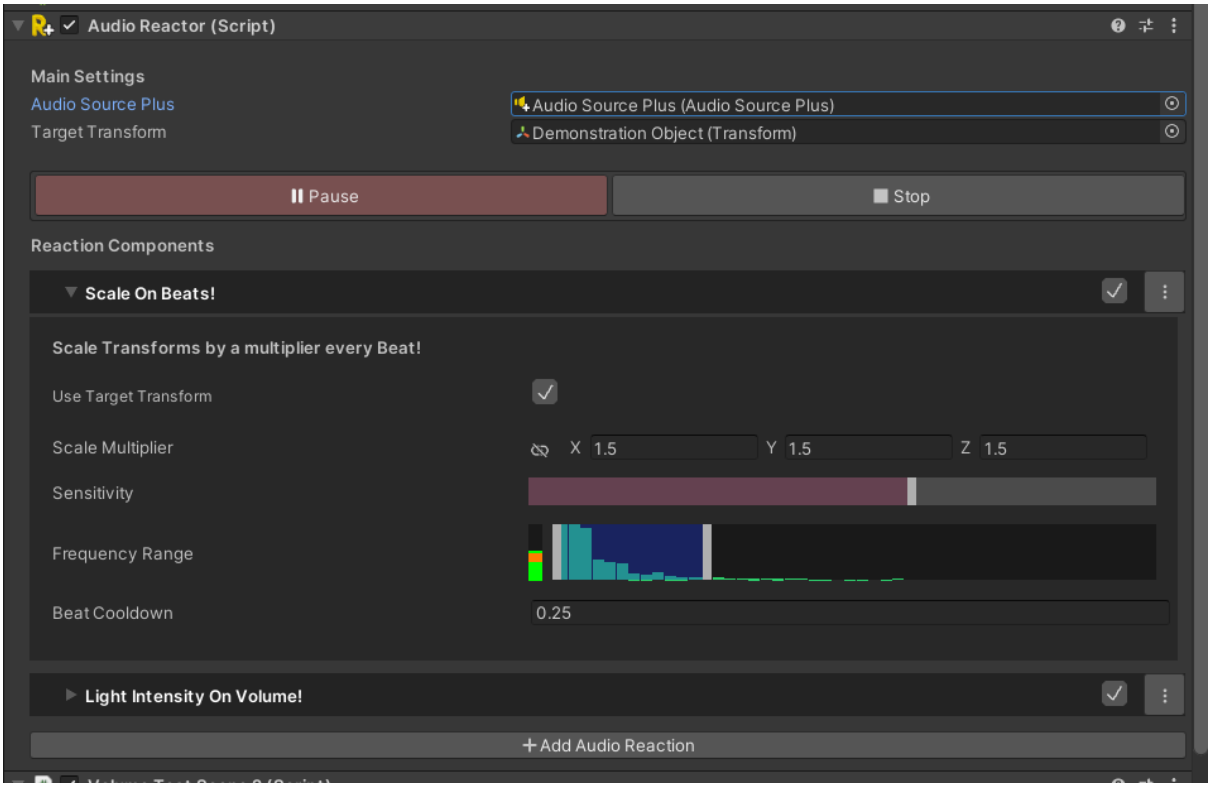
Have you created a Marker configuration you'd like to save, or perhaps both a Marker and Audio configuration? You can save and load your Marker Profiles at any time. By toggling the "Include Audio Clip" button, you can also save the currently assigned AudioClip to the Marker Profile, allowing it to be loaded along with the configuration.

A Marker Profile includes all the Marker Events you've created. However, it's important to note that there isn't a sophisticated system for rebinding audio events. Generally, if you want your Marker Events to rebind automatically, it is recommended to save and load your Marker Profiles within the same scene. This approach maximises the chances of a successful rebind.

Note!

Loading a Marker Profile copies the profile's contents into your timeline; it is not a direct reference. This means you can freely edit your loaded profile without worrying about overwriting the saved version. If you wish to overwrite the existing profile, simply save a new profile under the same name.

The Audio Reactor Component



AudioReactors are the second type of component in Audio Sync Pro. Audio Reactors should be placed on GameObjects that you want to be affected by sound, or on GameObjects related to them.

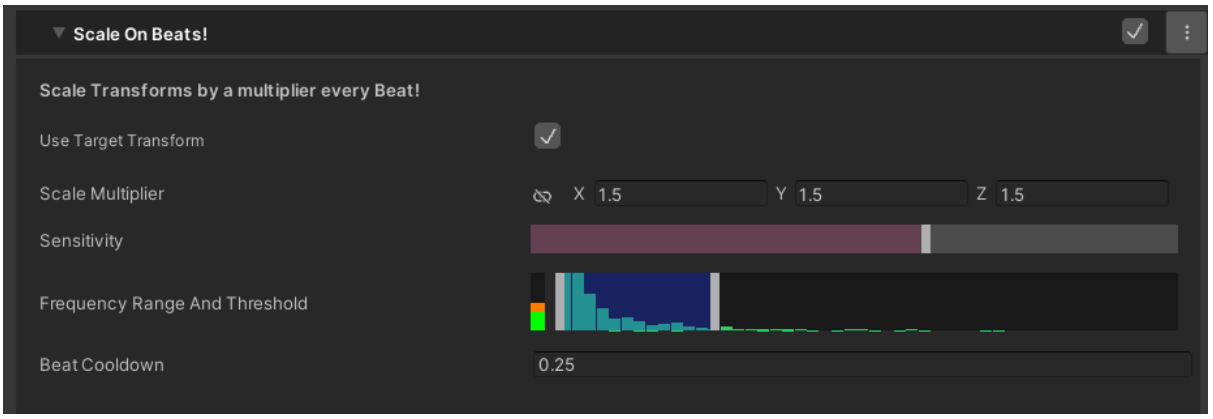
To use an Audio Reactor, simply assign the **AudioSourcePlus** component that you want it to listen to, and specify the **Transform** you want to affect. (The target Transform can be replaced later within each Reaction Component.)

Reaction Components:

A **Reaction Component** is an ongoing effect that you attach to your **AudioReactor**. Each Reaction Component dynamically responds to the audio from the specified **AudioSourcePlus** and can be adjusted using a range of intuitive parameters.

While the types of audio responses are diverse (and can be expanded!), there are primarily two types of Reactor Components:

Beat Reactions:



A **Beat Reaction** is a type of Reactor that has access to the full audio spectrum, allowing you to isolate your reaction effect to a specific part of your audio (e.g., drums, bass, highs, etc.).

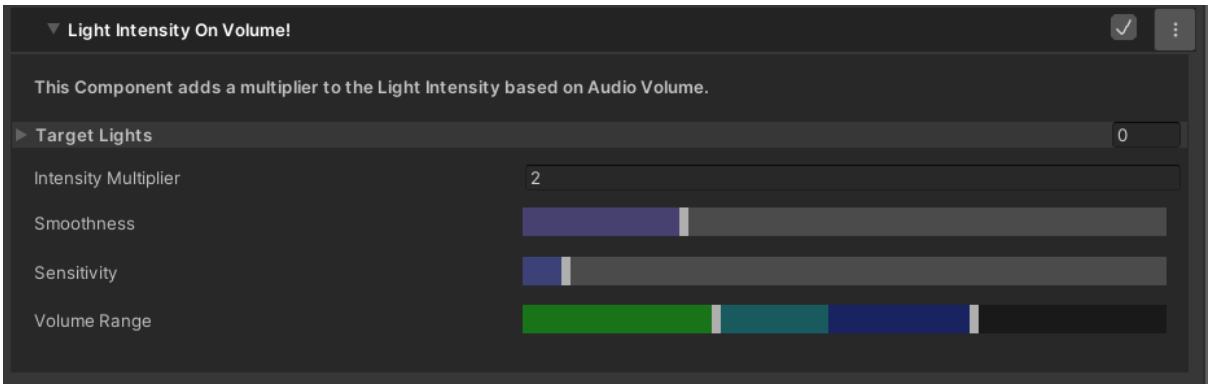
There are three common controls for Beat Reactors:

Sensitivity: Controls how sensitive the beat detection should be. Note that the wider the frequency range, the higher the sensitivity may need to be.
Frequency Range and Threshold: These controls determine the range of the frequency spectrum to which you want your object to react, as well as the threshold (represented by a vertical bar) for when a beat should be registered.
Beat Cooldown: This value specifies the minimum amount of time, in seconds, that must pass before another beat can be registered.

Tip!

Beat Reactors aren’t just for beats—they're ideal for any situation where you need more precise control over your audio responses. However, it's important to note that the Beat Detector’s spectrum analysis requires the audio to be audible to function. If the audio cannot be heard, there will be no reaction. Volume Reactions, on the other hand, do not have this limitation.

Volume Reactions:



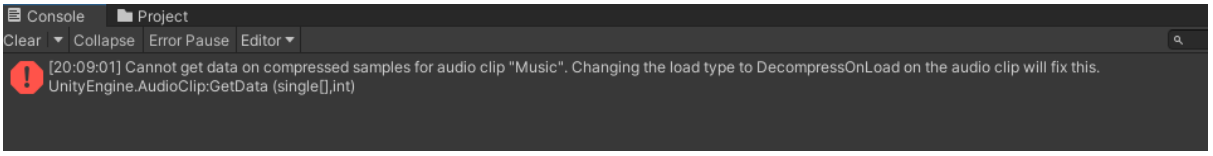
A **Volume Reaction** is a type of Reactor that accesses the raw volume of your audio, allowing you to sync reactions to any sound source, regardless of whether it is currently audible. For instance, you could use it to make a character lip-sync while speaking, even if the player cannot hear it.

For Volume Reactions, there are three common controls:

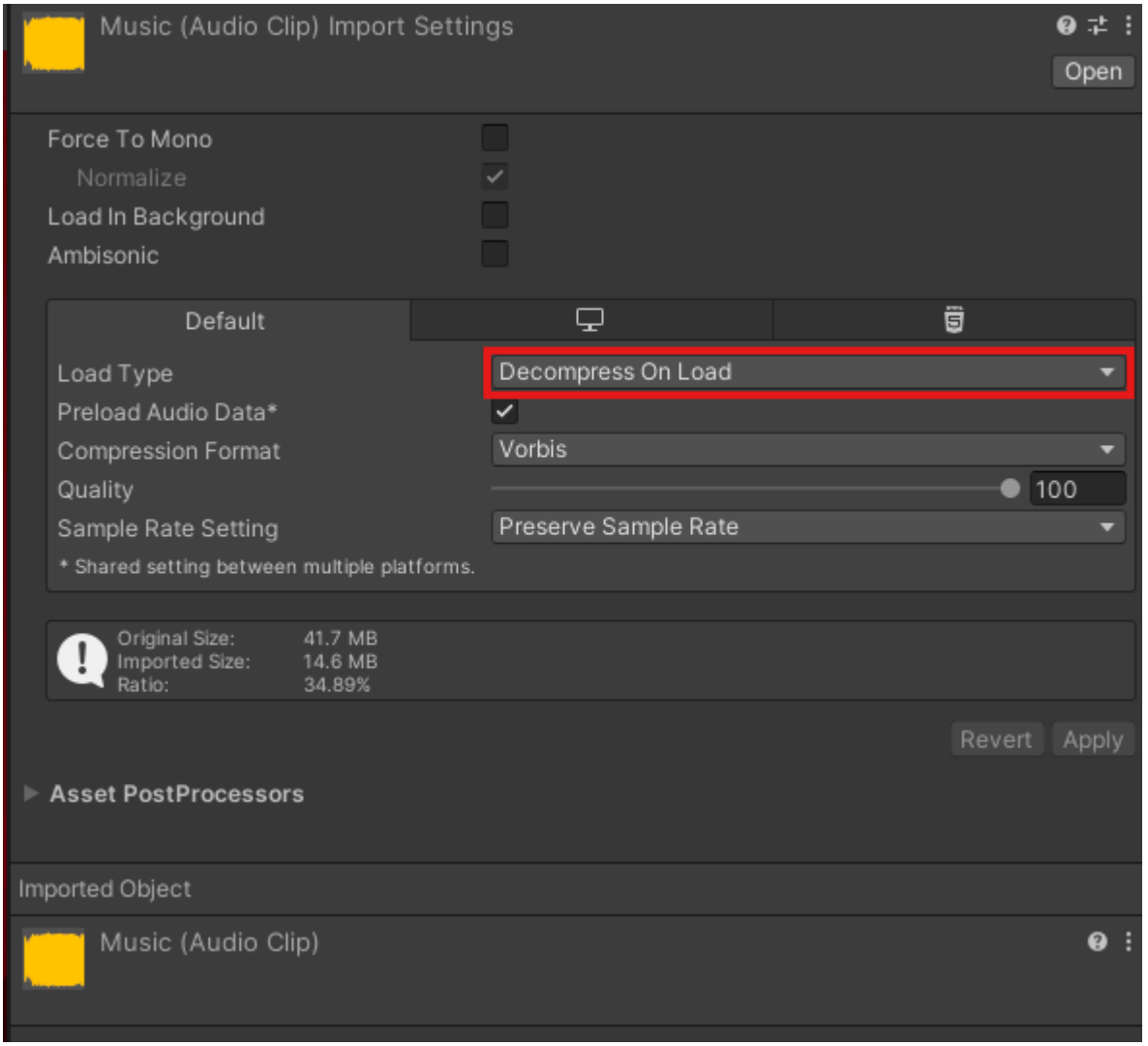
- **Smoothness**: Raw volume data can be jagged and abrupt. The Smoothness slider helps smooth out these fluctuations, creating a more fluid audio response. However, increasing smoothness may reduce the perceived responsiveness of your reaction. A value between **0.1 and 0.25** works well for most use cases, but for pure audio visualisation needs, a smoothing value of **0** might be desirable.
- **Sensitivity**: This slider adjusts how sensitive your audio reaction will be to the sound. Think of it as a volume knob for your reaction.
- **Volume Range**: This control defines the volume span in which your reactions will occur. Your reactions are automatically mapped to the specified range, making it easy to fine-tune the desired effect. As you preview your audio, you can see how the Sensitivity and Smoothness sliders influence the audio fed into the Volume Range.

Audio Requirements for Reactions:

Depending on your audio import settings: you might encounter this error:

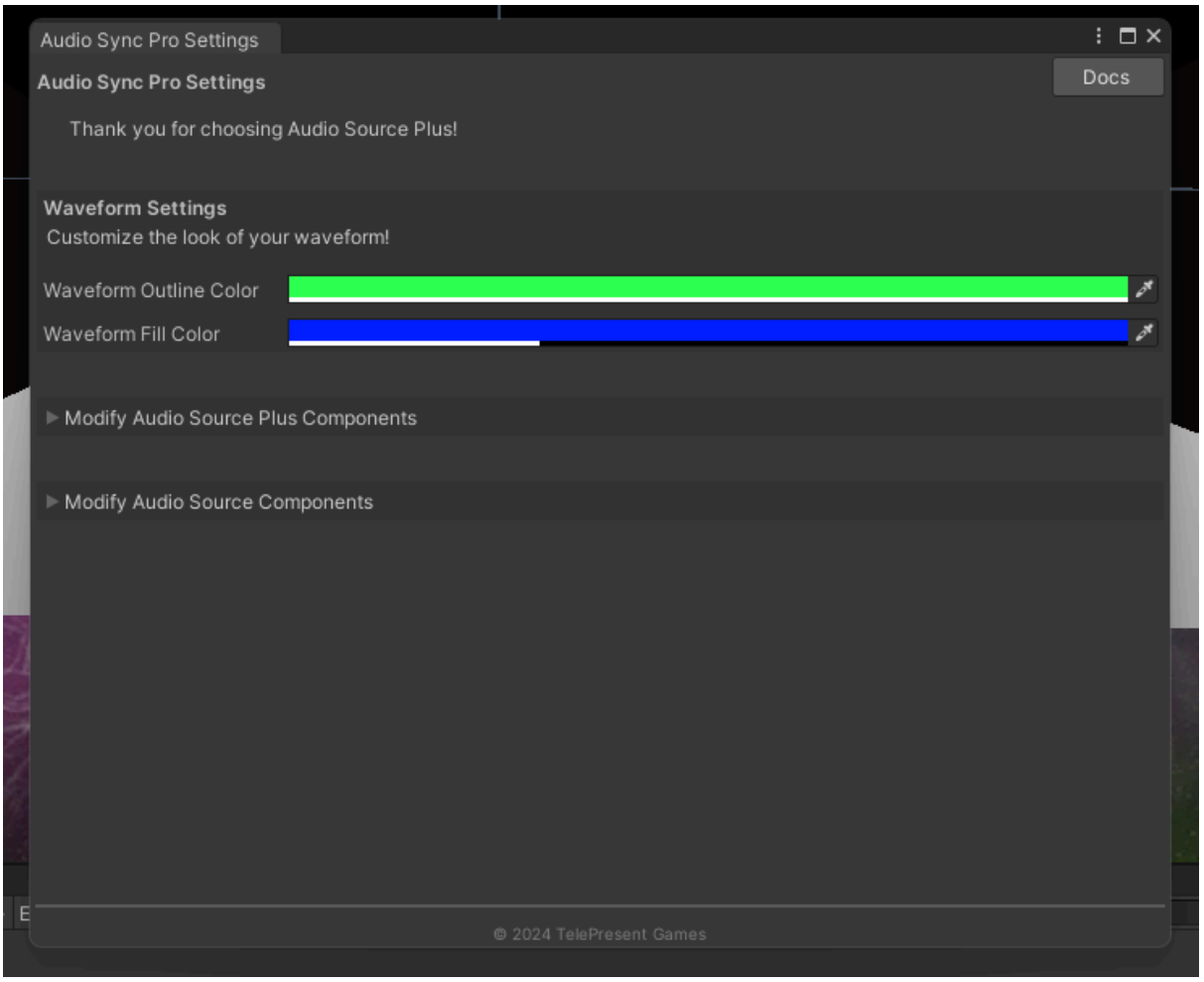


This error is caused due to the tool not being able to gather audio data from audio with the “Compressed in Memory” setting enabled. To fix the issue, please ensure that the following highlighted setting in your audio is set:


Music (Audio Clip) Import Settings
Open
Force To Mono
Normalize
Load In Background
Ambisonic
Default
Load Type
Decompress On Load
Preload Audio Data*
Compression Format
Vorbis
Quality
100
Sample Rate Setting
Preserve Sample Rate
* Shared setting between multiple platforms.
Original Size: 41.7 MB
Imported Size: 14.6 MB
Ratio: 34.89%
Revert
Apply
Asset PostProcessors
Imported Object
Music (Audio Clip)

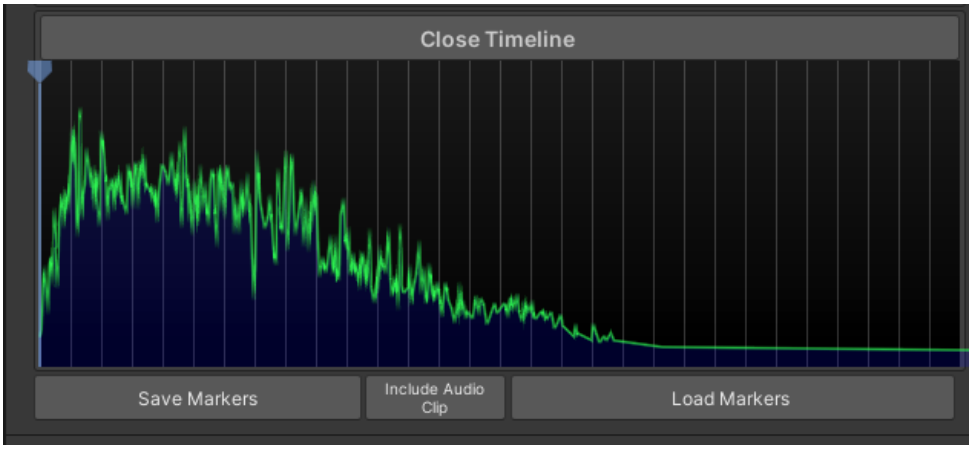
Additional Utilities

By selecting **Tools -> TelePresent -> Audio Sync Pro Settings**, you'll find additional utilities and customisation options.



Customise Timeline Colour:

Using the two Colour fields, you're able to adjust the line and fill colours of your waveform timeline



Modify Audio Source Components

With the “Modify Audio Source/Audio Source Plus Components” sections, you’re able to easily convert/revert all your selected component types into either Audio Sources or Audio Source Pluses. This is particularly useful for those cases where you wish to either mass convert your project to work with Audio Sync Pro, or to revert your project to standard settings.

Compatibility

Below are some important considerations when deciding if Audio Sync Pro is the right solution for your project:

Render Pipeline Compatibility:

- Audio Sync Pro is tested and compatible with all Render Pipelines.

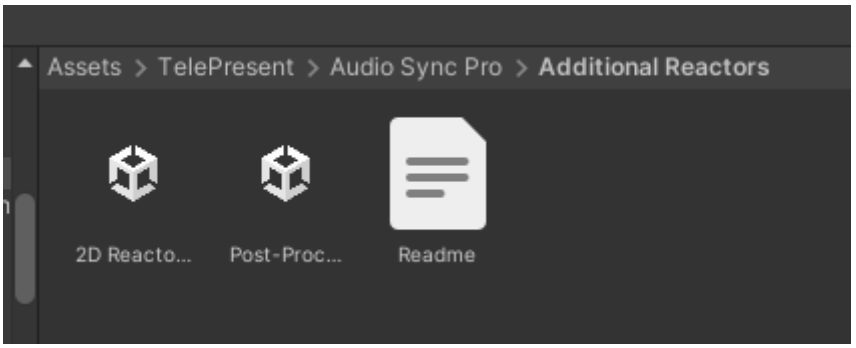
Platforms:

- **PC Builds**: Fully tested and compatible.
- **WebGL**: Partial compatibility—everything is supported except Beat Reactors.
- **Console and Mobile**: Not yet tested. Please contact me for any inquiries regarding platform support.

Reactor Components:

The Following is a full list of the Reactor Components currently available in Audio Sync Pro. Please contact me for any of your Reactor Component Submissions or requests!

Installing Additional Reactors:



To Install Additional Reactors included in Audio Souce Pro, simply open the two files in the Additional Reactor Folder.

To make your own Reactor, please have a look at the Templates folder within the ReactorComponents inside of the Scripts Folder. Stay tuned for a video guide with more specific information on Reactor Component creation.

Animation:

- **Play Animation On Beat:** Plays an animation whenever a beat is registered.

Events:

- **Call Event on Beat:** Calls a Unity Event whenever a beat is registered.

Lights:

- **Light Intensity With Volume:** Add a modifier to light intensity based on volume! 2D Light version also included in package.

Materials:

- **Flip Color On Beats:** Flips material color between two colors every beat
- **Modify Material Parameter on Volume:** Adds a modifier to a material parameter instance on a renderer defined in the component.
- **Modify Material Parameter Directly:** Add a modifier to a material parameter defined in the component. Affects a material instance, independently of any renderer.
- **Sprite Sheet On Volume:** Uses Volume to increment through a sprite sheet.
- **Switch Texture On Volume:** Uses volume to switch a texture between entries defined on a list through a ScriptableObject: “ASP_TextureList”

Particles:

- **Emit Particles on Volume:** Uses Volume to control the particle emission parameter. Please contact me with requests for more particle reactions!

Physics:

- **Add Impulse on Beats:** Adds an impulse to a Rigidbody every beat
- **Add Force On Volume**: Adds force to a Rigidbody based on volume.
  2D variants are also included in the package.

Transforms:

- **Move On Beats:** Adds movement offset every beat.
- **Move On Volume:** Adds movement offset based on volume.
- **Rotate On Beats:** Add rotation offset every beat.
- **Rotate On Volume:** Add Rotation offset based on volume.
- **Rotate Sine On Volume:** Add a rotation offset based on sine movement. Louder audio equals faster lerping along the sine rotation.
- **Scale On Beats:** Add Scale modifier every beat.
- **Scale With Volume:** Add Scale modifier based on volume.

Troubleshooting

Issue 1: My Audio Event says I have an unsupported parameter type, and the method won’t be called as a result.

Unfortunately, there are some parameter types that Audio Events do not currently support. I've made every effort to cover as many types as possible, extending beyond Unity's default one-parameter event system. However, some parameter types are currently unfeasible to implement.

If you find that a parameter type you consider essential is unsupported, please feel free to reach out to me via email, and I'll see what I can do! 😊

Issue 2: My Audio Reactor isn't Reacting to Audio.

There could be some potential causes to this issue.

1. Are the desired Reaction Components active? They should have a ticked checkbox on their respective headers if they are enabled.
2. Are you building for WebGL? WebGL does not currently support Beat Reactions, and will simply not respond to them.

If you encounter any other issue, please reach out to me. I'll get back to you as soon as I can :)

Issue 3: My Reactors don't work with PlayOneShot()?

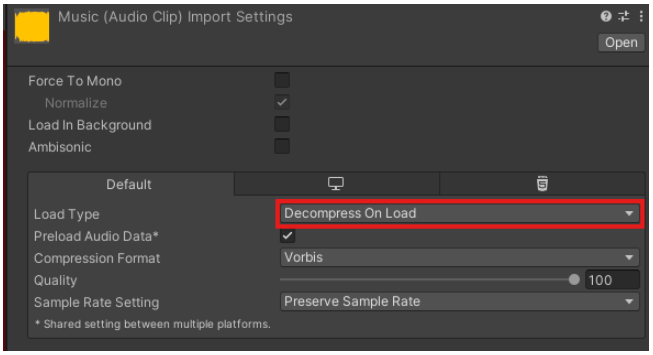
PlayOneShot is unfortunately a bit different than the regular Play() method on an AudioSource, and thus has some unique requirements to work with Audio Sync Pro.

Solution 1: Rather than calling PlayOneShot(AudioClip) directly on your AudioSource, instead call the same method on the AudioSourcePlus. Then you should see the desired results.

Solution 2: Ensure that your AudioSourcePlus has no clip assigned to it at the time of playing your OneShot.

Issue 4: "Cannot Get Data on compressed samples" Error

This error is likely caused by certain audio Import settings being set. Please make sure your audio clip is set to "Decompress On Load" in your audio import settings.



Thank You for Using Audio Sync Pro!

I hope this asset will make working with audio synchronisation and effects a fun and easy experience 😊 Also, thank you for taking a chance on this new, unproven asset

This is a brand new release, and I would greatly appreciate you reaching out, should you encounter any issues or have any feature requests you'd like me to address. .

Should you have any questions, feedback, or encounter potential issues, please don't hesitate to reach out to me at **TelePresentGames@gmail.com.** Your input is valuable, and I'm dedicated to ensuring that you'll get your needs fulfilled from this asset.

Happy developing!

Kind regards,
Martin

Changelog:

Original Release:

- Original release. Shoot me a message giving feedback or suggestions for new features or Reaction Components :)