

ReadSpeaker TTS

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Chapter 1

Main Page

1.1 Introduction

This is an introduction to using [ReadSpeaker](#) TTS in Unity. Below you will find a guide to get it installed and running. Further reading is presented in the pages listed below. \list

- [SSML](#)
- [Optimization](#)
- [Android](#) \endlist

1.1.1 Installation

To install [ReadSpeaker](#) TTS, import the unity package to your project, once the import is finished, restart the Unity Editor.

1.1.2 Installing Voice Engines

To install more voice engines, import the unity package containing the voice files to your project. Restart the Unity Editor in order to start using the newly installed voice engine.

1.1.3 Getting Started

This section requires you to have [ReadSpeaker](#) TTS installed in your project, along with atleast one voice engine. To start using [ReadSpeaker](#) TTS, start by creating any GameObject or select an already existing GameObject and add a [TTSSpeaker](#) component to it. Once a [TTSSpeaker](#) has been added to a GameObject you can inspect the component in the inspector. To set up the [TTSSpeaker](#) for use, begin by giving it a reference to an Audio↔Source component. If you are giving a voice to an ingame character, it is advised to attach the AudioSource and the [TTSSpeaker](#) to the characters root GameObject. To continue, add an AudioSource component to the same Game↔Object which you attached the [TTSSpeaker](#) component to earlier and reference it in the speakers Audio Source field. Next up we will define the speech characteristics of our newly created speaker. You can select whether you would like to use a preset voice or define the characteristics explicitly for this speaker. For now "Use Preset" can be set to false. The next step is to choose a voice engine from the dropdown menu. Select any voice engine installed in your project. You will be presented with some information about the selected voice engine such as it's gender and

language. Below that you will find a number of fields which allows you to further customize the voice by adjusting it's volume, pitch, speed etc. For more information about the adjustable values, see [TTSSpeechCharacteristics](#). You can preview the effects immediately in the Editor by pressing the "Preview" button below. The speaker is now ready to be used during runtime. Below is an example on how to use the [TTSSpeaker](#) component to perform realtime TTS.

```
using UnityEngine;
using ReadSpeaker;
public class TTSTest : MonoBehaviour{
    private TTSSpeaker speaker;

    public void Start(){
        TTS.Init();
        speaker = GetComponent<TTSSpeaker>();
    }
    public void Update(){
        if(Input.GetKeyDown(KeyCode.Space)){
            TTS.SayAsync("Spacebar was pressed!", speaker);
        }
    }
}
```

By attaching this script to the same GameObject which already holds the [TTSSpeaker](#) as well as the AudioSource component we should be able to start the game and listen to the voice speak as we press space.

1.1.4 Note regarding Say/SayAsync

Note that here we used [TTS.SayAsync](#) as opposed to [TTS.Say](#) which allowed us to perform the computationally heavy operation of synthesis on a background thread. The tradeoff being uncertainty as to when the synthesis completes. Depending on your use case, you might want to use either of these variants. If you rely on a steady framerate, [TTS.SayAsync](#) is to prefer as only a small fraction of time is spent in the main thread. If you want to rely on the speech being played the next frame after the call, [TTS.Say](#) should be used.

1.1.5 Contact

pontus.melin@readspeaker.com

Chapter 2

SSML

[ReadSpeaker](#) TTS supports Speech Synthesis Markup Language (SSML). SSML `< speak >` and `< voice >` tags are automatically padded to the input text when supplying the [TextType.SSML](#) argument to [TTS.Say/TTS.SayAsync](#). To synthesize using SSML pass the [TextType.SSML](#) argument to the [TTS.Say/TTS.SayAsync](#) function like so:

```
string ssmlText = "<voice name=\"james\"> My name is james </voice> <voice name=\"ashley\"> and my name is  
    Ashley </voice>"  
TTS.Say(ssmlText, TextType.SSML);
```


Chapter 3

Optimization

This section details usage of the TTS can be optimized to increase performance or reduce memory usage.

3.1 Say vs. SayAsync

Using [TTS.SayAsync](#) offloads the computationally heavy operation of synthesizing to a background thread. Using [TTS.Say](#), the synthesis takes place on the main thread. Depending on your use case, you might want to use either of these variants. If you rely on a steady framerate, [TTS.SayAsync](#) is to prefer as only a small fraction of time is spent in the main thread. If you want to rely on the speech being played the next frame after the call, [TTS.Say](#) should be used.

3.2 Loading/Unloading voice engines

In the case that the engine is not currently loaded into memory upon synthesis, it will load into memory automatically. To avoid occupying memory the voice engine is then immediately unloaded once it has been determined that it is no longer used. The loading operation can be computationally expensive, as such there may be cases where it is more beneficial to keep the engine loaded in memory for a longer period of time. To manually control when a voice engine gets loaded and unloaded from memory, use [TTSEngine.Load\(\)](#) and [TTSEngine.Unload\(\)](#).

3.3 Manual TTS conversion

There might be cases where the workload of performing the synthesis should be separated from playing the audio. For these purposes, use the [TTSTConverter](#) class. This class is used by [TTS.Say](#) and [TTS.SayAsync](#) in the backend to perform synthesis. An example is shown below.

```
using System.Collections.Generic;
using UnityEngine;
using ReadSpeaker;
public class TTSFactory : MonoBehaviour{
    public void Start(){
        TTS.Init();
        List<float[]> results = new List<float[]>();
        TTSTConverter converter = new TTSTConverter();
        TTSEngine engine = TTS.GetEngine("ashley", "d16");
        converter.Engine = engine;
        converter.Volume = 250;
        converter.Pitch = 50;
        converter.Speed = 125;
        converter.Pause = 0;
        converter.CommaPause = 0;
    }
}
```

```

        converter.EmpphasisFactor = 0;
        converter.TextType = TextType.Normal;
        converter.IsAsync = false;
        for(int i = 0; i < 100; i++){
            converter.Pitch = 50 + (i*2);
            converter.Text = i.ToString();
            converter.ConvertToBuffer();
            results.Add(converter.GetAudioData());
        }
    }
}

```

The above code would result in a list of 100 audio data arrays each containing the audio data that was produced by reading their index of the list.

3.3.1 Multithreading

When converting on threads on other than the main thread make sure to use a separate [TTSTConverter](#) for each thread. Also consider using the thread safe implementations of [ConvertToBuffer](#) and [ConvertToFile](#): [ReadSpeaker.TTSTConverter.ConvertToBufferThreadProc](#) and [ReadSpeaker.TTSTConverter.ConvertToFileThreadProc](#). This will avoid race conditions by locking voice engines to perform one conversion at a time. Different voice engines can convert in parallel. Make sure to set [TTSTConverter.IsAsync](#) to true when running on a separate thread. For example:

```

using System.Threading;
using UnityEngine;
using ReadSpeaker;

public class TTSFactory : MonoBehaviour{
    public void Start(){
        TTS.Init();
        TTSEngine engine1 = TTS.GetEngine("ashley", "d16");
        TTSEngine engine2 = TTS.GetEngine("james", "d16");
        for(int i = 0; i < 100; i++){
            TTSTConverter converter = new TTSTConverter();
            if((i % 2) == 0){
                converter.Engine = engine1;
            }else{
                converter.Engine = engine2;
            }
            converter.Text = "Hello there.";
            converter.Volume = 250;
            converter.Pitch = 50;
            converter.Speed = 125;
            converter.Pause = 0;
            converter.CommaPause = 0;
            converter.EmpphasisFactor = 0;
            converter.TextType = TextType.Normal;
            converter.IsAsync = true;
            ThreadPool.QueueUserWorkItem(converter.ConvertToBufferThreadProc);
        }
    }
}

```

This will queue 100 conversions on the thread pool, 50 using the voice engine ashley/d16 and 50 using the voice engine james/d16. Note that only conversions using different voice engines can run in parallel. For this example, 2 conversions will run in parallel while the remaining will wait in the thread pool until the voice engine's lock is released by the previous conversion.

Chapter 4

Android

4.1 Voice Engine Installation

Installation of voice engines is not required on Windows and Linux. On Android however, the voice databases will reside inside the compressed .apk file which is built by Unity. This means that the TTS system can not access the database files directly. As a consequence, running on Android requires that the voice engines are installed in the applications internal storage. This is handled automatically the first time [TTS.Init\(\)](#) is called on a device. If a large number of voices are used, this could cause the application to load for a long amount of time once this occurs. It is thus recommended to put the call to [TTS.Init\(\)](#) at an appropriate time, such as during a loading screen.

4.2 Voice Engine loading/unloading

Due to how the backend operates on Android, loading and unloading engines are handled automatically upon conversion. The consequence being that [TTSEngine.Load\(\)](#) and [TTSEngine.Unload\(\)](#) are no-ops on Android.

Chapter 5

Namespace Index

5.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

ReadSpeaker	15
ReadSpeaker.Settings	17

Chapter 6

Hierarchical Index

6.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Dictionary	
ReadSpeaker.Settings.SerializableDictionary< TKey, TValue >	19
ISerializationCallbackReceiver	
ReadSpeaker.Settings.SerializableDictionary< TKey, TValue >	19
MonoBehaviour	
ReadSpeaker.TTSSpeaker	35
ScriptableObject	
ReadSpeaker.Settings.TTSSettings	34
ReadSpeaker.TTSVoicePreset	37
ReadSpeaker.Settings.SerializableDictionary< string, VoicePlatformFlags >	19
ReadSpeaker.Settings.ExportFlagsDict	19
ReadSpeaker.TTS	19
ReadSpeaker.TTSConverter	29
ReadSpeaker.TTSEngine	33
ReadSpeaker.Settings.TTSSettingsData	34
ReadSpeaker.TTSSpeechCharacteristics	36
ReadSpeaker.Settings.VoicePlatformFlags	37

Chapter 7

Class Index

7.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

ReadSpeaker.Settings.ExportFlagsDict	19
ReadSpeaker.Settings.SerializableDictionary< TKey, TValue >	19
ReadSpeaker.TTS	
The core class for using runtime text to speech within Unity.	19
ReadSpeaker.TTSConverter	
Encapsulates the text-to-speech conversion process.	29
ReadSpeaker.TTSEngine	
Represents a voice engine.	33
ReadSpeaker.Settings.TTSSettings	34
ReadSpeaker.Settings.TTSSettingsData	34
ReadSpeaker.TTSSpeaker	
Represents a speaking entity.	35
ReadSpeaker.TTSSpeechCharacteristics	
Represents a set of speech characteristics to be used during synthesis.	36
ReadSpeaker.TTSVoicePreset	
A data container for TTSSpeechCharacteristics .	37
ReadSpeaker.Settings.VoicePlatformFlags	37

Chapter 8

Namespace Documentation

8.1 ReadSpeaker Namespace Reference

Classes

- class [TTS](#)
The core class for using runtime text to speech within Unity.
- class [TTSTConverter](#)
Encapsulates the text-to-speech conversion process.
- class [TTSEngine](#)
Represents a voice engine.
- class [TTSSpeaker](#)
Represents a speaking entity.
- class [TTSSpeechCharacteristics](#)
Represents a set of speech characteristics to be used during synthesis.
- class [TTSVoicePreset](#)
A data container for [TTSSpeechCharacteristics](#).

Enumerations

- enum [TextType](#) { [Normal](#) = 0 , [SSML](#) = 128 }
Determines how the text will be processed during conversion.
- enum [OutputFormat](#) { [PCM16](#) = 0 , [PCM8](#) = 1 }
Determines what audio output format to use during conversion.

Functions

- delegate void **OnWordEvent** (IntPtr context, int startPos, int endPos, float time)
- delegate void **OnVisemeEvent** (IntPtr context, short visemeld, float time)
- delegate void **OnMarkEvent** (IntPtr context, string markName, float time)
- delegate void **OnAudioEvent** (IntPtr context, byte[] audioData, int length)

8.1.1 Enumeration Type Documentation

8.1.1.1 OutputFormat

enum `ReadSpeaker.OutputFormat`

Determines what audio output format to use during conversion.

Enumerator

PCM16	16-Bit Linear PCM
PCM8	8-Bit Linear PCM

8.1.1.2 TextType

enum [ReadSpeaker.TextType](#)

Determines how the text will be processed during conversion.

Enumerator

Normal	SSML tags will not be processed.
SSML	SSML tags will be processed.

8.2 ReadSpeaker.Settings Namespace Reference**Classes**

- class [ExportFlagsDict](#)
- class [SerializableDictionary](#)
- class [TTSSettings](#)
- class [TTSSettingsData](#)
- class [VoicePlatformFlags](#)

Enumerations

- enum **LoggingLevel** { **Off** , **Verbose** }
- enum **VoicePlatformFlag** { **Used** , **Unused** , **Unavailable** }

Chapter 9

Class Documentation

9.1 ReadSpeaker.Settings.ExportFlagsDict Class Reference

Inheritance diagram for ReadSpeaker.Settings.ExportFlagsDict:

9.2 ReadSpeaker.Settings.SerializableDictionary< TKey, TValue > Class Template Reference

Inheritance diagram for ReadSpeaker.Settings.SerializableDictionary< TKey, TValue >:

Collaboration diagram for ReadSpeaker.Settings.SerializableDictionary< TKey, TValue >:

Public Member Functions

- void **OnBeforeSerialize** ()
- void **OnAfterDeserialize** ()

The documentation for this class was generated from the following file:

- TTSSettings.cs

9.3 ReadSpeaker.TTS Class Reference

The core class for using runtime text to speech within Unity.

Static Public Member Functions

- static void **UnloadEngines** ()
Forces all loaded engines to be unloaded from memory and to be kept unloaded as long as they are not in use.
- static void **PauseAll** ()
Pauses the audio source of every [TTSSpeaker](#).
- static void **ResumeAll** ()
Resumes the audio source of every [TTSSpeaker](#).
- static void **InterruptAll** ()
Interrupts the audio source of every [TTSSpeaker](#).
- static string **AddConverter** ([TTSCConverter](#) converter)
- static [TTSCConverter](#) **GetConverter** (string id)
- static void **RemoveConverter** ([TTSCConverter](#) converter)
- static void **Init** ()
Initializes the text to speech system. Has to be called before any calls to associated functions.
- static [TTSSpeaker](#) **GetDefaultSpeaker** ()
Gets the default speaker or creates one if none exists.
- static void **PlayAudioBuffer** (float[] audioData, AudioSource audioSource, bool playOneShot=false, int sampleRate=16000)
Plays audioData from a buffer on the specified audioSource .
- static void **PlayAudioFile** (string path, AudioSource audioSource, bool playOneShot=false)
Plays an audio file located at path on the specified audioSource .
- static void **Say** (string text, [TTSSpeechCharacteristics](#) characteristics, AudioSource audioSource, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false)
Converts a text to speech using the specified characteristics and immediately plays it from an audioSource .
- static void **Say** (string text, [TTSSpeaker](#) speaker, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false)
Converts a text to speech using the specified speaker and immediately plays it.
- static void **Say** (string text, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false)
Converts a text to speech using the default speaker and immediately plays it.
- static void **SayAsync** (string text, [TTSSpeechCharacteristics](#) characteristics, AudioSource audioSource, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false, MonoBehaviour monoBehaviour=null)
Converts a text to speech asynchronously using the specified characteristics and plays it from an audioSource when ready.
- static void **SayAsync** (string text, [TTSSpeaker](#) speaker, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false)
Converts a text to speech asynchronously using the specified speaker and plays it when ready.
- static void **SayAsync** (string text, [TextType](#) textType=[TextType.Normal](#), bool playOneShot=false)
Converts a text to speech asynchronously using the default speaker and plays it when ready.
- static List< string > **GetAvailableLanguages** ()
Gets all available languages in the installed engines.
- static List< string > **GetAvailableGendersForLanguage** (string language)
Gets all of the available genders for a specified language.
- static [TTSEngine](#) **GetEngineWithLanguage** (string language)
Gets a [TTSEngine](#) for a specified language.
- static [TTSEngine](#) **GetEngineWithGender** (string gender)
Gets a [TTSEngine](#) for a specified gender.

- static [TTSEngine GetEngineWithLanguageAndGender](#) (string language, string gender)
Gets a [TTSEngine](#) with a specified language and gender.
- static [TTSEngine GetEngine](#) (string name, string type)
Gets the [TTSEngine](#) with a specified name and type.
- static List< [TTSEngine](#) > [GetEnginesWithLanguage](#) (string language)
Gets all [TTSEngines](#) with a specified language.
- static List< [TTSEngine](#) > [GetEnginesWithGender](#) (string gender)
Gets all [TTSEngines](#) with a specified gender.
- static List< [TTSEngine](#) > [GetEnginesWithLanguageAndGender](#) (string language, string gender)
Gets all [TTSEngines](#) with specified language and gender.
- static [TTSEngine GetEngineByID](#) (string engineID)
Gets the [TTSEngine](#) with a specified ID.
- static List< [TTSEngine](#) > [GetInstalledEngines](#) ()
Gets all of the installed [TTSEngines](#)

Events

- static Action **onPauseAll**
Invoked by [TTS.PauseAll\(\)](#)
- static Action **onResumeAll**
Invoked by [TTS.ResumeAll\(\)](#)
- static Action **onInterruptAll**
Invoked by [TTS.InterruptAll\(\)](#)

9.3.1 Detailed Description

The core class for using runtime text to speech within Unity.

9.3.2 Member Function Documentation

9.3.2.1 GetAvailableGendersForLanguage()

```
static List< string > ReadSpeaker.TTS.GetAvailableGendersForLanguage (
    string language ) [inline], [static]
```

Gets all of the available genders for a specified language.

Parameters

<i>language</i>	The language which is queried.
-----------------	--------------------------------

Returns

A list of genders available for the engines with language *language* </return>

9.3.2.2 GetAvailableLanguages()

```
static List< string > ReadSpeaker.TTS.GetAvailableLanguages ( ) [inline], [static]
```

Gets all available languages in the installed engines.

Returns

All of the languages available from the currently installed engines.

9.3.2.3 GetDefaultSpeaker()

```
static TTSSpeaker ReadSpeaker.TTS.GetDefaultSpeaker ( ) [inline], [static]
```

Gets the default speaker or creates one if none exists.

Returns

The current default speaker.

9.3.2.4 GetEngine()

```
static TTSEngine ReadSpeaker.TTS.GetEngine (
    string name,
    string type ) [inline], [static]
```

Gets the [TTSEngine](#) with a specified name and type.

Parameters

<i>name</i>	The name of the engine.
<i>type</i>	The type of the engine.

Returns

The [TTSEngine](#) with a *name* and *type*

9.3.2.5 GetEngineByID()

```
static TTSEngine ReadSpeaker.TTS.GetEngineByID (
    string engineID ) [inline], [static]
```

Gets the [TTSEngine](#) with a specified ID.

Parameters

<i>engineID</i>	The ID which is queried.
-----------------	--------------------------

Returns

The [TTSEngine](#) with *engineID*

9.3.2.6 GetEnginesWithGender()

```
static List< TTSEngine > ReadSpeaker.TTS.GetEnginesWithGender (
    string gender ) [inline], [static]
```

Gets all TTSEngines with a specified gender.

Parameters

<i>gender</i>	The gender which is queried.
---------------	------------------------------

Returns

The TTSEngines with *gender*

9.3.2.7 GetEnginesWithLanguage()

```
static List< TTSEngine > ReadSpeaker.TTS.GetEnginesWithLanguage (
    string language ) [inline], [static]
```

Gets all TTSEngines with a specified language.

Parameters

<i>language</i>	The language which is queried.
-----------------	--------------------------------

Returns

The TTSEngines with *language*

9.3.2.8 GetEnginesWithLanguageAndGender()

```
static List< TTSEngine > ReadSpeaker.TTS.GetEnginesWithLanguageAndGender (
    string language,
    string gender ) [inline], [static]
```

Gets all TTSEngines with specified language and gender.

Parameters

<i>language</i>	The langauge which is queried
<i>gender</i>	The gender which is queried.

Returns

The TTSEngines with *language* and *gender*

9.3.2.9 GetEngineWithGender()

```
static TTSEngine ReadSpeaker.TTS.GetEngineWithGender (
    string gender ) [inline], [static]
```

Gets a [TTSEngine](#) for a specified gender.

Parameters

<i>gender</i>	The gender which is queried
---------------	-----------------------------

The first found [TTSEngine](#) for a *gender* . null if none is found

9.3.2.10 GetEngineWithLanguage()

```
static TTSEngine ReadSpeaker.TTS.GetEngineWithLanguage (
    string language ) [inline], [static]
```

Gets a [TTSEngine](#) for a specified language.

Parameters

<i>langauge</i>	The language which is queried.
-----------------	--------------------------------

Returns

The first found [TTSEngine](#) for a *language* . null if none is found

9.3.2.11 GetEngineWithLanguageAndGender()

```
static TTSEngine ReadSpeaker.TTS.GetEngineWithLanguageAndGender (
    string language,
    string gender ) [inline], [static]
```

Gets a [TTSEngine](#) with a specified language and gender.

Parameters

<i>language</i>	The language which is queried.
<i>gender</i>	The gender which is queried.

The first found [TTSEngine](#) for a *language* and [gender](#). null if none is found.

9.3.2.12 GetInstalledEngines()

```
static List< TTSEngine > ReadSpeaker.TTS.GetInstalledEngines ( ) [inline], [static]
```

Gets all of the installed TTSEngines

Returns

All installed TTSEngines

9.3.2.13 Init()

```
static void ReadSpeaker.TTS.Init ( ) [inline], [static]
```

Initializes the text to speech system. Has to be called before any calls to associated functions.

Exceptions

<i>System.Exception</i>	The current platform is not supported.
-------------------------	--

9.3.2.14 InterruptAll()

```
static void ReadSpeaker.TTS.InterruptAll ( ) [inline], [static]
```

Interrupts the audio source of every [TTSSpeaker](#).

9.3.2.15 PlayAudioBuffer()

```
static void ReadSpeaker.TTS.PlayAudioBuffer (
    float[] audioData,
    AudioSource audioSource,
    bool playOneShot = false,
    int sampleRate = 16000 ) [inline], [static]
```

Plays *audioData* from a buffer on the specified *audioSource* .

Parameters

<i>audioData</i>	The buffer which contains the data that is to be played.
<i>audioSource</i>	The AudioSource from which the audio is to be played.

9.3.2.16 PlayAudioFile()

```
static void ReadSpeaker.TTS.PlayAudioFile (
    string path,
    AudioSource audioSource,
    bool playOneShot = false ) [inline], [static]
```

Plays an audio file located at *path* on the specified *audioSource* .

Parameters

<i>path</i>	The path to the audio file which is to be played.
<i>audioSource</i>	The AudioSource from which the data is to be played.

9.3.2.17 Say() [1/3]

```
static void ReadSpeaker.TTS.Say (
    string text,
    TextType textType = TextType.Normal,
    bool playOneShot = false ) [inline], [static]
```

Converts a *text* to speech using the default speaker and immediately plays it.

Parameters

<i>text</i>	The text which is to be spoken.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

9.3.2.18 Say() [2/3]

```
static void ReadSpeaker.TTS.Say (
    string text,
    TTSSpeaker speaker,
    TextType textType = TextType.Normal,
    bool playOneShot = false ) [inline], [static]
```

Converts a *text* to speech using the specified *speaker* and immediately plays it.

Parameters

<i>text</i>	The text which is to be spoken.
<i>speaker</i>	The speaker which is to speak the text.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

9.3.2.19 Say() [3/3]

```
static void ReadSpeaker.TTS.Say (
    string text,
    TTSSpeechCharacteristics characteristics,
    AudioSource audioSource,
    TextType textType = TextType.Normal,
    bool playOneShot = false ) [inline], [static]
```

Converts a *text* to speech using the specified *characteristics* and immediately plays it from an *audioSource*.

Parameters

<i>text</i>	The text which is to be spoken.
<i>characteristics</i>	The speech characteristics which is to be used during synthesis.
<i>audioSource</i>	The AudioSource from which the audio is to be played.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

9.3.2.20 SayAsync() [1/3]

```
static void ReadSpeaker.TTS.SayAsync (
    string text,
    TextType textType = TextType.Normal,
    bool playOneShot = false ) [inline], [static]
```

Converts a *text* to speech asynchronously using the default speaker and plays it when ready.

Parameters

<i>text</i>	The text which is to be spoken.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

9.3.2.21 SayAsync() [2/3]

```
static void ReadSpeaker.TTS.SayAsync (
    string text,
    TTSSpeaker speaker,
    TextType textType = TextType.Normal,
    bool playOneShot = false ) [inline], [static]
```

Converts a *text* to speech asynchronously using the specified *speaker* and plays it when ready.

Parameters

<i>text</i>	The text which is to be spoken.
<i>speaker</i>	The speaker which is to speak the text.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

9.3.2.22 SayAsync() [3/3]

```
static void ReadSpeaker.TTS.SayAsync (
    string text,
    TTSpeechCharacteristics characteristics,
    AudioSource audioSource,
    TextType textType = TextType.Normal,
    bool playOneShot = false,
    MonoBehaviour monoBehaviour = null ) [inline], [static]
```

Converts a *text* to speech asynchronously using the specified *characteristics* and plays it from an *audioSource* when ready.

Parameters

<i>text</i>	The text which is to be spoken.
<i>characteristics</i>	The speech characteristics which is to be used during synthesis.
<i>audioSource</i>	The AudioSource from which the audio is to be played.
<i>textType</i>	The text type which determines how the input <i>text</i> should be processed.
<i>playOneShot</i>	Whether the audio should be played via PlayOneShot.

The documentation for this class was generated from the following file:

- RSTTS.cs

9.4 ReadSpeaker.TTSConverter Class Reference

Encapsulates the text-to-speech conversion process.

Public Member Functions

- void [ConvertToBufferThreadProc](#) (System.Object threadContext)
A thread procedure to convert text to speech using the current handle values and stores the result in an audio buffer. Use this for thread safe conversion.
- void [ConvertToBuffer_SyncInfoThreadProc](#) (System.Object threadContext)
A thread procedure to convert text to speech with additional synchronization info using the current handle values and stores the result in an audio buffer. Use this for thread safe conversion.
- void [ConvertToFileThreadProc](#) (System.Object threadContext)
A thread procedure to convert text to speech using the current handle values and stores the result in an audio file. Use this for thread safe conversion.
- int [ConvertToBuffer](#) ()
Converts text to speech using the current handle values and stores the result in an audio buffer.
- int [ConvertToBuffer_SyncInfo](#) ()
- int [ConvertToFile](#) ()
Converts text to speech using the current handle values and stores the result in an audio file.
- bool [FinishedConverting](#) ()
Checks if the conversion has finished.
- float[] [GetAudioData](#) ()
Gets the audio data that has been converted by [ConvertToBuffer\(\)](#).

Public Attributes

- OnWordEvent **onWord**
- OnVisemeEvent **onViseme**
- OnMarkEvent **onMark**
- OnAudioEvent **onAudio**

Properties

- string **Text** [getset]
Gets or sets the text to be converted.
- **TTSEngine Engine** [getset]
Gets or sets the voice engine to be used for synthesis.
- int **Volume** [getset]
Gets or sets the volume to be used during synthesis.
- int **Pitch** [getset]
Gets or sets the pitch to be used during synthesis.
- int **Speed** [getset]
Gets or sets the speed to be used during synthesis.
- int **Pause** [getset]
Gets or sets the time in milliseconds to pause when encountering a delimiter during synthesis.
- int **CommaPause** [getset]
Gets or sets the time in milliseconds to pause when encountering a comma during synthesis.
- **TextType TextType** [getset]
Gets or sets the text type to be used during synthesis.
- string **OutputPath** [getset]
Gets or sets the path to the output file when converting to file.
- **OutputFormat OutputFormat** [getset]
Gets or sets the format of the audio output.
- bool **IsAsync** [getset]
Gets or sets a value indicating whether the converter is used asynchronously.

9.4.1 Detailed Description

Encapsulates the text-to-speech conversion process.

9.4.2 Member Function Documentation

9.4.2.1 ConvertToBuffer()

```
int ReadSpeaker.TTSConverter.ConvertToBuffer ( ) [inline]
```

Converts text to speech using the current handle values and stores the result in an audio buffer.

For example:

```
public class TTSEExample : MonoBehaviour{
    public void Start(){
        TTS.Init();
        TTSEngine engine = TTS.GetEngine("ashley","d16");
        TTSConverter converter = new TTSConverter();
        converter.Text = "Hello";
        converter.Engine = engine;
        converter.Volume = 225;
        converter.Pitch = 125;
        converter.Speed = 125;
        converter.Pause = 0;
        converter.CommaPause = 0;
        converter.ConvertToBuffer();
        float[] audioData = converter.GetAudioData();
    }
}
```

Results in audioData containing the audio data from converting the text "Hello" to speech using the speech engine named "ashley" with type "d16".

Returns

0 if succesful, a number less than 0 if unsuccessful

9.4.2.2 ConvertToBuffer_SyncInfoThreadProc()

```
void ReadSpeaker.TTSConverter.ConvertToBuffer_SyncInfoThreadProc (
    System.Object threadContext ) [inline]
```

A thread procedure to convert text to speech with additional synchronization info using the current handle values and stores the result in an audio buffer. Use this for thread safe conversion.

Parameters

<i>threadContext</i>	The thread context where this procedure performs the task.
----------------------	--

9.4.2.3 ConvertToBufferThreadProc()

```
void ReadSpeaker.TTSConverter.ConvertToBufferThreadProc (
    System.Object threadContext ) [inline]
```

A thread procedure to convert text to speech using the current handle values and stores the result in an audio buffer. Use this for thread safe conversion.

Parameters

<i>threadContext</i>	The thread context where this procedure performs the task.
----------------------	--

9.4.2.4 ConvertToFile()

```
int ReadSpeaker.TTSConverter.ConvertToFile ( ) [inline]
```

Converts text to speech using the current handle values and stores the result in an audio file.

For example:

```
public class TTSExample : MonoBehaviour{
    public void Start(){
        TTS.Init();
        TTS.Engine engine = TTS.GetEngine("ashley", "d16");
        TTSConverter converter = new TTSConverter();
        converter.Text = "Hello";
        converter.Engine = engine;
        converter.Volume = 225;
        converter.Pitch = 125;
        converter.Speed = 125;
        converter.Pause = 0;
        converter.CommaPause = 0;
```

```

        converter.OutputPath = Application.dataPath + "/Hello.wav";
        converter.ConvertToFile();
    }
}

```

Results in a file named 'Hello.wav' being created at Application.dataPath containing the speech output from converting the text "Hello" with the engine named "ashley" with type "d16".

Returns

0 if succesful, a number less than 0 if unsuccessful

9.4.2.5 ConvertToFileThreadProc()

```

void ReadSpeaker.TTSConverter.ConvertToFileThreadProc (
    System.Object threadContext ) [inline]

```

A thread procedure to convert text to speech using the current handle values and stores the result in an audio file. Use this for thread safe conversion.

Parameters

<i>threadContext</i>	The thread context where this procedure performs the task.
----------------------	--

9.4.2.6 FinishedConverting()

```

bool ReadSpeaker.TTSConverter.FinishedConverting ( ) [inline]

```

Checks if the conversion has finished.

Returns

True if conversion has both been started and finished, false otherwise.

9.4.2.7 GetAudioData()

```

float[ ] ReadSpeaker.TTSConverter.GetAudioData ( ) [inline]

```

Gets the audio data that has been converted by [ConvertToBuffer\(\)](#).

Returns

The audio data which has been converted by [ConvertToBuffer\(\)](#). The complete data set if [FinishedConverting\(\)](#) returns true, otherwise an incomplete data set.

The documentation for this class was generated from the following file:

- RSTTS.cs

9.5 ReadSpeaker.TTSEngine Class Reference

Represents a voice engine.

Public Member Functions

- bool [Equals](#) (TTSEngine other)
Compares this instance to another [TTSEngine](#) instance.
- void **Load** ()
Loads the associated voice database to memory. The voice database is loaded in memory until [Unload\(\)](#) is called.
- void **Unload** ()
Unloads the associated voice database from memory.

Public Attributes

- readonly string **id**
The ID of the engine.
- readonly string **name**
The name of the engine.
- readonly string **type**
The type of the engine.
- readonly string **language**
The language used by the voice.
- readonly string **gender**
The gender of the voice.
- readonly string **version**
The Version number of this engine.
- readonly int **sampleRate**
The sample rate used by the voice.

9.5.1 Detailed Description

Represents a voice engine.

9.5.2 Member Function Documentation

9.5.2.1 Equals()

```
bool ReadSpeaker.TTSEngine.Equals (  
    TTSEngine other ) [inline]
```

Compares this instance to another [TTSEngine](#) instance.

Parameters

<i>other</i>	The TTSEngine to compare to.
--------------	--

Returns

True if this voice engine has the same ID as *other* . False otherwise.

The documentation for this class was generated from the following file:

- RSTTS.cs

9.6 ReadSpeaker.Settings.TTSSettings Class Reference

Inheritance diagram for ReadSpeaker.Settings.TTSSettings:

Collaboration diagram for ReadSpeaker.Settings.TTSSettings:

Public Member Functions

- void **OnEnable** ()
- void **Refresh** ()
- string **FirstLetterToUpper** (string str)

Public Attributes

- [TTSSettingsData](#) **data**

The documentation for this class was generated from the following file:

- TTSSettings.cs

9.7 ReadSpeaker.Settings.TTSSettingsData Class Reference

Collaboration diagram for ReadSpeaker.Settings.TTSSettingsData:

Public Attributes

- [ExportFlagsDict](#) **exportFlagsDict**
- LoggingLevel **loggingLevel**

The documentation for this class was generated from the following file:

- TTSSettings.cs

9.8 ReadSpeaker.TTSSpeaker Class Reference

Represents a speaking entity.

Inheritance diagram for ReadSpeaker.TTSSpeaker:

Collaboration diagram for ReadSpeaker.TTSSpeaker:

Public Member Functions

- [TTSSpeechCharacteristics](#) **GetSpeechCharacteristics** ()
Gets the speech characteristics which is currently in use by this speaker.
- void **Pause** ()
Pauses audio playback on the associated audio source.
- void **Resume** ()
Resumes audio playback on the associated audio source.
- void **Interrupt** ()
Interrupts audio playback on the associated audio source.

Public Attributes

- [TTSSpeechCharacteristics](#) **characteristics**
The speech characteristics of this speaker.
- [TTSVoicePreset](#) **preset**
The voice preset of this speaker.
- bool **usePreset**
Whether to use the voice preset or the inherent speech characteristics.
- AudioSource **audioSource**
The audio source used by this speaker.

9.8.1 Detailed Description

Represents a speaking entity.

9.8.2 Member Function Documentation

9.8.2.1 GetSpeechCharacteristics()

```
TTSSpeechCharacteristics ReadSpeaker.TTSSpeaker.GetSpeechCharacteristics ( ) [inline]
```

Gets the speech characteristics which is currently in use by this speaker.

Returns

If usePreset is set to true, returns the characteristics defined by *preset* . Otherwise returns the inherent *characteristics* .

The documentation for this class was generated from the following file:

- TTSSpeaker.cs

9.9 ReadSpeaker.TTSSpeechCharacteristics Class Reference

Represents a set of speech characteristics to be used during synthesis.

Public Member Functions

- **TTSSpeechCharacteristics** ([TTSEngine](#) engine)

Parameters

engine	The voice engine to be used for synthesis.
--------	--

- **TTSSpeechCharacteristics** ([TTSEngine](#) engine, int volume, int pitch, int speed, int pause, int commaPause)

Properties

- [TTSEngine](#) **Engine** [getset]
Gets or sets the voice engine to be used for synthesis.
- int **Volume** [getset]
Gets or sets the volume to be used during synthesis.
- int **Pitch** [getset]
- int **Speed** [getset]
- int **Pause** [getset]
- int **CommaPause** [getset]

9.9.1 Detailed Description

Represents a set of speech characteristics to be used during synthesis.

9.9.2 Constructor & Destructor Documentation

9.9.2.1 TTSSpeechCharacteristics()

```
ReadSpeaker.TTSSpeechCharacteristics.TTSSpeechCharacteristics (
    TTSEngine engine,
    int volume,
    int pitch,
    int speed,
    int pause,
    int commaPause ) [inline]
```

Parameters

engine	The voice engine to be used for synthesis.	Generated by Doxygen
volume	The volume to be used during synthesis.	
pitch	The pitch to be used during synthesis.	
speed	The speed to be used during synthesis.	
pause	The time in milliseconds to pause when encountering a delimiter during synthesis.	
commaPause	The time in milliseconds to pause when encountering a comma during synthesis.	

The documentation for this class was generated from the following file:

- RSTTS.cs

9.10 ReadSpeaker.TTSVoicePreset Class Reference

A data container for [TTSSpeechCharacteristics](#).

Inheritance diagram for ReadSpeaker.TTSVoicePreset:

Collaboration diagram for ReadSpeaker.TTSVoicePreset:

Public Attributes

- [TTSSpeechCharacteristics](#) **characteristics**
The speech characteristics of this preset.

9.10.1 Detailed Description

A data container for [TTSSpeechCharacteristics](#).

The documentation for this class was generated from the following file:

- TTSVoicePreset.cs

9.11 ReadSpeaker.Settings.VoicePlatformFlags Class Reference

Public Member Functions

- **VoicePlatformFlags** (VoicePlatformFlag android, VoicePlatformFlag windows_x64, VoicePlatformFlag windows_x86, VoicePlatformFlag linux_x64, VoicePlatformFlag linux_x86, VoicePlatformFlag ps4, VoicePlatformFlag ps5, VoicePlatformFlag xboxone, VoicePlatformFlag nswitch, VoicePlatformFlag ios, VoicePlatformFlag osx)

Public Attributes

- VoicePlatformFlag **android**
- VoicePlatformFlag **windows_x86**
- VoicePlatformFlag **windows_x64**
- VoicePlatformFlag **linux_x86**
- VoicePlatformFlag **linux_x64**
- VoicePlatformFlag **ps4**
- VoicePlatformFlag **ps5**
- VoicePlatformFlag **xboxone**
- VoicePlatformFlag **nswitch**
- VoicePlatformFlag **ios**
- VoicePlatformFlag **osx**

The documentation for this class was generated from the following file:

- TTSSettings.cs

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