Ultimate Starter Kit

Documentation

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None

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1. Getting Started

1.1 Requirements

The Ultimate Starter Kit plugin is only available for Unreal Engine 5.0.3 and newer. The plugin also depends on the following plugins:

1. Niagara
2. Enchanced Input

1.2 Installation

1. Download the latest release from GitHub
2. Navigate to `C:\Program Files\Epic Games\UE_{VERSION}\Engine\Plugins`
3. Create a `Marketplace` folder if needed
4. Extract the release and copy to the `Marketplace` folder
5. Open Unreal Engine
6. Click on `Edit > Plugins`
7. Enable the plugin under the `Built-in > Other` category
8. Restart Unreal Engine

1.3 Plugin Content

The Ultimate Starter Kit plugin includes content that can be used in your Blueprints. You might need to enable this first:

1. Open the `Content Browser`
2. Click on the settings button
3. Enable the `Show Plugin Content` setting

1.4 Features

The Ultimate Starter Kit plugin comes with the following features:

- Logger: A system used to easily log info to file and via on-screen messages
- Save data management: A system used to easily save/load game data with support for multiple save slots
- Input Indicators: A system used to easily detect different input devices and update the UI to display the correct indicators
- Currency: A system that is used to easily manage different types of currency
- Audio: A system used to manage the basic properties of audio files
- Stats: A system used to easily manage character stats with an optional regenerate ability
- 3D platformer character: Basic 3D platformer character and animation template
- Menu System: A customizable menu system with support for controllers and complex menu layouts
- Config Utils: Extract information from different config files
- Platform Utils: Easily detect different platform types and architectures
- Project Utils: Extract project information like name, description and version

2. Core Functionality

2.1 Input Devices

2.1.1 Introduction

Supported input devices. This is used to update the input indicators when using different input devices

2.1.2 Values

Value	Description
KeyboardMouse	Using a keyboard and mouse
GenericController	Using a controller on a desktop build
XboxController	Using an Xbox controller
PlaystationController	Using a Playstation controller
SwitchController	Using a Nintendo Switch controller
Unknown	Unknown device (used before initializing the input indicators)

2.2 Game Instance

2.2.1 Introduction

A base game instance with support for saving and loading game data using multiple save slots

2.2.2 Dependencies

The `USKGameInstance` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

2.2.3 Using the Game Instance

You need to create a blueprint using the `USKGameInstance_Implementation` as a parent before using the game instance. The input indicators feature is already configured if you use this base class. If you prefer to set this up manually, you can use `USKGameInstance` instead. After creating your own game instance blueprint, set this as the default game instance:

1. Open the Project Settings
2. Go to Project > Maps & Modes
3. Change the `Game Instance Class` value to your own blueprint

2.2.4 Save Data

You need to create a `USK Save Game` object before you can save/load data. This object contains all the data that you want to save. Just add the data you want to save as variables to the blueprint. The `Game Instance` will handle the rest. You also need to set the following properties before you can save/load data:

- **Save Game Class:** A reference to the `USK Save Game` class that contains the data you want to save

***NB:** You are required to set the save slot before you can save/load data. If not, you will get a `nullptr` and might cause your game to crash*

2.2.5 Input Indicators

The Game Instance will automatically detect input events and update the current input device if needed. If the input device is changed, other classes will be notified through the `OnInputDeviceUpdated` event

2.2.6 API Reference

Properties

Property	Description	Type	Default Value
SaveGameClass	The class that holds the data that should be saved/loaded	TSubclassOf<UUSKSaveGame>	
IsInputIndicatorsEnabled	Is the input indicators feature enabled?	bool	true
InputMappingContext	The input mapping context used to extract the keys based on specific input actions	UInputMappingContext*	`nullptr`
KeyboardMouseInputMappings	A map of all keyboard/mouse keys and the texture displayed in the indicator	TMap<FKey, UTexture2D*>	
GenericControllerInputMappings	A map of all generic controller keys and the texture displayed in the indicator	TMap<FKey, UTexture2D*>	
XboxControllerInputMappings	A map of all Xbox controller keys and the texture displayed in the indicator	TMap<FKey, UTexture2D*>	
PlaystationControllerInputMappings	A map of all Playstation controller keys and the texture displayed in the indicator	TMap<FKey, UTexture2D*>	
SwitchControllerInputMappings	A map of all Switch controller keys and the texture displayed in the indicator	TMap<FKey, UTexture2D*>	

Events

Name	Description	Params
OnDataLoadedEvent	Event used to notify other classes when the save data is loaded	
OnInputDeviceUpdated	Event used to notify other classes when the current input device is updated	

Functions

Name	Description	Params	Return
GetSaveData	Get the save data that is currently loaded		**UUSKSaveGame*** A reference to the current save data
SaveData	Save the modified data currently in memory		
SetCurrentSaveSlot	Set the current save slot	**Index (int)** The index of the save slot	
IsSaveSlotUsed	Check if a save slot is used	**Index (int)** The index of the save slot to check	**bool** A boolean value indicating if the save slot is used
EnableInputIndicators	Enable the input indicators feature		
DisableInputIndicators	Disable the input indicators feature		
GetInputIndicatorIcon	Get the input indicator icon for a specific action	**InputAction (UInputAction*)** The input action **Amount (int)** The amount of icons to retrieve	**TArray<UTexture2D*>** An array of input indicator icons for the specified action

2.2.7 Blueprint Usage

You can use the `USKGameInstance` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Save Data > Get Save Data
- Ultimate Starter Kit > Save Data > Save Data
- Ultimate Starter Kit > Save Data > Set Current Save Slot
- Ultimate Starter Kit > Save Data > Is Save Slot Used
- Ultimate Starter Kit > Input > Enable Input Indicators
- Ultimate Starter Kit > Input > Disable Input Indicators
- Ultimate Starter Kit > Input > Get Input Indicator Icon

2.2.8 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `USKGameInstance` can now be used in any of your C++ files:

```
#include "USK/Core/USKGameInstance.h"

void ATestActor::Test()
{
    // USKGameInstance is a pointer to the UUSKGameInstance
    UUSKSaveGame* SaveData = USKGameInstance->GetSaveData();
    USKGameInstance->SaveData();
    USKGameInstance->SetCurrentSaveSlot(Index);
    bool IsSaveSlotUsedValue = USKGameInstance->IsSaveSlotUsed(Index);
    USKGameInstance->EnableInputIndicators();
    USKGameInstance->DisableInputIndicators();
    TArray<UTexture2D*> InputIndicatorIcon = USKGameInstance->GetInputIndicatorIcon(InputAction, Amount);
}
```

3. Logger

3.1 Introduction

A system used to easily log info to file and via on-screen messages

3.2 Log Levels

This plugin supports the following log types:

1. **Trace:** Logs that contain the most detailed messages. These messages may contain sensitive application data. These messages are disabled by default and should never be enabled in a production environment
2. **Debug:** Logs that are used for interactive investigation during development. These logs should primarily contain information useful for debugging and have no long-term value
3. **Information:** Logs that track the general flow of the application. These logs should have long-term value
4. **Warning:** Logs that highlight an abnormal or unexpected event in the application flow, but do not otherwise cause the application execution to stop
5. **Error:** Logs that highlight when the current flow of execution is stopped due to a failure. These should indicate a failure in the current activity, not an application-wide failure

The log levels corresponds to the following verbosity level in Unreal Engine:

Log Level	Log Verbosity
Trace	VeryVerbose
Debug	Verbose
Information	Display
Warning	Warning
Error	Error

The plugin will automatically ignore certain log levels based on the type of build:

Log Level	Development	Shipping
Trace	Enabled	Disabled
Debug	Enabled	Disabled
Information	Enabled	Enabled
Warning	Enabled	Enabled
Error	Enabled	Enabled

3.3 Logging Methods

There are 2 different logging methods. Both of these are used each time you log something:

- **On-screen messages:** These messages will appear on-screen for 5 seconds (only used when running the game through the editor)
- **Log File:** Everything you log is also written to a file using the Unreal Engine logging feature

3.4 API Reference

3.4.1 Macros

Name	Description	Params	Return
USK_LOG_TRACE	Log trace information using the current function name as the tag	**Text (FString)** The text that should be logged out	
USK_LOG_DEBUG	Log debug information using the current function name as the tag	**Text (FString)** The text that should be logged out	
USK_LOG_INFO	Log information using the current function name as the tag	**Text (FString)** The text that should be logged out	
USK_LOG_WARNING	Log a warning using the current function name as the tag	**Text (FString)** The text that should be logged out	
USK_LOG_ERROR	Log an error using the current function name as the tag	**Text (FString)** The text that should be logged out	

3.4.2 Functions

Name	Description	Params	Return
Trace	Log trace information	**Tag (FString)** The category of the log entry. This is usually the function or class name. It allows you to find out exactly where this is being logged **Text (FString)** The text that should be logged out	
Debug	Log debug information	**Tag (FString)** The category of the log entry. This is usually the function or class name. It allows you to find out exactly where this is being logged **Text (FString)** The text that should be logged out	
Info	Log information	**Tag (FString)** The category of the log entry. This is usually the function or class name. It allows you to find out exactly where this is being logged **Text (FString)** The text that should be logged out	
Warning	Log a warning	**Tag (FString)** The category of the log entry. This is usually the function or class name. It allows you to find out exactly where this is being logged **Text (FString)** The text that should be logged out	
Error	Log an error	**Tag (FString)** The category of the log entry. This is usually the function or class name. It allows you to find out exactly where this is being logged **Text (FString)** The text that should be logged out	

3.5 Blueprint Usage

You can easily log info using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Logger > Log Trace
- Ultimate Starter Kit > Logger > Log Debug
- Ultimate Starter Kit > Logger > Log Info
- Ultimate Starter Kit > Logger > Log Warning
- Ultimate Starter Kit > Logger > Log Error

3.6 C++ Usage

The logging is handled through a static class/functions. You first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The logger can now be used in any of your C++ files:

```
#include "USK/Logger/Log.h"

void ATestActor::Test()
{
    USK_LOG_TRACE("Testing trace logging");
    USK_LOG_DEBUG("Testing debug logging");
    USK_LOG_INFO("Testing info logging");
    USK_LOG_WARNING("Testing warning logging");
    USK_LOG_ERROR("Testing error logging");

    ULog::Trace("Custom Tag", "Testing trace logging");
    ULog::Debug("Custom Tag", "Testing debug logging");
    ULog::Info("Custom Tag", "Testing info logging");
    ULog::Warning("Custom Tag", "Testing warning logging");
    ULog::Error("Custom Tag", "Testing error logging");
}
```

4. Trackable Data

4.1 Overview

4.1.1 Introduction

A system that is used to easily manage different types of actor data

4.1.2 Trackable Data Component

Before you can manage the data, you need to create a Trackable Data Component and add it to the actor/character containing the data

4.1.3 Built-in data

The following data can automatically be managed without creating custom components:

1. Currency (using the `Currency Component`)
2. Stats (using the `Stats Component`)

4.2 Data

4.2.1 Introduction

All trackable data use the FTrackableData struct to specify the default values and behaviours

4.2.2 Properties

Property	Description	Type	Default Value
InitialValue	The initial value of the data	float	
EnforceMaxValue	Should we enforce a maximum value?	bool	
MaxValue	The maximum value of the data	float	100.0f
AutoSave	Should all value updates automatically be saved using the game instance?	bool	
AutoGenerate	Should we automatically generate value every second?	bool	
GenerateAmount	The amount of value to generate every second	float	
GenerateDelay	The delay before the value starts generating after losing value	float	

4.3 Component

4.3.1 Introduction

A component that is used to easily manage/track different types of actor data

4.3.2 Dependencies

The `TrackableDataComponent` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience
- Game Instance: Used to monitor for input device changes and handle saving/loading game data

4.3.3 Data

The data to track is configured by adding items to the `Data` map. The component should be added to the actor/character containing the data

4.3.4 API Reference

Properties

Property	Description	Type	Default Value
Data	The map of data to track	TMap<FName, FTrackableData>	

Events

Name	Description	Params
OnValueZero	Event used to notify other classes every time the data value reaches 0	**Name (FName)** The name of the data item
OnValueUpdated	Event used to notify other classes every time the data value is updated	**Name (FName)** The name of the data item **Value (FName)** The current value of the data item **ValuePercentage (FName)** The percentage of the current value compared to the max value of the data item

Functions

Name	Description	Params	Return
GetValue	Get the amount of the data	**Name (FName)** The name of the data item	**float** The current amount of the data item
GetValuePercentage	Get the value of the data as a percentage of to the max value	**Name (FName)** The name of the data item	**float** The value of the data as a percentage of to the max value
Add	Add an amount to the data	**Name (FName)** The name of the data item **Amount (float)** The amount to add	**float** The new amount of the data item
Remove	Remove an amount from the data	**Name (FName)** The name of the data item **Amount (float)** The amount to remove	**float** The new amount of the data item

4.3.5 Blueprint Usage

You can use the `TrackableDataComponent` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Trackable Data > Get Value
- Ultimate Starter Kit > Trackable Data > Get Value Percentage
- Ultimate Starter Kit > Trackable Data > Add
- Ultimate Starter Kit > Trackable Data > Remove

4.3.6 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `TrackableDataComponent` can now be used in any of your C++ files:

```
#include "USK/Data/TrackableDataComponent.h"

void ATestActor::Test()
{
    // TrackableDataComponent is a pointer to the UTrackableDataComponent
    float Value = TrackableDataComponent->GetValue(Name);
    float ValuePercentage = TrackableDataComponent->GetValuePercentage(Name);
    float AddValue = TrackableDataComponent->Add(Name, Amount);
    float RemoveValue = TrackableDataComponent->Remove(Name, Amount);
}
```

5. Audio

5.1 Audio Overview

5.1.1 Introduction

A system used to manage the basic properties of audio files. It includes different sound classes, a sound mix and sound attenuation settings

5.1.2 Sound Classes

The audio system includes a few basic preconfigured sound classes:

Class name	Group	Volume
USK_EffectsSoundClass	Effects	1.0
USK_MusicSoundClass	Music	0.5
USK_UISoundClass	UI	1.0
USK_VoiceSoundClass	Voice	3.0

5.2 Audio Utils

5.2.1 Introduction

The audio utils class is used to easily play sound effects

5.2.2 Dependencies

The `AudioUtils` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

5.2.3 API Reference

Functions

Name	Description	Params	Return
PlaySound2D	Play a 2D sound	**WorldContext (UObject*)** The top level object representing a map **SoundFX (USoundBase*)** The USoundBase to play	
PlayRandomSound2D	Play a random 2D sound	**WorldContext (UObject*)** The top level object representing a map **SoundFX (TArray)** The array of USoundBase to select the random sound from	
PlaySound	Play a sound at the specified actor's location	**Actor (AActor*)** The actor where the sound will be played **SoundFX (USoundBase*)** The USoundBase to play	
PlayRandomSound	Play a random sound at the specified actor's location	**Actor (AActor*)** The actor where the sound will be played **SoundFX (TArray)** The array of USoundBase to select the random sound from	

5.2.4 Blueprint Usage

You can use the `AudioUtils` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Audio > Play Sound2D
- Ultimate Starter Kit > Audio > Play Random Sound2D
- Ultimate Starter Kit > Audio > Play Sound
- Ultimate Starter Kit > Audio > Play Random Sound

5.2.5 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `AudioUtils` can now be used in any of your C++ files:

```
#include "USK/Audio/AudioUtils.h"

void ATestActor::Test()
{
    UAudioUtils::PlaySound2D(WorldContext, SoundFX);
    UAudioUtils::PlayRandomSound2D(WorldContext, SoundFX);
    UAudioUtils::PlaySound(Actor, SoundFX);
    UAudioUtils::PlayRandomSound(Actor, SoundFX);
}
```

5.3 Music Player

5.3.1 Introduction

Actor responsible for playing, pausing and stopping music. It also allows you to adjust music volume

5.3.2 Dependencies

The `inal` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

5.3.3 Components

The `inal` uses the following components:

Name	Description	Type
AudioPlayer	Actor responsible for playing, pausing and stopping music. It also allows you to adjust music volume	UAudioComponent*

5.3.4 API Reference

Properties

Property	Description	Type	Default Value
PlayOnStart	Should the music automatically play when the actor is spawned?	bool	true

Functions

Name	Description	Params	Return
SetVolume	Adjust the playback volume of the music	**Volume (float)** The new volume of the music	
Play	Play the music		
Pause	Pause the music		
Stop	Stop the music		

5.3.5 Blueprint Usage

You can use the `inal` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Audio > Set Volume
- Ultimate Starter Kit > Audio > Play
- Ultimate Starter Kit > Audio > Pause
- Ultimate Starter Kit > Audio > Stop

5.3.6 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `inal` can now be used in any of your C++ files:

```
#include "USK/Audio/MusicPlayer.h"

void ATestActor::Test()
{
    // inal is a pointer to the final
    inal->SetVolume(Volume);
    inal->Play();
    inal->Pause();
    inal->Stop();
}
```

6. 3D Platformer

6.1 Overview

6.1.1 Introduction

The plugin includes a basic 3D platformer character and animation template. This can easily be extended to add unique functionality

6.2 Character

6.2.1 Introduction

Base character that can be used for 3D platformer games

6.2.2 Dependencies

The `PlatformerCharacter` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

6.2.3 Features

The following features are included in the 3D platformer character class:

1. **Double Jumping**: Additional jump with a different jump animation
2. **Variable Jump Height**: Adjust jump height based on how long the jump button is pressed
3. **Coyote Time**: Allow the character to jump for a short time after falling off the platform
4. **Shadow Decal**: A decal used as a shadow to indicate where the character will land
5. **Adjustable Camera Distance**: The camera automatically zooms in on the character while idle and zooms out as soon as the character starts moving
6. **Jump & Land effects**: Sound effects and particles when jumping and landing

All these features can be configured to meet your needs and can also be disabled

6.2.4 Components

The `PlatformerCharacter` uses the following components:

Name	Description	Type
SpringArmComponent	Base character that can be used for 3D platformer games	USpringArmComponent*
CameraComponent	The camera used by the character	UCameraComponent*

6.2.5 API Reference

Properties

Property	Description	Type	Default Value
InputMappingContext	The input mapping context used by the player	UInputMappingContext*	`nullptr`
MoveAction	The move input action	UInputAction*	`nullptr`
LookAroundAction	The camera rotation input action	UInputAction*	`nullptr`
JumpAction	The jump input action	UInputAction*	`nullptr`
ShadowDecalClass	The shadow decal class used to draw a shadow below the character while in the air	TSubclassOf<AShadowDecal>	
JumpSoundEffects	An array of sound effects played when jumping	TArray<USoundBase*>	
JumpParticleFx	The particle effects spawned when jumping	UNiagaraSystem*	`nullptr`
JumpParticleFxSpawnOffset	The offset applied to the location of the jump particles when spawning	FVector	
LandedSoundEffects	An array of sound effects played when landing	TArray<USoundBase*>	
LandParticleFx	The particle effects spawned when landing	UNiagaraSystem*	`nullptr`
LandParticleFxSpawnOffset	The offset applied to the location of the land particles when spawning	FVector	
VariableJumpHeight	Does the character support variable jump height?	bool	true
VariableJumpHeightMaxHoldTime	The amount of time to hold the jump button to reach the max height	float	0.3f
JumpVelocity	The velocity applied to the character when jumping	float	500.0f
AirControl	The amount of lateral movement control available to the character while in the air	float	1000.0f
FallingFriction	The amount of friction to apply to lateral air movement when falling	float	3.5f
Gravity	The amount of gravity applied to the character	float	2.0f
CanDoubleJump	Can the character perform a double jump?	bool	true
CanCoyoteJump	Does the character support coyote time when trying to jump?	bool	true
CoyoteJumpTime	The amount of coyote time for the character	float	0.375f
CoyoteJumpVelocity	The velocity applied to the character when performing a coyote jump	float	700.0f
BrakingFriction	Friction coefficient applied when braking	float	10.0f
MaxAcceleration	The rate of change of velocity	float	2500.0f
TargetArmLength	Length of the spring arm component	float	350.0f
ArmLengthMultiplier	The multiplier applied to the spring arm component when the character is moving	float	0.4f
CameraAdjustmentSpeed	The speed used when adjusting the camera distance	float	3.0f

6.2.6 Blueprint Usage

There is no additional functions exposed to Blueprints. Just create the character and add it to your level

6.3 Animation Instance

6.3.1 Introduction

Base animation instance for a 3D platformer character

6.3.2 Dependencies

The `PlatformerAnimationInstance` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

6.3.3 API Reference

Properties

Property	Description	Type	Default Value
IdleAnimation	The animation used when the character is in the idle state	UAnimSequence*	`nullptr`
WalkAnimation	The animation used when the character is walking	UAnimSequence*	`nullptr`
RunAnimation	The animation used when the character is running	UAnimSequence*	`nullptr`
JumpAnimation	The animation used when the character is jumping	UAnimSequence*	`nullptr`
DoubleJumpAnimation	The animation used when the character is double jumping	UAnimSequence*	`nullptr`
FallAnimation	The animation used when the character is falling	UAnimSequence*	`nullptr`
LandAnimation	The animation used when the character is landing	UAnimSequence*	`nullptr`
MovementSpeed	The movement speed fo the character	float	
IsInAir	Is the character currently in the air?	bool	
IsDoubleJumping	Is the character double jumping?	bool	

6.3.4 Blueprint Usage

You can use this template by creating your own animation blueprint and selecting `UPlatformerAnimationInstance` as the parent class. Set your animations and use this for your 3D platformer character

6.4 Shadow Decal

6.4.1 Introduction

Decal used to draw a shadow beneath a character when the character is in the air

6.4.2 Dependencies

The `ShadowDecal` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

6.4.3 API Reference

Functions

Name	Description	Params	Return
Initialize	Initialize the shadow decal	**OwnerCharacter (ACharacter*)** The character owning this shadow decal	

6.4.4 Blueprint Usage

You can use the `ShadowDecal` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Shadow Decal > Initialize

6.4.5 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `ShadowDecal` can now be used in any of your C++ files:

```
#include "USK/Character/ShadowDecal.h"

void ATestActor::Test()
{
    // ShadowDecal is a pointer to the AShadowDecal
    ShadowDecal->Initialize(OwnerCharacter);
}
```

7. UI & Widgets

7.1 FPS Counter

7.1.1 Introduction

A widget used to display the current framerate

7.1.2 Required Widgets

There is already a `FpsCounter_Implementation` that you can use in your projects. But if you create your own instance of this widget, you need to add the following before you can compile:

Name	Description	Type
FramerateText	The text block used to display the framerate	UTextBlock*

7.1.3 API Reference

Properties

Property	Description	Type	Default Value
UpdateDelay	The delay in seconds between each update	float	0.125f
HighFramerate	A framerate that is considered high and will use the high color	int	60
MediumFramerate	A framerate that is considered medium and will use the medium color	int	30
HighColor	The color used to display high framerates	FLinearColor	
MediumColor	The color used to display medium framerates	FLinearColor	
LowColor	The color used to display low framerates	FLinearColor	

7.2 Input Indicator

7.2.1 Introduction

A widget used to display input indicators based on the current input device and input action

7.2.2 Dependencies

The `InputIndicator` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience
- Game Instance: Used to monitor for input device changes and handle saving/loading game data

7.2.3 Required Widgets

There is already a `InputIndicator_Implementation` that you can use in your projects. But if you create your own instance of this widget, you need to add the following before you can compile:

Name	Description	Type
Container	The container used to display multiple images	UHorizontalBox*

7.2.4 API Reference

Properties

Property	Description	Type	Default Value
InputIndicatorIconClass	The input indicator icon class	TSubclassOf<UInputIndicatorIcon>	
Action	The input action displayed by widget	UInputAction*	`nullptr`
Size	The size of the image	float	50.0f
Amount	The amount of images to display for the input action	int	1

Functions

Name	Description	Params	Return
UpdateAction	Update the input action displayed by the widget	**NewAction (UInputAction*)** The new action **NewAmount (int)** The new amount of images to display	

7.2.5 Blueprint Usage

You can use the `InputIndicator` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > UI > Update Action

7.2.6 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `InputIndicator` can now be used in any of your C++ files:

```
#include "USK/Widgets/InputIndicator.h"

void ATestActor::Test()
{
    // InputIndicator is a pointer to the UInputIndicator
    InputIndicator->UpdateAction(NewAction, NewAmount);
}
```

7.3 Input Indicator Icon

7.3.1 Introduction

A widget used to display a single input indicator image

7.3.2 Dependencies

The `InputIndicatorIcon` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

7.3.3 Required Widgets

There is already a `InputIndicatorIcon_Implementation` that you can use in your projects. But if you create your own instance of this widget, you need to add the following before you can compile:

Name	Description	Type
Container	The size box container used to resize the image	USizeBox*
Image	The image used to display the input indicator	UImage*

7.3.4 API Reference

Properties

Property	Description	Type	Default Value

Functions

Name	Description	Params	Return
UpdateIcon	Update the icon	**Size (float)** The size of the image **Icon (UTexture2D*)** The new icon	

7.3.5 Blueprint Usage

You can use the `InputIndicatorIcon` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > UI > Update Icon

7.3.6 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `InputIndicatorIcon` can now be used in any of your C++ files:

```
#include "USK/Widgets/InputIndicatorIcon.h"

void ATestActor::Test()
{
    // InputIndicatorIcon is a pointer to the UInputIndicatorIcon
```

```
    InputIndicatorIcon->UpdateIcon(Size, Icon);
}
```

7.4 Menu

7.4.1 Introduction

A widget used to display menu items and handle navigation between the items

7.4.2 Dependencies

The `Menu` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

7.4.3 Optional Widgets

You can add the following widgets to enable extra functionality:

Name	Description	Type
ScrollContainer	Scroll container used for large menus with many items	UScrollBox*

7.4.4 API Reference

Properties

Property	Description	Type	Default Value
AddInputBindingOnLoad	Should the input binding automatically be added as soon as the widget is loaded?	bool	
PauseGameWhileVisible	Should the game automatically be paused/resumed based on the visibility of the menu?	bool	
SelectedSFX	The sound effect played when a menu item is selected	USoundBase*	`nullptr`
BackSFX	The sound effect played when trying to go back to a previous menu or closing the menu through the back button	USoundBase*	`nullptr`
InputMappingContext	The input mapping context used to navigate the menu	UInputMappingContext*	`nullptr`
MenuUpInputAction	The input action used to navigate up	UInputAction*	`nullptr`
MenuDownInputAction	The input action used to navigate down	UInputAction*	`nullptr`
MenuLeftInputAction	The input action used to navigate left	UInputAction*	`nullptr`
MenuRightInputAction	The input action used to navigate right	UInputAction*	`nullptr`
MenuSelectInputAction	The input action used to select a menu item	UInputAction*	`nullptr`
MenuBackInputAction	The input action used to go back to a previous menu or close the menu	UInputAction*	`nullptr`

Events

Name	Description	Params
OnBackEvent	Event used to handle the back/close action of the menu	

Functions

Name	Description	Params	Return
OnMenuUp	Navigate up		
OnMenuDown	Navigate down		
OnMenuLeft	Navigate left		
OnMenuRight	Navigate right		
OnMenuSelected	Select the current menu item		
OnMenuBack	Go back to a previous menu or close the menu		

7.4.5 Blueprint Usage

You can use the `Menu` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > UI > On Menu Up
- Ultimate Starter Kit > UI > On Menu Down
- Ultimate Starter Kit > UI > On Menu Left
- Ultimate Starter Kit > UI > On Menu Right
- Ultimate Starter Kit > UI > On Menu Selected
- Ultimate Starter Kit > UI > On Menu Back

7.4.6 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `Menu` can now be used in any of your C++ files:

```
#include "USK/Widgets/Menu.h"

void ATestActor::Test()
{
    // Menu is a pointer to the UMenu
    Menu->OnMenuUp();
    Menu->OnMenuDown();
    Menu->OnMenuLeft();
    Menu->OnMenuRight();
    Menu->OnMenuSelected();
    Menu->OnMenuBack();
}
```

7.5 Menu Item

7.5.1 Menu Navigation

Introduction

All the supported menu navigation types

Values

Value	Description
Disabled	No navigation allowed
HighlightItem	Highlight a different menu item
IncreaseDecreaseValue	Increase or decrease the value

7.5.2 Menu Item Widget

Introduction

A widget used to display a title, text and value in the form of a menu item

Dependencies

The `MenuItem` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

Required Widgets

You need to add the following before you can compile the `MenuItem` widget:

Name	Description	Type
NormalText	The TextBlock used to display the text of the menu item while not highlighted	UTextBlock*

Optional Widgets

You can add the following widgets to enable extra functionality:

Name	Description	Type
Title	The TextBlock used to display the title of the menu item	UTextBlock*
HighlightedText	The TextBlock used to display the text of the menu item while highlighted	UTextBlock*
BorderLeft	The border displayed on the left of the menu item	UImage*
BorderRight	The border displayed on the right of the menu item	UImage*
BorderBackground	The background border display in the menu item	UImage*
ButtonLeft	The button displayed on the left of the menu item	UImage*
ButtonRight	The button displayed on the right of the menu item	UImage*
ButtonBackground	The background button display in the menu item	UImage*

Optional Animations

You can add the following widgets to enable extra functionality:

Name	Description
HighlightedAnimation	The animation played when the menu item is highlighted

API Reference

PROPERTIES

Property	Description	Type	Default Value
HighlightedAnimation	The animation played when the menu item is highlighted	UWidgetAnimation*	`nullptr`
FocusByDefault	Should the menu item be focused by default?	bool	
HideOnConsoles	Should the menu item be hidden on consoles?	bool	
TitleText	The title text displayed in the menu item	FText	
MenuItemText	The text displayed in the menu item	FText	
HighlightedSFX	The sound effect played when the menu item is highlighted	USoundBase*	`nullptr`
BorderNormalColor	The color of the border when not highlighted	FLinearColor	
BorderHighlightedColor	The color of the border when highlighted	FLinearColor	
BorderNormalImage	The image of the border when not highlighted	UTexture2D*	`nullptr`
BorderHighlightedImage	The image of the border when highlighted	UTexture2D*	`nullptr`
BorderLeftNormalImage	The image of the left border when not highlighted	UTexture2D*	`nullptr`
BorderLeftHighlightedImage	The image of the left border when highlighted	UTexture2D*	`nullptr`
BorderRightNormalImage	The image of the right border when not highlighted	UTexture2D*	`nullptr`
BorderRightHighlightedImage	The image of the right border when highlighted	UTexture2D*	`nullptr`
BackgroundNormalColor	The color of the button when not highlighted	FLinearColor	
BackgroundHighlightedColor	The color of the button when highlighted	FLinearColor	
BackgroundNormalImage	The image of the button when not highlighted	UTexture2D*	`nullptr`
BackgroundHighlightedImage	The image of the button when highlighted	UTexture2D*	`nullptr`
BackgroundLeftNormalImage	The image of the left button when not highlighted	UTexture2D*	`nullptr`
BackgroundLeftHighlightedImage	The image of the left button when highlighted	UTexture2D*	`nullptr`
BackgroundRightNormalImage	The image of the right button when not highlighted	UTexture2D*	`nullptr`
BackgroundRightHighlightedImage	The image of the right button when highlighted	UTexture2D*	`nullptr`
DefaultValue	The default value of the menu item	int	100
MinValue	The minimum value of the menu item	int	0
MaxValue	The maximum value of the menu item	int	100
VerticalNavigation	The type of navigation used by the menu item when pressing the up or down key	EMenuNavigation	
MenuItemUp	The menu item highlighted when the up key is pressed	UMenuItem*	`nullptr`
MenuItemDown	The menu item highlighted when the down key is pressed	UMenuItem*	`nullptr`
HorizontalNavigation	The type of navigation used by the menu item when pressing the left or right key	EMenuNavigation	
MenuItemLeft	The menu item highlighted when the left key is pressed	UMenuItem*	`nullptr`
MenuItemRight	The menu item highlighted when the right key is pressed	UMenuItem*	`nullptr`

EVENTS

Name	Description	Params
OnSelectedEvent	Event used to notify other classes that the menu item was selected	
OnValueChanged	Event used to notify other classes that the menu item's value was updated	**Value (int)** The new value of the menu item

FUNCTIONS

Name	Description	Params	Return
SetText	Set the text display in the menu item	**Text (FText)** The new text displayed in the menu item	
SetHighlightedState	Set the highlighted state of the menu item	**IsHighlighted (bool)** Is the menu item highlighted? **PlayHighlightedSound (bool)** Should the highlighted sound effect be played?	
GetValue	Get the current value of the menu item		**int** The current value of the menu item
UpdateValue	Update the value of the menu item	**IncreaseValue (bool)** Should the value be increased?	

Blueprint Usage

You can use the `MenuItem` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > UI > Set Text
- Ultimate Starter Kit > UI > Set Highlighted State
- Ultimate Starter Kit > UI > Get Value
- Ultimate Starter Kit > UI > Update Value

C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `MenuItem` can now be used in any of your C++ files:

```
#include "USK/Widgets/MenuItem.h"

void ATestActor::Test()
{
    // MenuItem is a pointer to the UMenuItem
    MenuItem->SetText(Text);
    MenuItem->SetHighlightedState(IsHighlighted, PlayHighlightedSound);
    int Value = MenuItem->GetValue();
    MenuItem->UpdateValue(IncreaseValue);
}
```

8. Utils

8.1 Config Utils

8.1.1 Introduction

A Blueprint Function Library class used to extract config values

8.1.2 Dependencies

The `ConfigUtils` relies on other components of this plugin to work:

- Logger: Used to log useful information to help you debug any issues you might experience

8.1.3 API Reference

Functions

Name	Description	Params	Return
GetConfigValue	Extract a config value from a given config file	**Filename (FString)** The name of the config file **Section (FString)** The section in the config file **Key (FString)** The key in the config file **DefaultValue (FString)** The default value to return if the config file can't be read	**FString** The value extracted from the config file
GetGameConfigValue	Extract a config value from the default game config file	**Section (FString)** The section in the config file **Key (FString)** The key in the config file **DefaultValue (FString)** The default value to return if the config file can't be read	**FString** The value extracted from the config file

8.1.4 Blueprint Usage

You can use the `ConfigUtils` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Utils > Config > Get Config Value
- Ultimate Starter Kit > Utils > Config > Get Game Config Value

8.1.5 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `ConfigUtils` can now be used in any of your C++ files:

```
#include "USK/Utils/ConfigUtils.h"

void ATestActor::Test()
{
    FString ConfigValue = UConfigUtils::GetConfigValue(Filename, Section, Key, DefaultValue);
    FString GameConfigValue = UConfigUtils::GetGameConfigValue(Section, Key, DefaultValue);
}
```

8.2 Platform

8.2.1 Platform Type

Introduction

The types of supported platform types

Values

Value	Description
Unknown	An unknown or unsupported platform
Windows	Windows (any architecture)
MacOS	MacOS (any architecture)
Linux	Linux (any architecture)
Xbox	Xbox console
Playstation	Playstation console
Switch	Nintendo Switch console
Android	Android (any architecture)
IOS	iOS

8.2.2 Platform Utils

Introduction

A Blueprint Function Library class used for platform detection

API Reference

FUNCTIONS

Name	Description	Params	Return
GetPlatform	Get the current platform		**EPlatform** The current platform
IsInEditor	Is the build running inside the editor?		**bool** A boolean value indicating if the build is running inside the editor
IsDesktop	Is the build running on a desktop platform?		**bool** A boolean value indicating if the build is running on a desktop platform
IsWindows	Is the build running on Windows?		**bool** A boolean value indicating if the build is running on Windows
IsMacOS	Is the build running on MacOS?		**bool** A boolean value indicating if the build is running on MacOS
IsMacOSx86	Is the build running on MacOS (x86)?		**bool** A boolean value indicating if the build is running on MacOS (x86)
IsMacOSArm	Is the build running on MacOS (ARM)?		**bool** A boolean value indicating if the build is running on MacOS (ARM)
IsLinux	Is the build running on Linux?		**bool** A boolean value indicating if the build is running on Linux
IsConsole	Is the build running on a console platform?		**bool** A boolean value indicating if the build is running on a console platform
IsXbox	Is the build running on Xbox?		**bool** A boolean value indicating if the build is running on Xbox
IsPlaystation	Is the build running on Playstation?		**bool** A boolean value indicating if the build is running on Playstation
IsSwitch	Is the build running on Switch?		**bool** A boolean value indicating if the build is running on Switch
IsMobile	Is the build running on a mobile platform?		**bool** A boolean value indicating if the build is running on a mobile platform
IsAndroid	Is the build running on Android?		**bool** A boolean value indicating if the build is running on Android
IsAndroidx86	Is the build running on Android (x86)?		**bool** A boolean value indicating if the build is running on Android (x86)
IsAndroidx64	Is the build running on Android (x64)?		**bool** A boolean value indicating if the build is running on Android (x64)
IsAndroidArm	Is the build running on Android (ARM)?		

			bool A boolean value indicating if the build is running on Android (ARM)
IsAndroidArm64	Is the build running on Android (ARM64)?		**bool** A boolean value indicating if the build is running on Android (ARM64)
IsIOS	Is the build running on iOS?		**bool** A boolean value indicating if the build is running on iOS

Blueprint Usage

You can use the `PlatformUtils` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Utils > Platform > Get Platform
- Ultimate Starter Kit > Utils > Platform > Is In Editor
- Ultimate Starter Kit > Utils > Platform > Is Desktop
- Ultimate Starter Kit > Utils > Platform > Is Windows
- Ultimate Starter Kit > Utils > Platform > Is MacOS
- Ultimate Starter Kit > Utils > Platform > Is MacOS (x86)
- Ultimate Starter Kit > Utils > Platform > Is MacOS (ARM)
- Ultimate Starter Kit > Utils > Platform > Is Linux
- Ultimate Starter Kit > Utils > Platform > Is Console
- Ultimate Starter Kit > Utils > Platform > Is Xbox
- Ultimate Starter Kit > Utils > Platform > Is Playstation
- Ultimate Starter Kit > Utils > Platform > Is Switch
- Ultimate Starter Kit > Utils > Platform > Is Mobile
- Ultimate Starter Kit > Utils > Platform > Is Android
- Ultimate Starter Kit > Utils > Platform > Is Android (x86)
- Ultimate Starter Kit > Utils > Platform > Is Android (x64)
- Ultimate Starter Kit > Utils > Platform > Is Android (ARM)
- Ultimate Starter Kit > Utils > Platform > Is Android (ARM64)
- Ultimate Starter Kit > Utils > Platform > Is iOS

C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `PlatformUtils` can now be used in any of your C++ files:

```
#include "USK/Utils/PlatformUtils.h"

void ATestActor::Test()
{
    EPlatform Platform = UPlatformUtils::GetPlatform();
    bool IsInEditorValue = UPlatformUtils::IsInEditor();
    bool IsDesktopValue = UPlatformUtils::IsDesktop();
    bool IsWindowsValue = UPlatformUtils::IsWindows();
    bool IsMacOSValue = UPlatformUtils::IsMacOS();
    bool IsMacOSx86Value = UPlatformUtils::IsMacOSx86();
    bool IsMacOSArmValue = UPlatformUtils::IsMacOSArm();
    bool IsLinuxValue = UPlatformUtils::IsLinux();
    bool IsConsoleValue = UPlatformUtils::IsConsole();
    bool IsXboxValue = UPlatformUtils::IsXbox();
    bool IsPlaystationValue = UPlatformUtils::IsPlaystation();
    bool IsSwitchValue = UPlatformUtils::IsSwitch();
```

```
    bool IsMobileValue = UPlatformUtils::IsMobile();
    bool IsAndroidValue = UPlatformUtils::IsAndroid();
    bool IsAndroidx86Value = UPlatformUtils::IsAndroidx86();
    bool IsAndroidx64Value = UPlatformUtils::IsAndroidx64();
    bool IsAndroidArmValue = UPlatformUtils::IsAndroidArm();
    bool IsAndroidArm64Value = UPlatformUtils::IsAndroidArm64();
    bool IsIOSValue = UPlatformUtils::IsIOS();
}
```

8.3 Project Utils

8.3.1 Introduction

A Blueprint Function Library class used to extract project values

8.3.2 API Reference

Functions

Name	Description	Params	Return
GetProjectId	Get the project ID from the game config file		**FString** The project ID
GetProjectName	Get the project name from the game config file		**FString** The project name
GetProjectDescription	Get the project description from the game config file		**FString** The project description
GetProjectVersion	Get the project version from the game config file		**FString** The project version
GetProjectCompanyName	Get the project company name from the game config file		**FString** The project company name
GetProjectCopyrightNotice	Get the project copyright notice from the game config file		**FString** The project copyright notice
GetProjectLicensingTerms	Get the project licensing terms from the game config file		**FString** The project licensing terms
GetProjectHomepage	Get the project homepage from the game config file		**FString** The project homepage

8.3.3 Blueprint Usage

You can use the `ProjectUtils` using Blueprints by adding one of the following nodes:

- Ultimate Starter Kit > Utils > Project > Get Project Id
- Ultimate Starter Kit > Utils > Project > Get Project Name
- Ultimate Starter Kit > Utils > Project > Get Project Description
- Ultimate Starter Kit > Utils > Project > Get Project Version
- Ultimate Starter Kit > Utils > Project > Get Project Company Name
- Ultimate Starter Kit > Utils > Project > Get Project Copyright Notice
- Ultimate Starter Kit > Utils > Project > Get Project Licensing Terms
- Ultimate Starter Kit > Utils > Project > Get Project Homepage

8.3.4 C++ Usage

Before you can use the plugin, you first need to enable the plugin in your `Build.cs` file:

```
PublicDependencyModuleNames.Add("USK");
```

The `ProjectUtils` can now be used in any of your C++ files:

```
#include "USK/Utils/ProjectUtils.h"

void ATestActor::Test()
{
    FString ProjectId = UProjectUtils::GetProjectId();
    FString ProjectName = UProjectUtils::GetProjectName();
    FString ProjectDescription = UProjectUtils::GetProjectDescription();
    FString ProjectVersion = UProjectUtils::GetProjectVersion();
    FString ProjectCompanyName = UProjectUtils::GetProjectCompanyName();
    FString ProjectCopyrightNotice = UProjectUtils::GetProjectCopyrightNotice();
    FString ProjectLicensingTerms = UProjectUtils::GetProjectLicensingTerms();
    FString ProjectHomepage = UProjectUtils::GetProjectHomepage();
}
```