



Unreal Fest 2024 Seoul

The Artist's guide to editing the Editor: Automation, Validation and Custom Tools

Jack Condon

Senior Software Engineer
Epic Games

Editing the Editor, Why?

Because you can!

Your Pipeline, your way of working.

Efficiency means Quality

Do more with less.

Collaborate through tools

Reduce onboarding!

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Agenda

- Workspace tooling & UX
- Content Pipeline

Agenda

- Asset Metadata & The Asset Registry
- In Editor Geometry tools
- Utility Tooling
- Changing the Editor UI
- Interchange in 5.4
- Asset Validation

Customize Editor UI

Your workspace, your way!



CREATE BASIC ASSET

- Blueprint Class
- Level
- Material
- Niagara System

CREATE ADVANCED ASSET

- Animation >
- Artificial Intelligence >
- Audio >
- Blueprint >
- Cinematics >
- Console Variables Editor >
- DMX >
- Editor Utilities >**
- Foliage >
- FX >
- Gameplay >
- Input >
- Live Link >
- Material >
- Media >
- Miscellaneous >
- Motion Design >
- nDisplay >
- Paper2D >
- Physics >
- Remote >
- Texture >
- User Interface >
- World >

Editor Utility Blueprint

Editor Utility Widget

Editor Utility Widget Blueprint

853.15984 | -489.7686€ | 352.90087€

Editor Utility Widgets

Create your own UI's



Editor Utility Widgets

Camera Manager Case Study

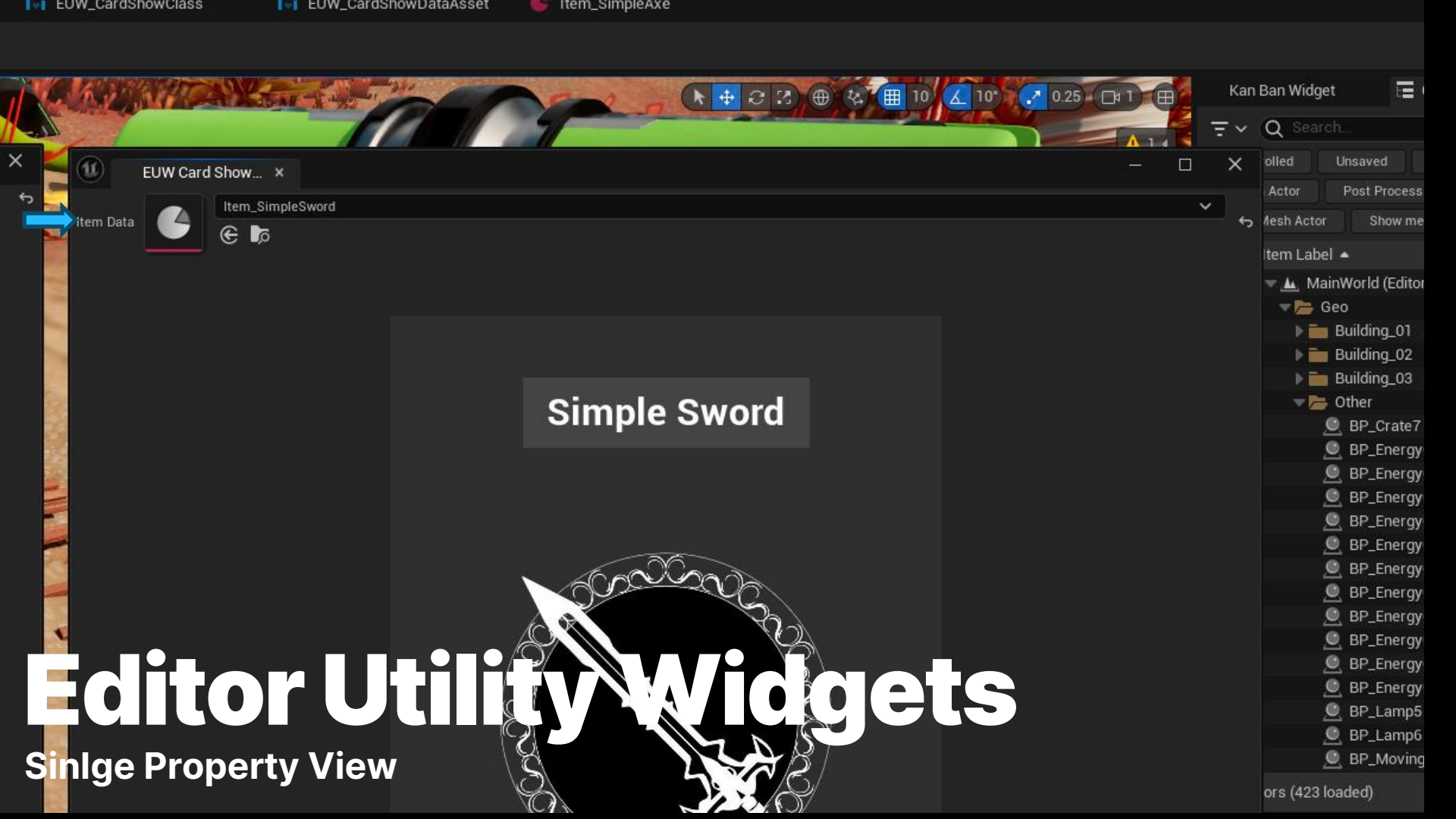
Editor Utility Widgets

Jacks Favorite Widgets to use



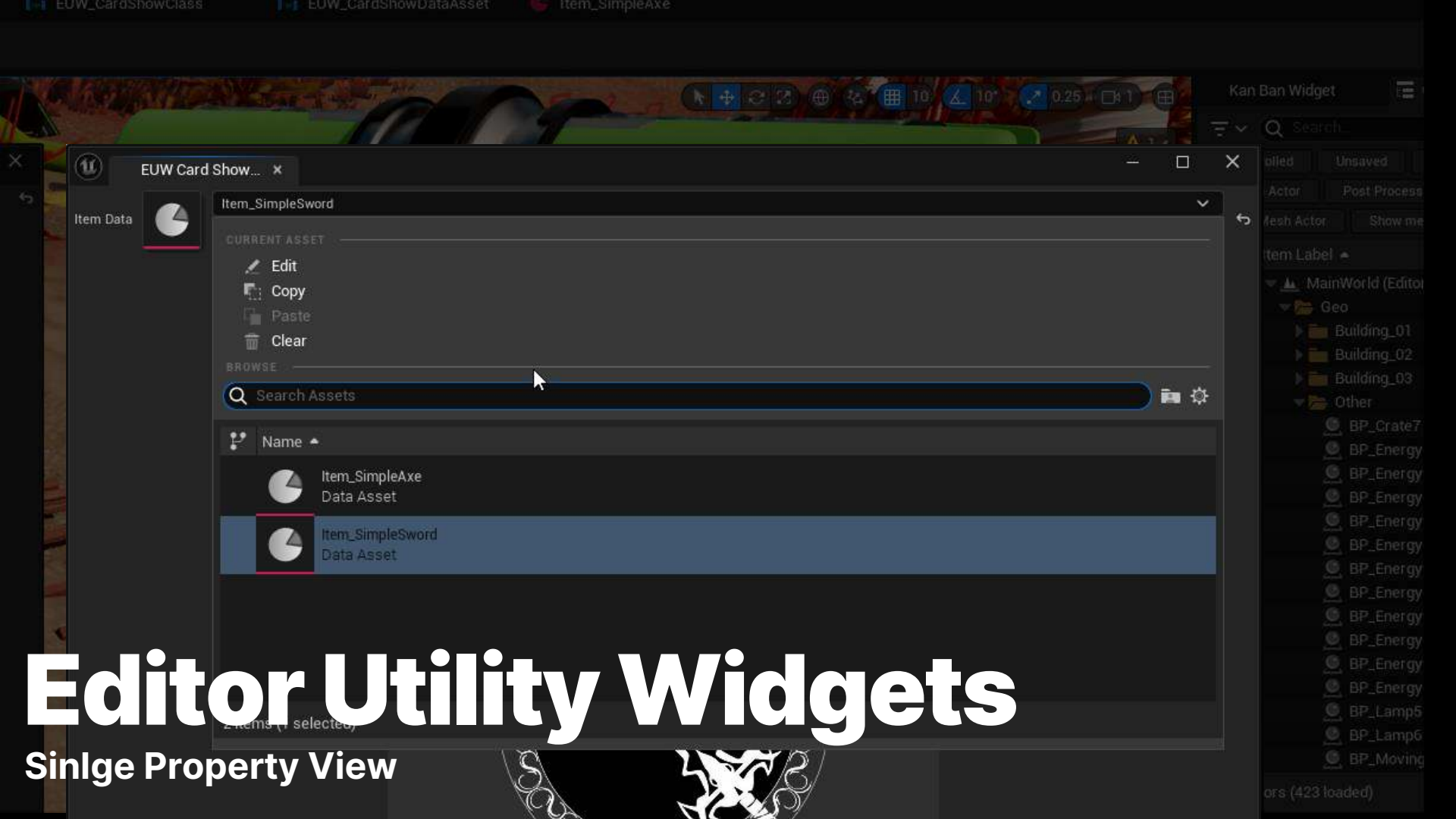
Editor Utility Widgets

Single Property View



Editor Utility Widgets

Single Property View



Editor Utility Widgets

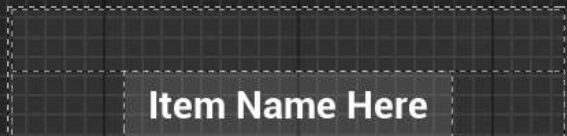
Single Property View

- EDITOR
 - Asset Thumbnail Widget
 - Details View
 - Object Mixer (Generic)
 - Single Property View
- INPUT
- LISTS
- MISC
- OPTIMIZATION
- PANEL
- PRIMITIVE
- SPECIAL EFFECTS
- SYNTH
- UNCATEGORIZED
- USER CREATED
- VIRTUAL PRODUCTION
- ADVANCED

- Hierarchy x Bind Widgets
- Search Widgets
- [EUW_CardShowDataAsset]
 - [Vertical Box]
 - SinglePropertyView
 - Button_53
 - [Common Text] "Show Card"
 - [Size Box]
 - [WBP Item]



Show Card



Item Name Here

Editor Utility Widgets

Single Property View

EDITOR

- Asset Thumbnail Widget
- Details View
- Object Mixer (Generic)
- Single Property View

INPUT

LISTS

MISC

OPTIMIZATION

PANEL

PRIMITIVE

SPECIAL EFFECTS

SYNTH

UNCATEGORIZED

USER CREATED

VIRTUAL PRODUCTION

ADVANCED

Hierarchy Bind Widgets

Search Widgets

[EUW_CardShowDataAsset]

- [Vertical Box]
- SinglePropertyView
- Button_53
 - [Common Text] "Show Card"
 - [Size Box]
 - [BP Item]

Details

SinglePropertyView Is Variable [Open SinglePropertyView](#)

Search

Slot (Vertical Box Slot)

Padding: 0.0

Size: Auto Fill

Horizontal Alignment: [Left] [Center] [Right] [Justify]

Vertical Alignment: [Top] [Middle] [Bottom] [Stretch]

View

Property Name: **ItemData**

Advanced

Accessibility

Override Accessible Defaults:

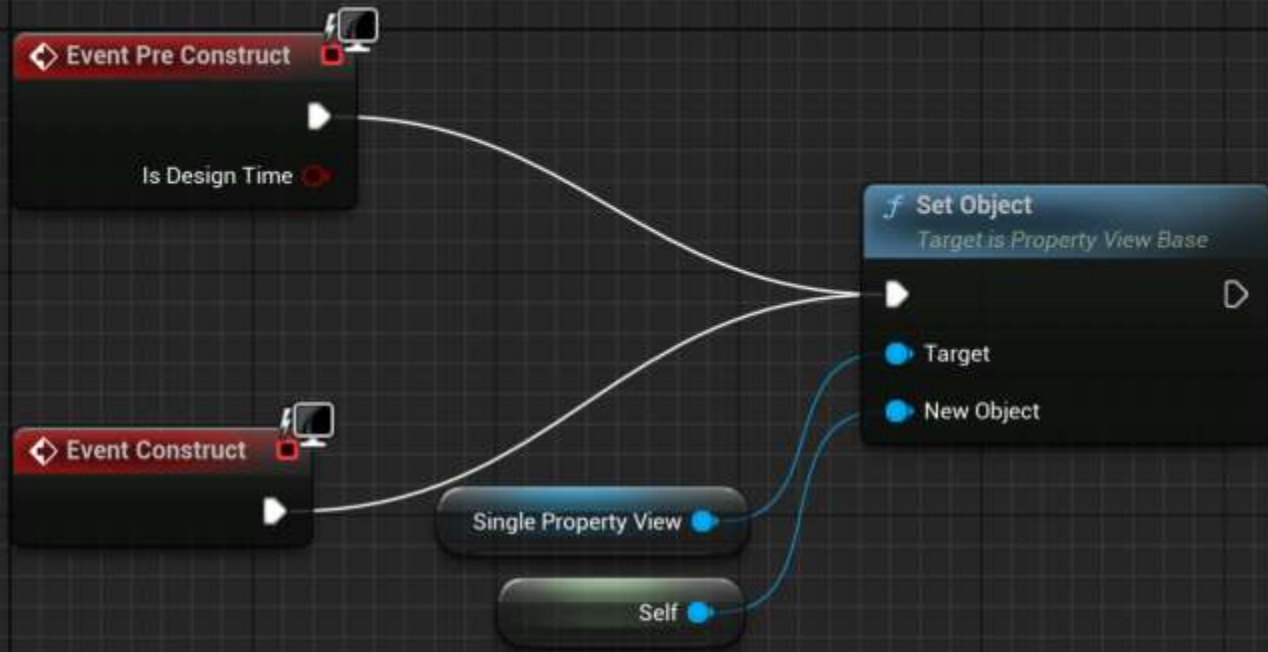
Can Children be Accessible:

Behavior

Tool Tip Text: [] Bind

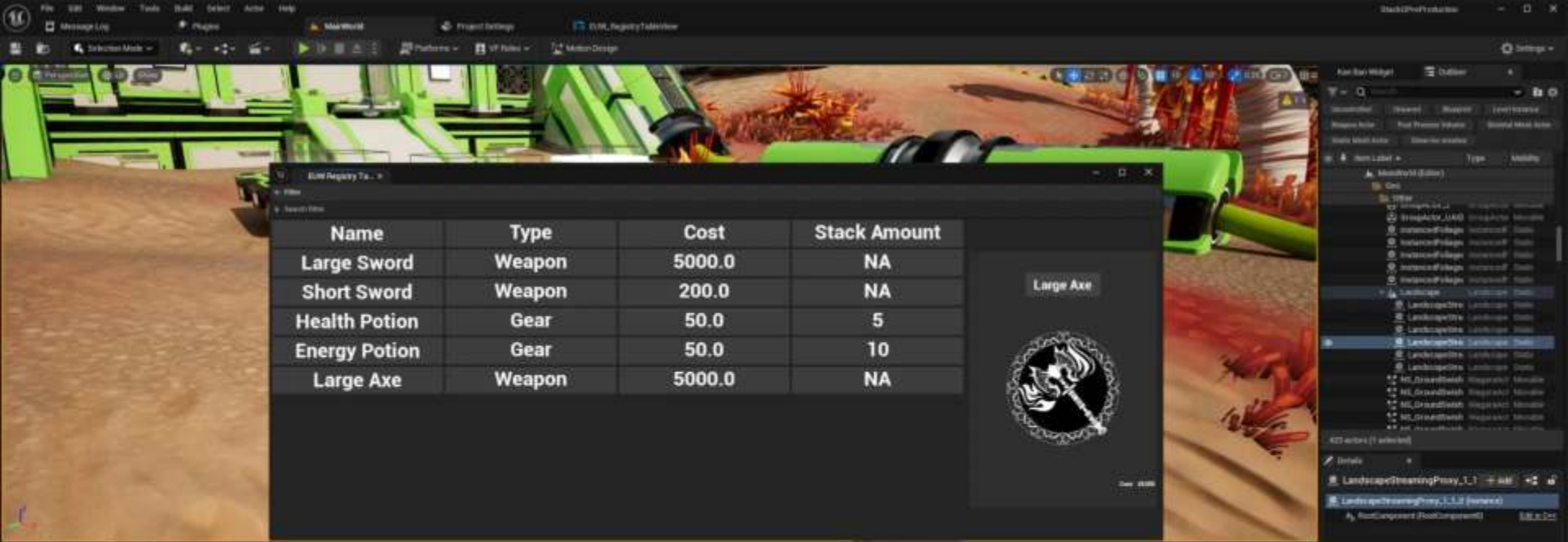
Editor Utility Widgets

Single Property View



Editor Utility Widgets

Single Property View



Editor Utility Widgets

Details Panel

GRAPHS

- EventGraph

FUNCTIONS (37 OVERRIDABLE)

- TagToString
- FilterData

MACROS

VARIABLES

- Filter**
 - SearchFilter (Inventory Search St)
 - ActorToSearchFor (Actor)
 - AnotherVar (Float)
- Config
- Settings
- Appearance
- Input
- Interaction
- Performance
- Layout
- Behavior
- Render Transform
- Localization
- Rendering
- Navigation
- DetailsView**
- SizeBox_0
- WBP_CardItemList
- WBP_CardItem
- OnActivated
- Items
- Items

EVENT DISPATCHERS



DetailsView Is Variable [Open DetailsView](#)

Search

Slot (Vertical Box Slot)

- Padding: 0.0
- Size: Auto Fill
- Horizontal Alignment: [Icons]
- Vertical Alignment: [Icons]

View

- Allow Filtering:
- Column Width: 0.65
- Categories to Show: 1 Array element
 - Index [0]: Filter
- Properties to Show: 0 Array element

Advanced

Accessibility

- Override Accessible Defaults:
- Can Children be Accessible:
- Accessible Behavior: Not Accessible

Advanced

Behavior

- Tool Tip Text: [Text] Bind
- [Property] Enabled: Bind
- Visible: [Dropdown] Bind

Render Transform

- Transform
- Pivot: 0.5 0.5

Editor Utility Widgets

Details Panel

Name	Cost	Stack Amount
Large Sword	000.0	NA
Short Sword	000.0	NA
Health Potion	50.0	5
Energy Potion	50.0	10
Large Axe	000.0	NA

None
⌵
🔄
🔍

CURRENT ACTOR

- Use Selected
- Copy
- Paste
- Clear

BROWSE




Item Label	Type
▼ MainWorld (Editor)	World
📦 1M_Cube_Chamfer6	StaticMeshActr
📦 1M_Cube_Chamfer7	StaticMeshActr
📦 1M_Cube_Chamfer8	StaticMeshActr
📦 1M_Cube_Chamfer9	StaticMeshActr
📦 1M_Cube_Chamfer10	StaticMeshActr
📦 1M_Cube_Chamfer11	StaticMeshActr
📦 1M_Cube_Chamfer12	StaticMeshActr
📦 1M_Cube_Chamfer14	StaticMeshActr
📦 1M_Cube_Chamfer15	StaticMeshActr
📦 1M_Cube_Chamfer16	StaticMeshActr
📦 1M_Cube_Chamfer17	StaticMeshActr

1M_Cube_Chamfer6

Editor Utility Widgets

Details Panel

Name	Cost	Stack Amount
Large Sword	000.0	NA
Short Sword	000.0	NA
Health Potion	50.0	5
Energy Potion	50.0	10
Large Axe	000.0	NA

None   

CURRENT ACTOR

Use Selected
Copy
Paste
Clear

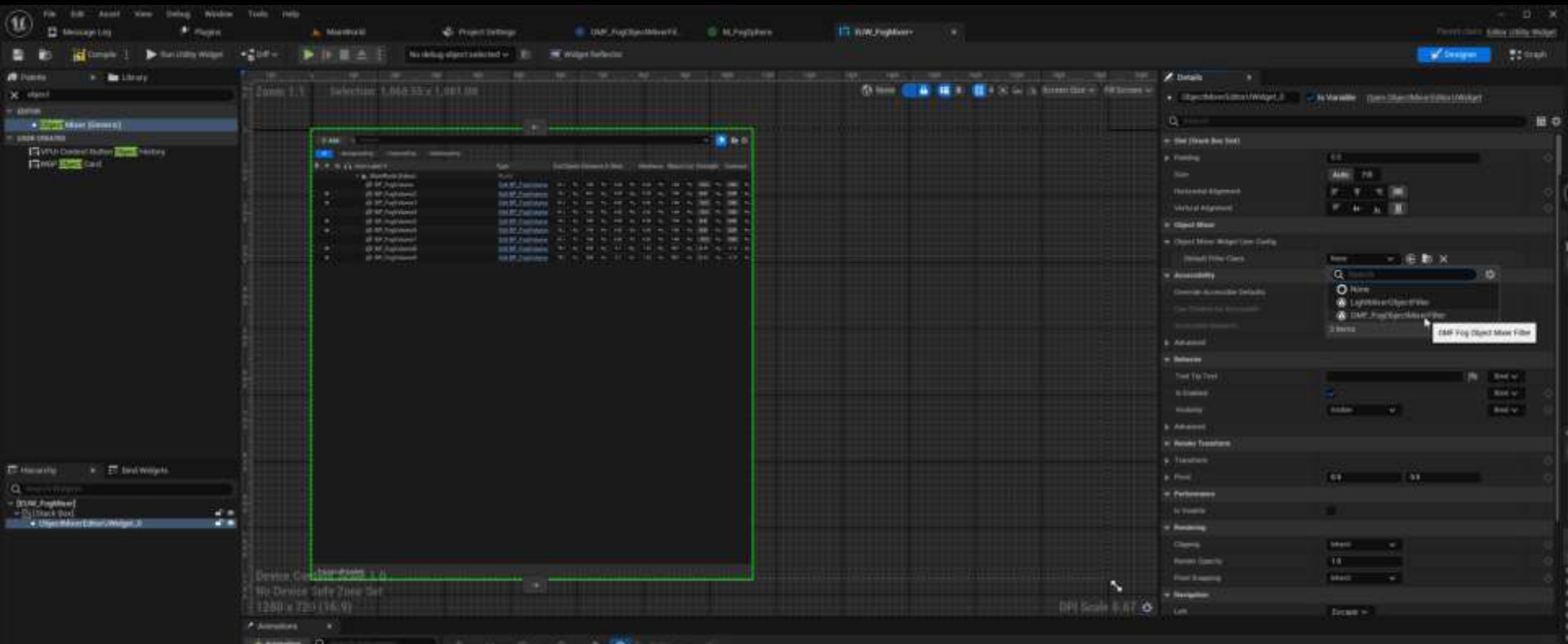
BROWSE

Item Label	Type
▼ MainWorld (Editor)	World
1M_Cube_Chamfer6	StaticMeshActr
1M_Cube_Chamfer7	StaticMeshActr
1M_Cube_Chamfer8	StaticMeshActr
1M_Cube_Chamfer9	StaticMeshActr
1M_Cube_Chamfer10	StaticMeshActr
1M_Cube_Chamfer11	StaticMeshActr
1M_Cube_Chamfer12	StaticMeshActr
1M_Cube_Chamfer14	StaticMeshActr
1M_Cube_Chamfer15	StaticMeshActr
1M_Cube_Chamfer16	StaticMeshActr
1M_Cube_Chamfer17	StaticMeshActr

1M_Cube_Chamfer6

Editor Utility Widgets

Details Panel



Editor Utility Widgets

Object Mixer



Editor Utility Widgets

Object Mixer

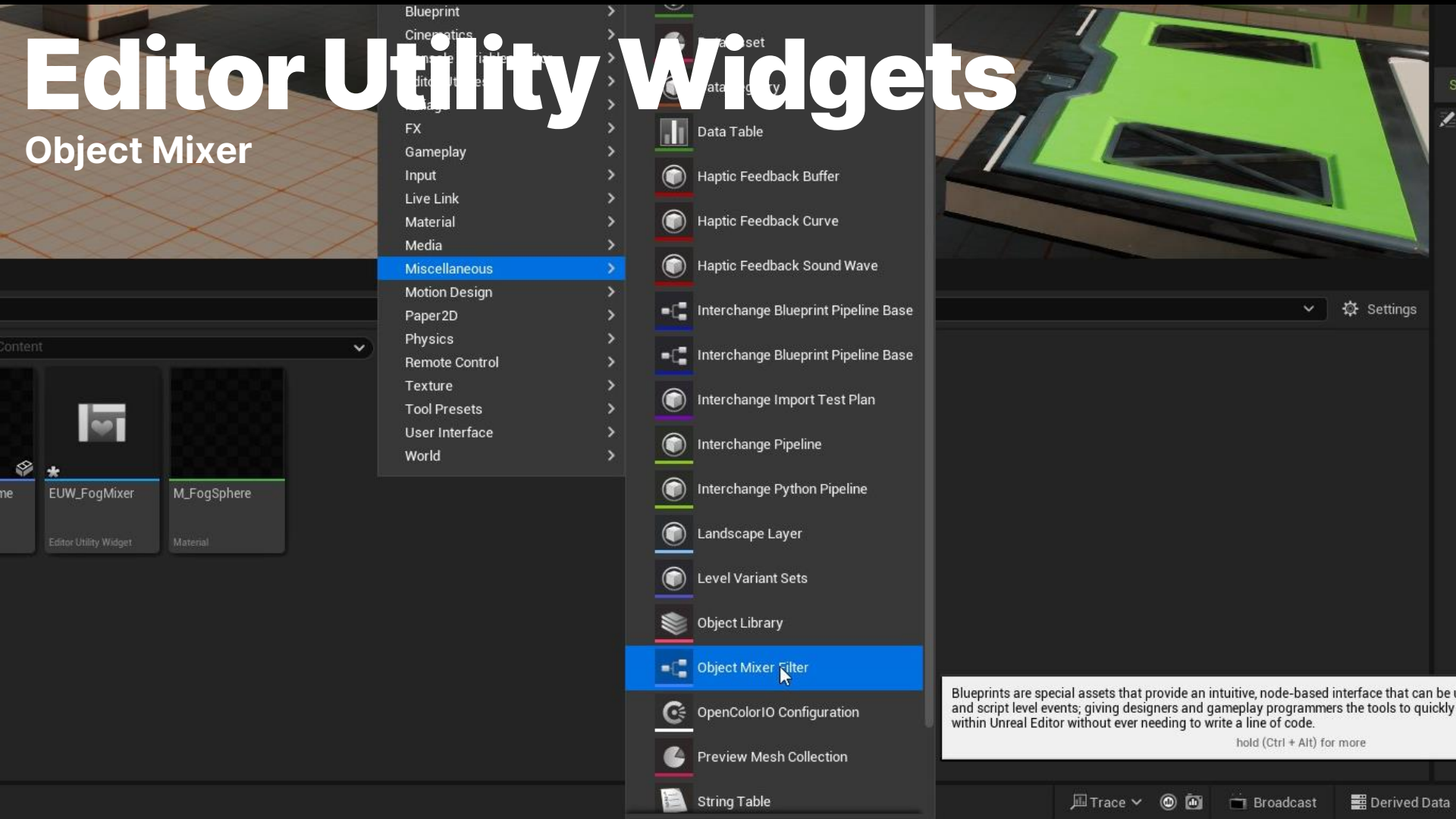


Editor Utility Widgets

Object Mixer

Editor Utility Widgets

Object Mixer



- Blueprint
- Cinematics
- Editor Utility Widgets
- FX
- Gameplay
- Input
- Live Link
- Material
- Media
- Miscellaneous
- Motion Design
- Paper2D
- Physics
- Remote Control
- Texture
- Tool Presets
- User Interface
- World

- Data Table
- Haptic Feedback Buffer
- Haptic Feedback Curve
- Haptic Feedback Sound Wave
- Interchange Blueprint Pipeline Base
- Interchange Blueprint Pipeline Base
- Interchange Import Test Plan
- Interchange Pipeline
- Interchange Python Pipeline
- Landscape Layer
- Level Variant Sets
- Object Library
- Object Mixer Filter
- OpenColorIO Configuration
- Preview Mesh Collection
- String Table

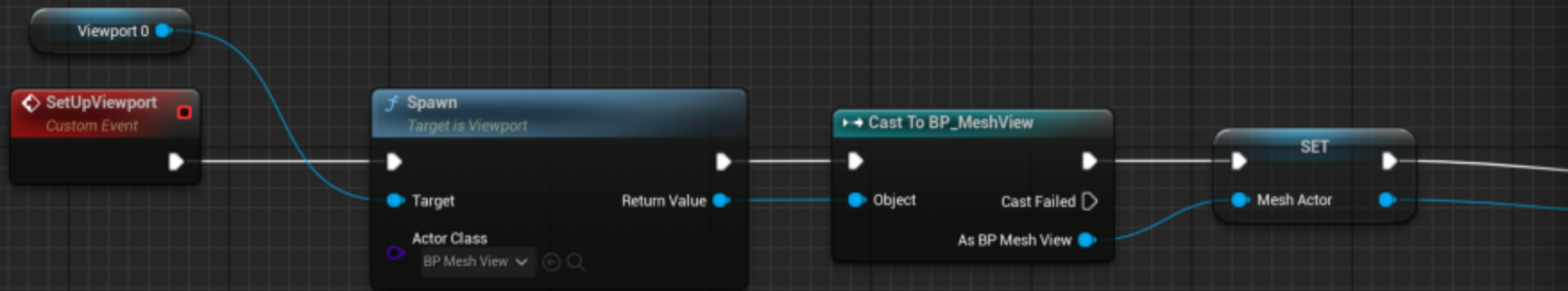
Blueprints are special assets that provide an intuitive, node-based interface that can be used to quickly create and script level events; giving designers and gameplay programmers the tools to quickly create and script level events within Unreal Editor without ever needing to write a line of code.

hold (Ctrl + Alt) for more



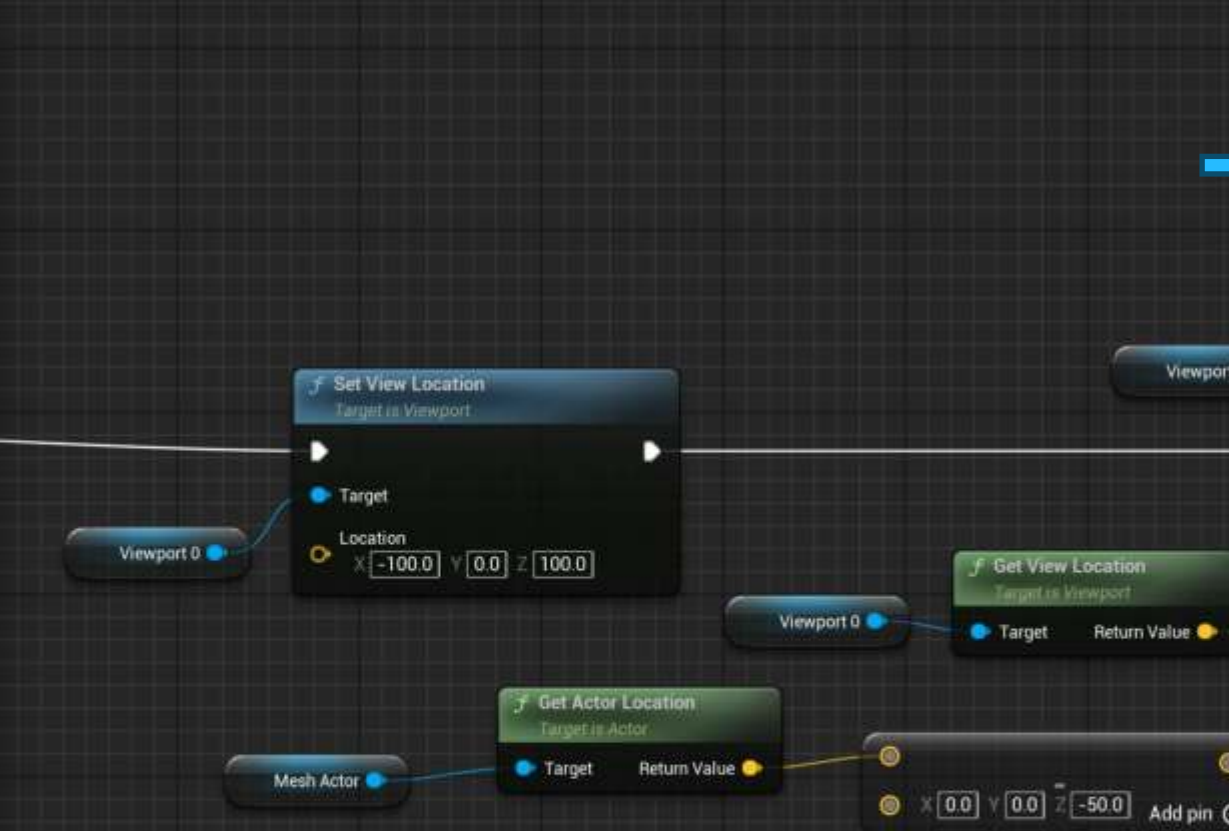
Editor Utility Widgets

Viewport



Editor Utility Widgets

Viewport



Hierarchy x Bind Widgets

Search Widgets

- [EWBP_MeshViewport]
 - [Overlay]
 - Viewport_0
 - [Horizontal Box]
 - LeftButton
 - RightButton

Editor Utility Widgets

Viewport

Editor Utility Widgets

Viewport





User Toolbox Plugin

(Experimental) Plugin to arrange your tools.

The screenshot displays a software interface with a dark theme. On the left, a sidebar shows a tree view with 'Camera Operations' selected. The main area is divided into two panes: 'User Toolbox Tab' and 'Command List'. The 'Command List' pane contains a hierarchical list of commands:

- Level Set
 - CTM Lock Transforms
- Camera
 - ETM Set Film Back
 - ETM Set Lens
 - SET Auto Focus
 - SET Open Camera
 - SET Change Aperture
 - SET Change Camera
- Layer
 - Assign to Layer
 - Assign to Level
- Viewport
 - Change View Mode
 - Zoom All
- Scene
 - Clear Hierarchy
 - Lock Selection
 - Make Layer's Command
- Utility
 - Composite Command
 - Composite Utility Command
 - Cancel Variable
 - Engine Command
 - Execute Breakable Action
 - Execute Pathlock Action
 - Tab-Switcher
 - Toggle Command
 - Toggle Command Inline
- Mesh
 - Fit Normals
 - Merge
 - Set High Precision on Mesh
- Actor
 - Mirror Actor Command
 - Push Component Material to Mesh
 - Select Actor by File
 - Select Actor by Size
- Debug
 - Refresh Tables
 - SET Lock Transforms

At the bottom of the interface, a status bar shows 'Content Browser', 'Message Log', and 'Command List'.

User Toolbox Plugin

Create Menus easily



User Toolbox Plugin

Change workflow and look

Tab Details x Command List Command Details x

Search

Command Tab

Name	Camera Toolbox	↶
Tab UI	UTBDefaultUITemplate ↵ ⌂ X	↶
Default Command UIOverride	Search ⚙	
Is Setting Should be Visible	<input type="radio"/> None	↶
Is Visible in Viewport Overlay	<input checked="" type="radio"/> UTBDefaultUITemplate	
Is Visible in Drawer	<input checked="" type="radio"/> UTBPaletteTabUI	
Is Visible in Windows Menu	<input checked="" type="radio"/> UTBSlimHorizontalToolBarTabUI	↶
	<input checked="" type="radio"/> UTBToolBarTabUI	
	<input checked="" type="radio"/> UTBVerticalToolBarTabUI	

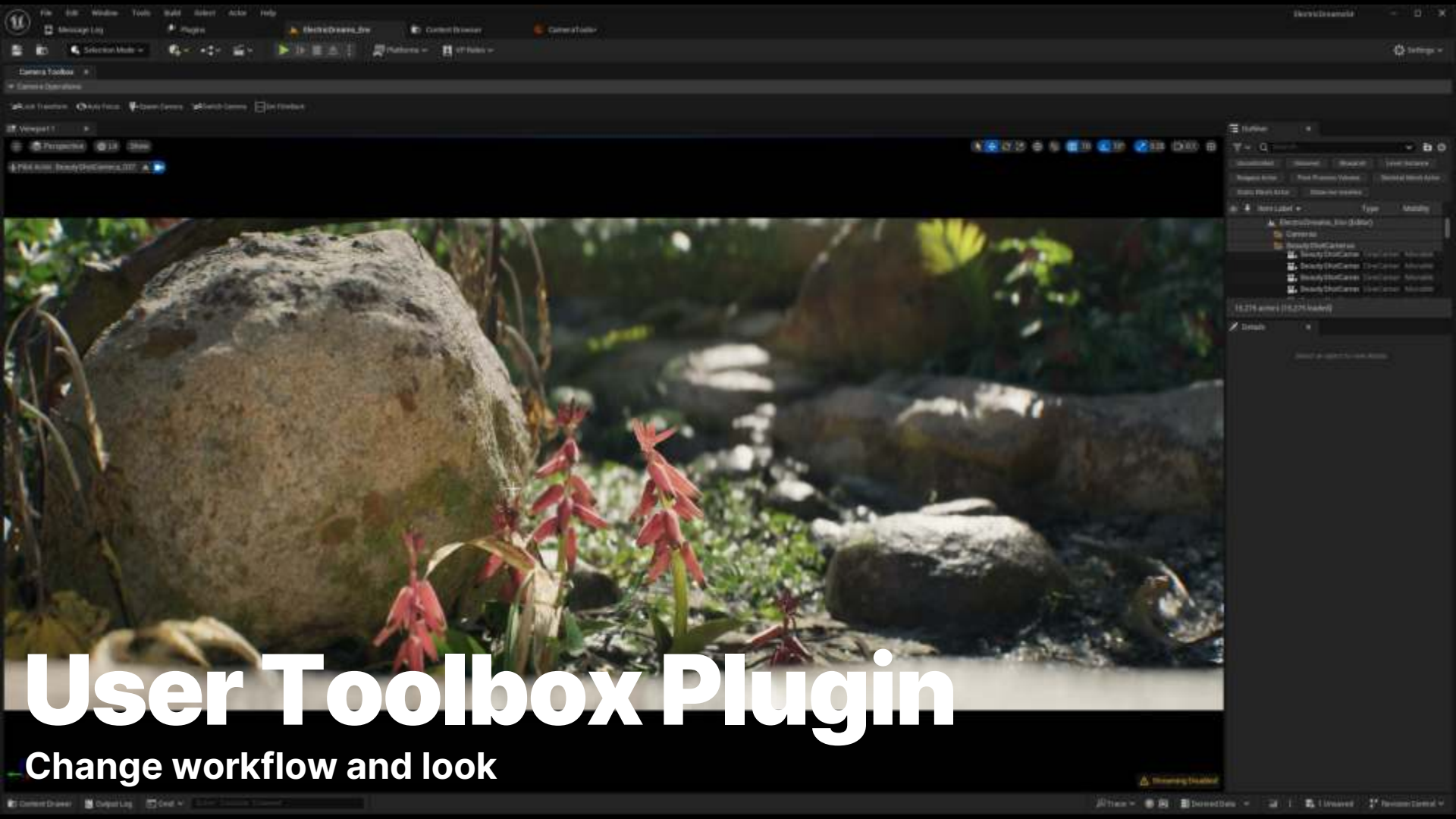
6 items

UTBTool Bar Tab UI

The image shows a software interface with a 'Command List' tab. A search bar is at the top. Below it, a table lists various command settings. The 'Tab UI' row is selected, and a dropdown menu is open, showing a search bar and a list of options: 'None', 'UTBDefaultUITemplate', 'UTBPaletteTabUI', 'UTBSlimHorizontalToolBarTabUI', 'UTBToolBarTabUI', and 'UTBVerticalToolBarTabUI'. The 'UTBToolBarTabUI' option is highlighted with a mouse cursor, and a tooltip points to it. The interface is dark-themed.

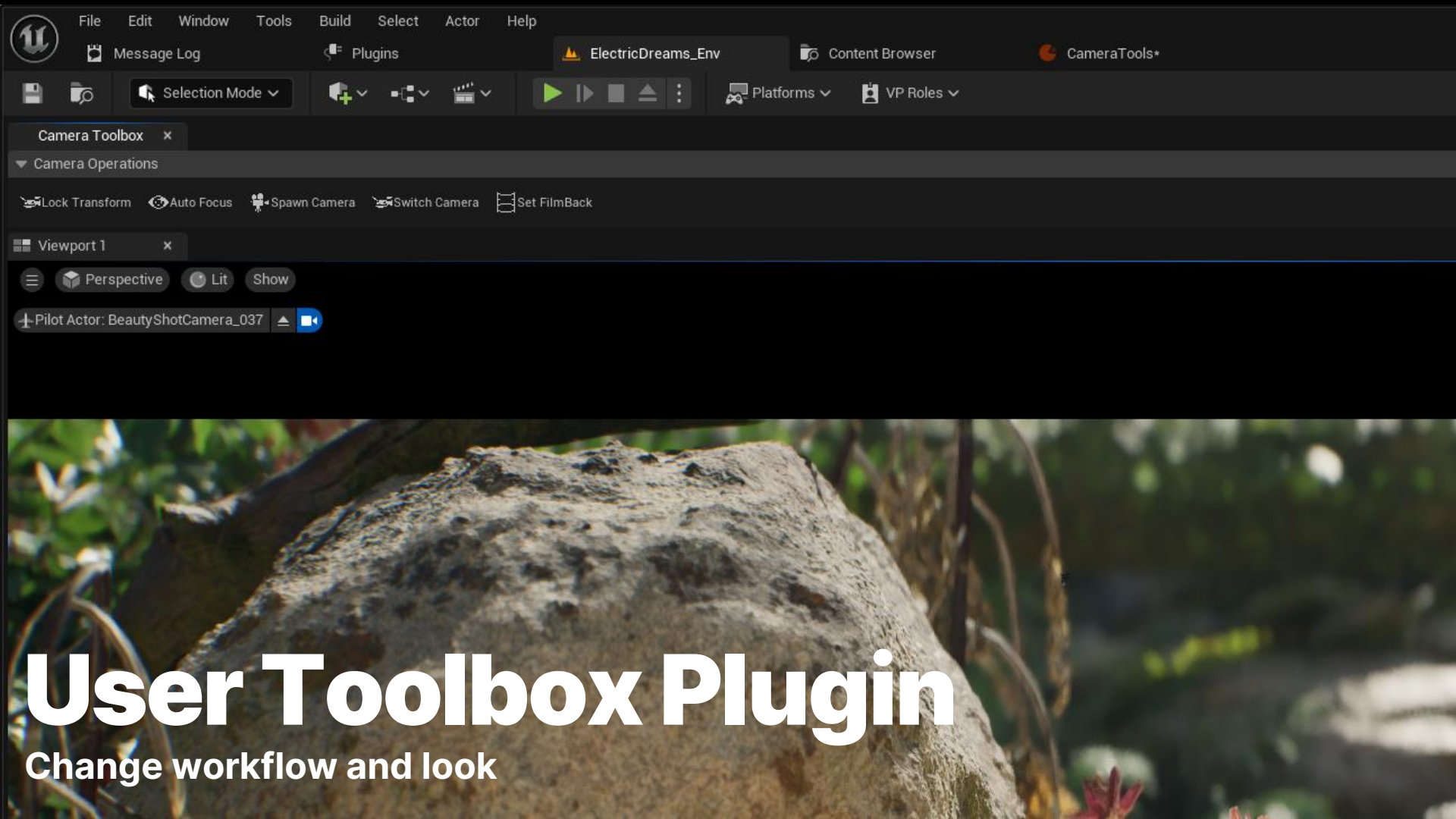
User Toolbox Plugin

Change workflow and look



User Toolbox Plugin

Change workflow and look



File Edit Window Tools Build Select Actor Help

Message Log

Plugins

ElectricDreams_Env

Content Browser

CameraTools*

Selection Mode

Platforms

VP Roles

Camera Toolbox

Camera Operations

Lock Transform Auto Focus Spawn Camera Switch Camera Set FilmBack

Viewport 1

Perspective Lit Show

Pilot Actor: BeautyShotCamera_037

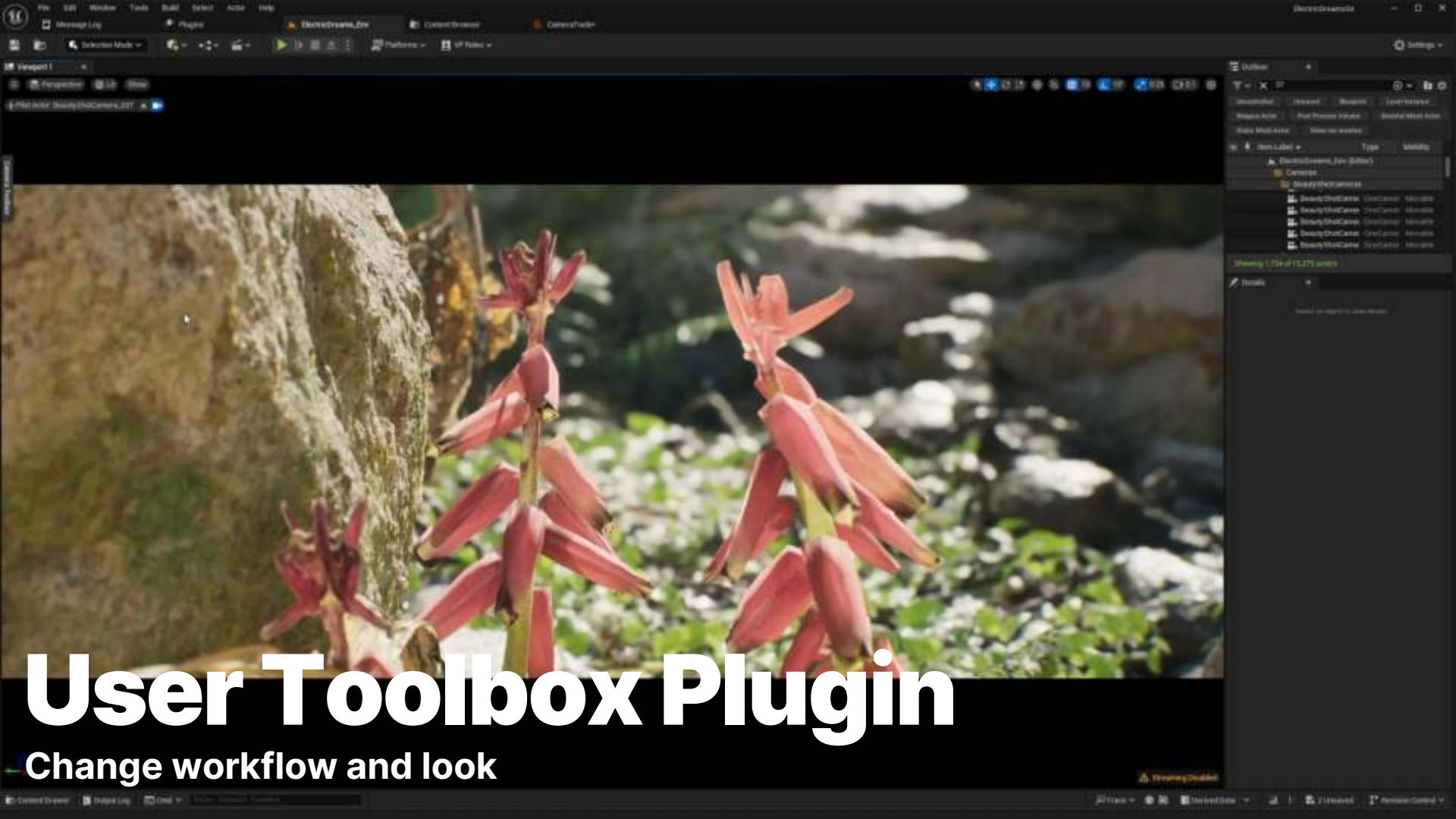
User Toolbox Plugin

Change workflow and look



User Toolbox Plugin

Change workflow and look



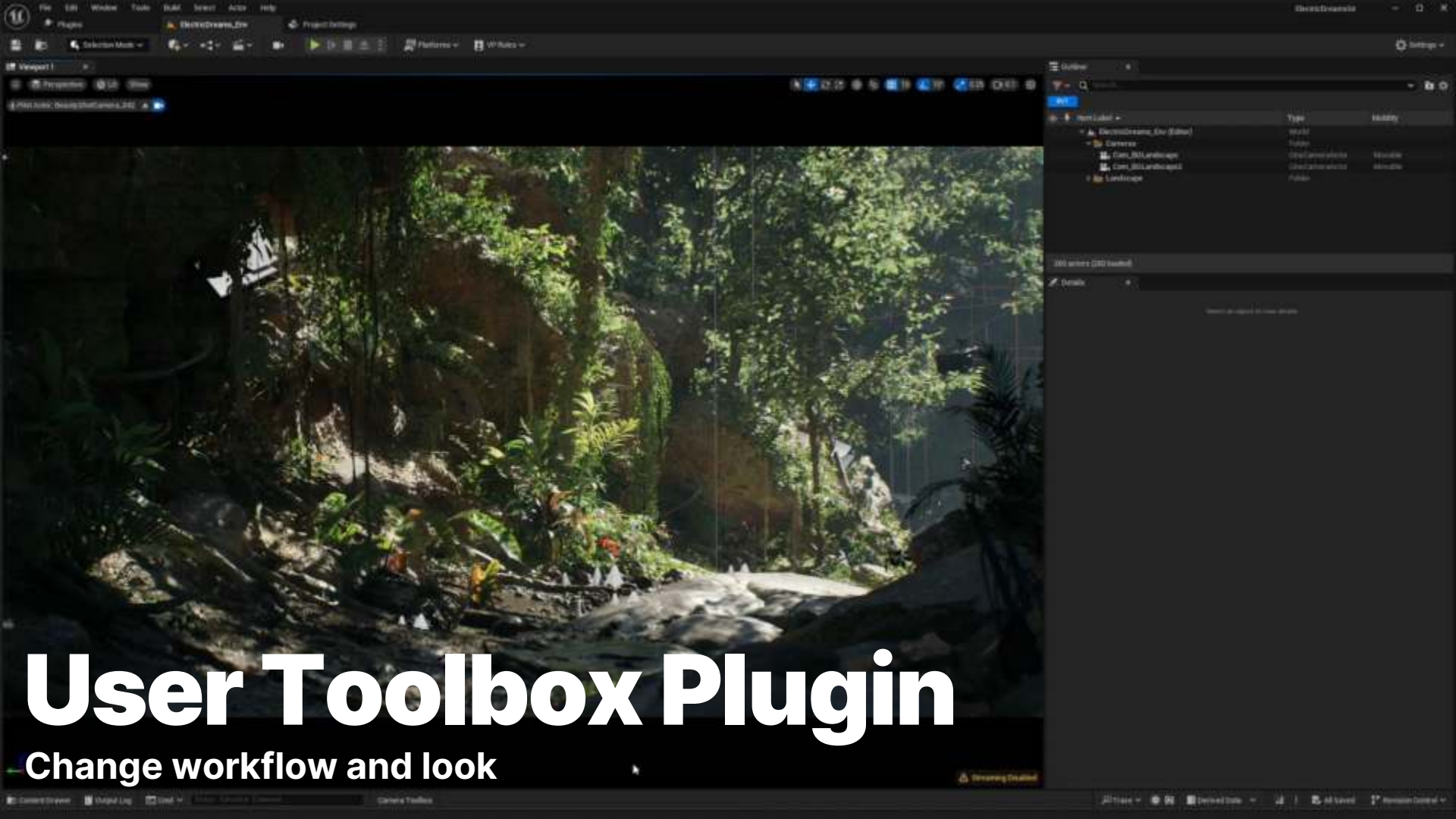
User Toolbox Plugin

Change workflow and look



User Toolbox Plugin

Change workflow and look



User Toolbox Plugin

Change workflow and look

User Toolbox Plugin

Icon Libraries





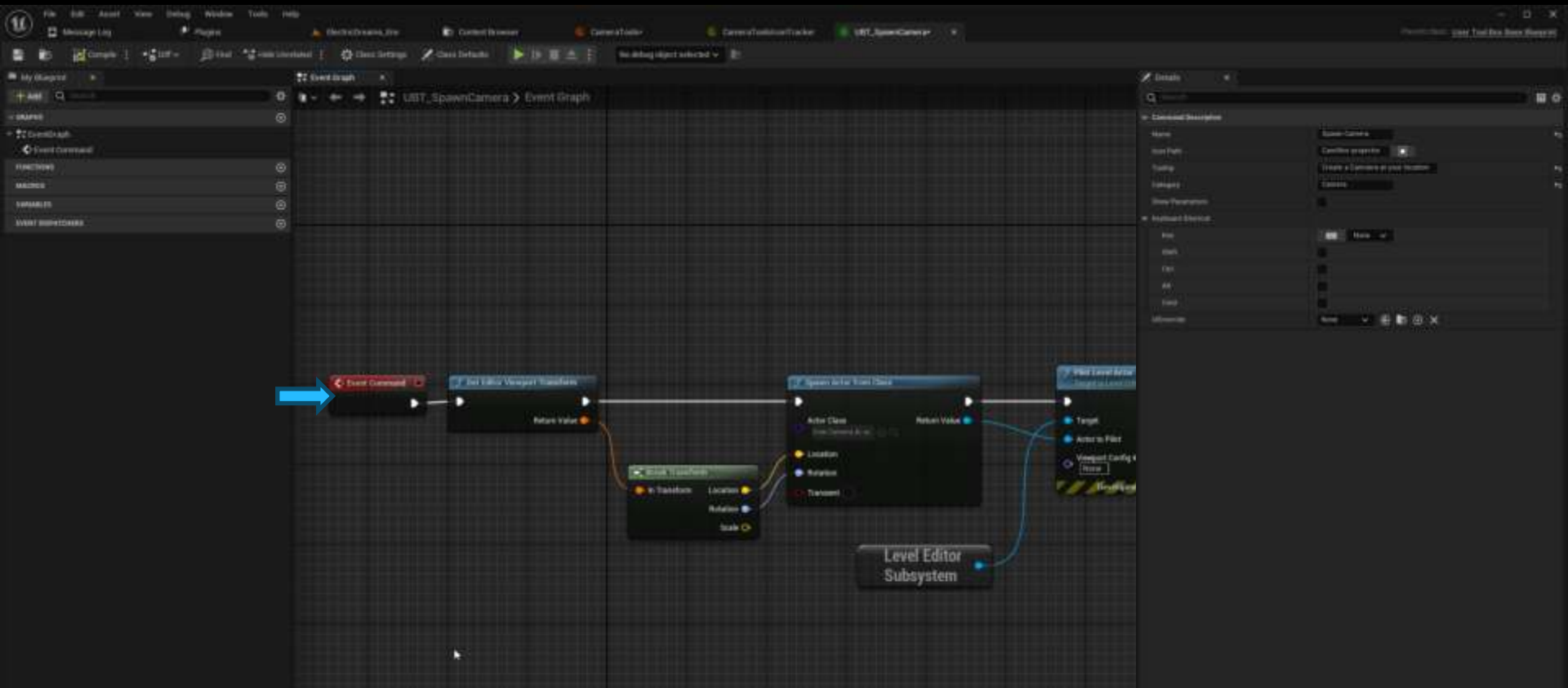
Icons

- Camdouble-diaphragm
- Cameye-target
- Camfilm-projector
- Camfilm-strip
- Camglass-ball
- Campadlock
- Camvideo-camera
- None

Ok Cancel

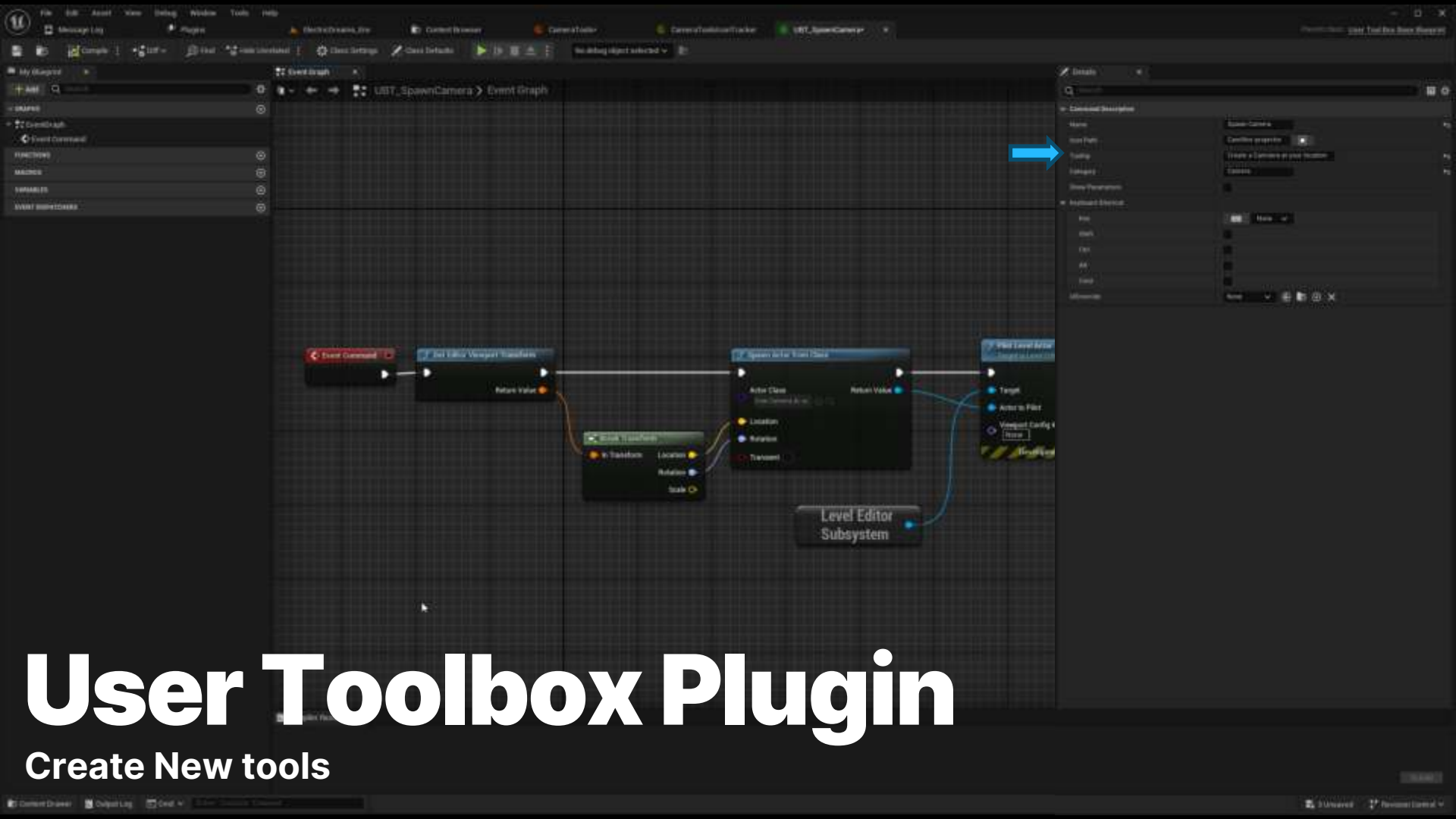
User Toolbox Plugin

Icon Librarys



User Toolbox Plugin

Create New tools



User Toolbox Plugin

Create New tools

Tab Details Command List

Search

- Level Dev
 - CTBLock Transform
- Camera
 - CTBSet Film Back
 - CTBSet Lens
 - UBT Auto Focus
 - UBT Spawn Camera
 - UBT Change Aperture
 - UBT Change Camera
- Level
 - Assign to Layer
 - Assign to Level
- Viewport
 - Change View Mode
 - Zoom All
- Scene
 - Clean Hierarchy
 - Isolate Selection
 - Show Layers Command
- Utility
 - Composite Command
 - Composite Inline Command
 - Console Variable
 - Engine Command
 - Execute Bindable Action
 - Execute Python Script
 - Tab Spawner
 - Toggle Command
 - Toggle Command Inline
- Mesh
 - Flip Normals
 - Merge
 - Set High Precision on Mesh
- Actor
 - Mirror Actor Component
 - Push Component Material into Mesh
 - Select Actor by Filter
 - Select Actor
 - Delete Actor
 - CTBLock Transform
 - Mesh Tokens

Command Details

Search

Command Description

Name: Auto Focus

Icon Path: Camera-target

Tooltip: Focuses on the Selected Actor or on the Actor in the middle of the viewport

Show Parameters: [None]

Keyboard Shortcut

Key	Ctrl F
Shift	[None]
Ctrl	[Checked]
Alt	[None]
Cmd	[None]

Override: None

Default

As Ctor Camera Actor: BeautyShotCamera_037



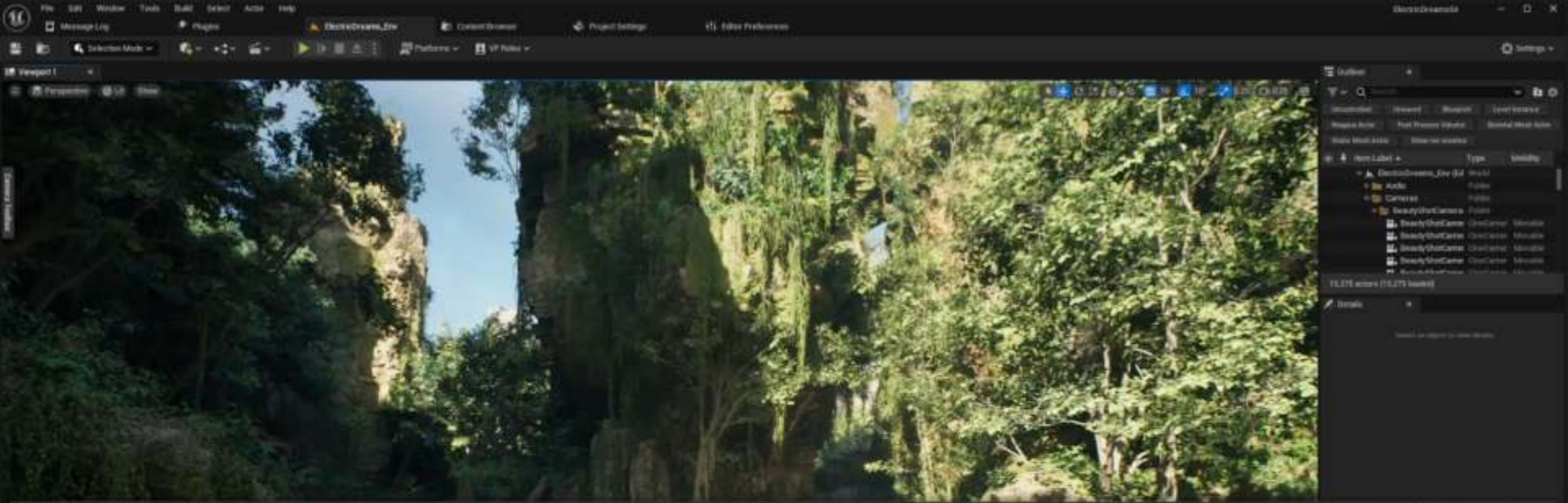
User Toolbox Plugin

Bind your own Hotkeys!

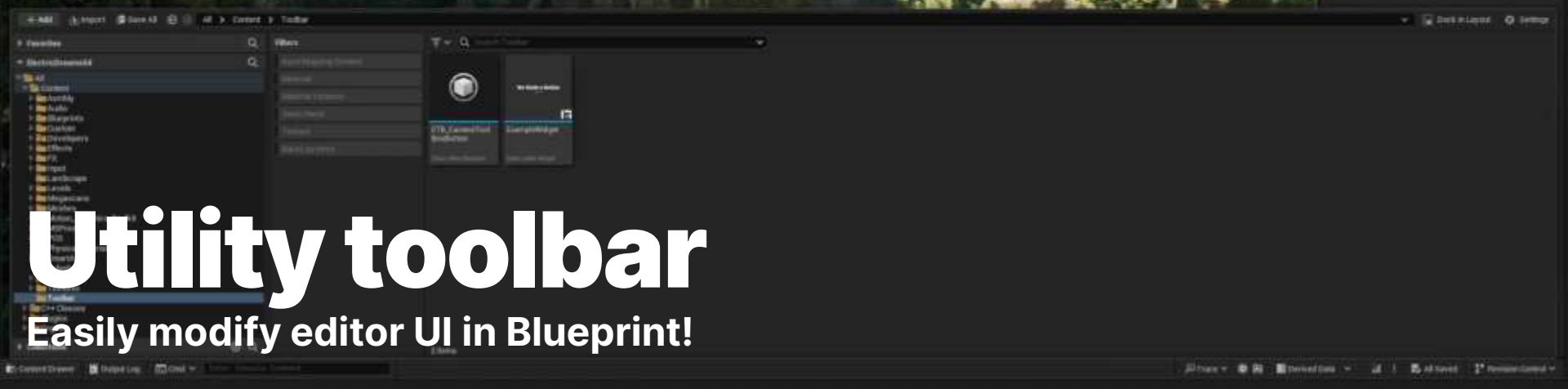


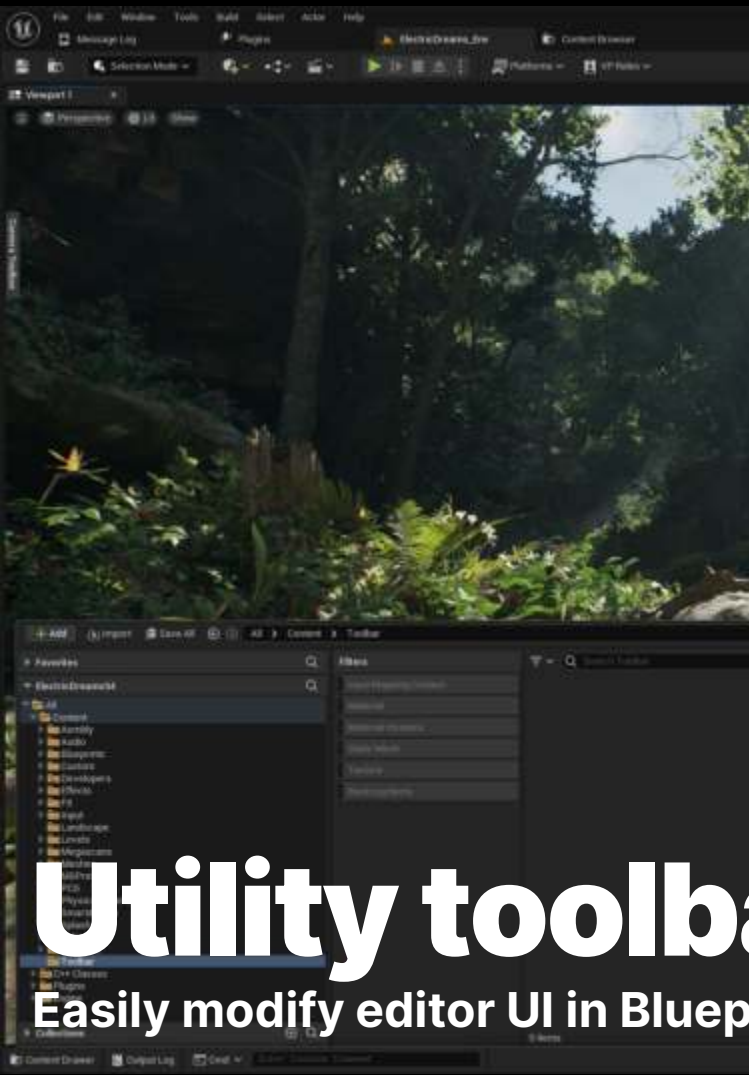
User Toolbox Plugin

Bind your own Hotkeys!



Utility toolbar
Easily modify editor UI in Blueprint!





Pick Parent Class

COMMON

- Editor Utility Actor: Editor Utility Actor
- Editor Utility Object: Editor Utility Object
- Asset Action Utility: Base class for all asset action-related utilities
Any functions/events that are exposed on derived classes
- Editor Function Library: Library of static functions that can use the editor APIs

ALL CLASSES

tool

- ACTUI
 - VPViewportTickableActorBase
- Interface
 - BaseSequencerAnimTool
 - DataflowEditorToolBuilder
 - UVToolSupportsSelection
- ToolMenuEntryScript
 - EditorUtilityToolMenuEntry**
- ToolMenuSectionDynamic
 - EditorUtilityToolMenuSection
- UBaseCommand
- UserToolBoxBaseBlueprint

28 items (1 selected)

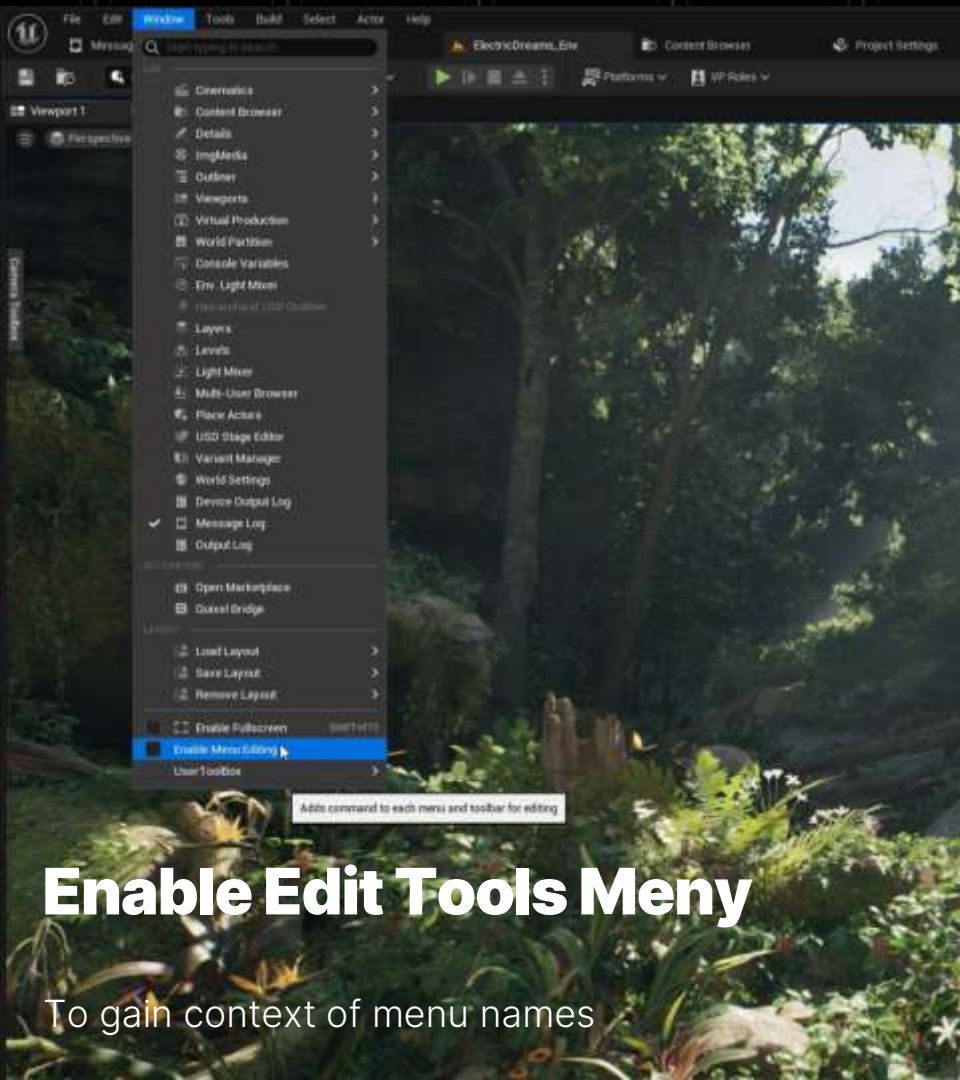
Select Cancel

Editor Utility Tool Menu Entry



Utility toolbar

Easily modify editor UI in Blueprint!



Enable Edit Tools Meny

To gain context of menu names

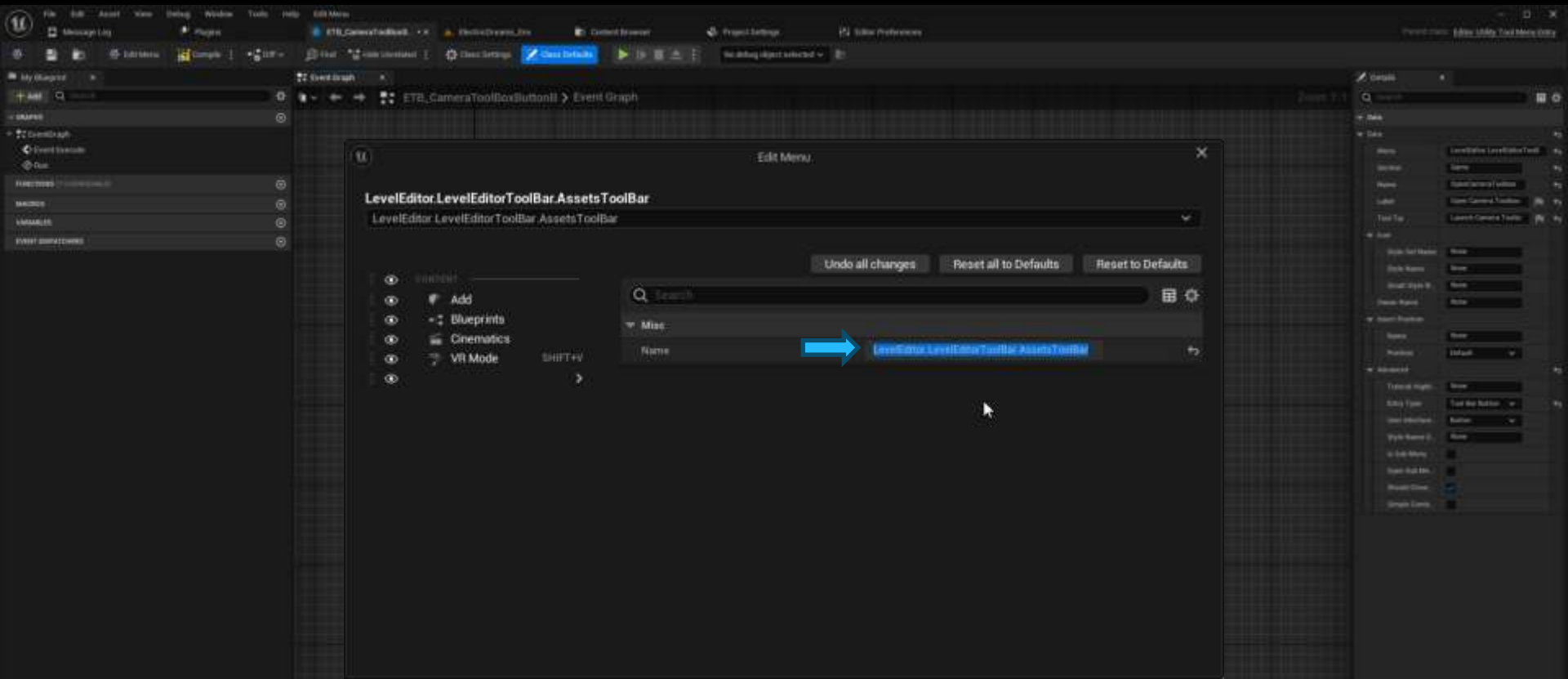
If you don't see this..
Write Values

```
[/Script/UnrealEd.EditorExperimentalSettings]
```

```
bEnableEditToolMenuUI=True
```

Into

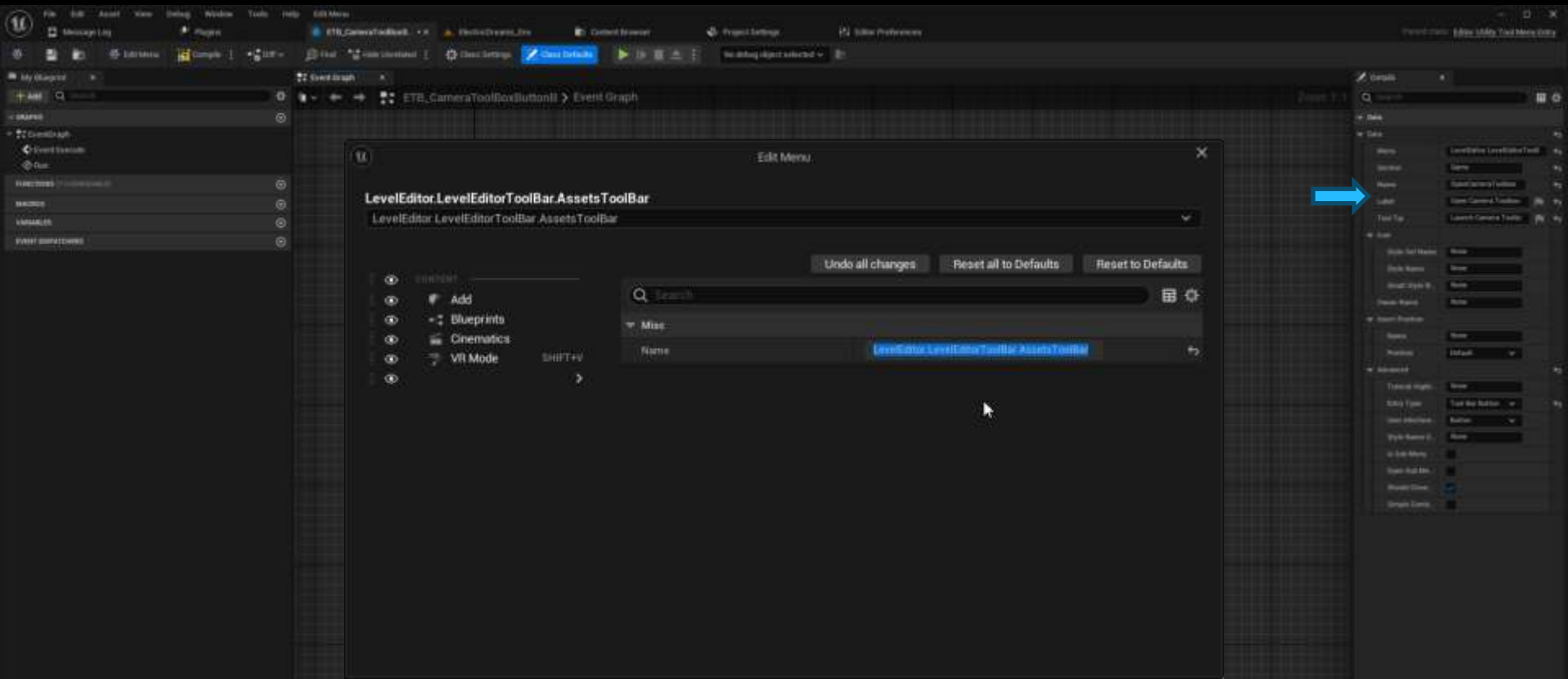
```
Config\DefaultEnginePerprojectUserSettings.ini
```



Utility toolbar

Easily modify editor UI in Blueprint!

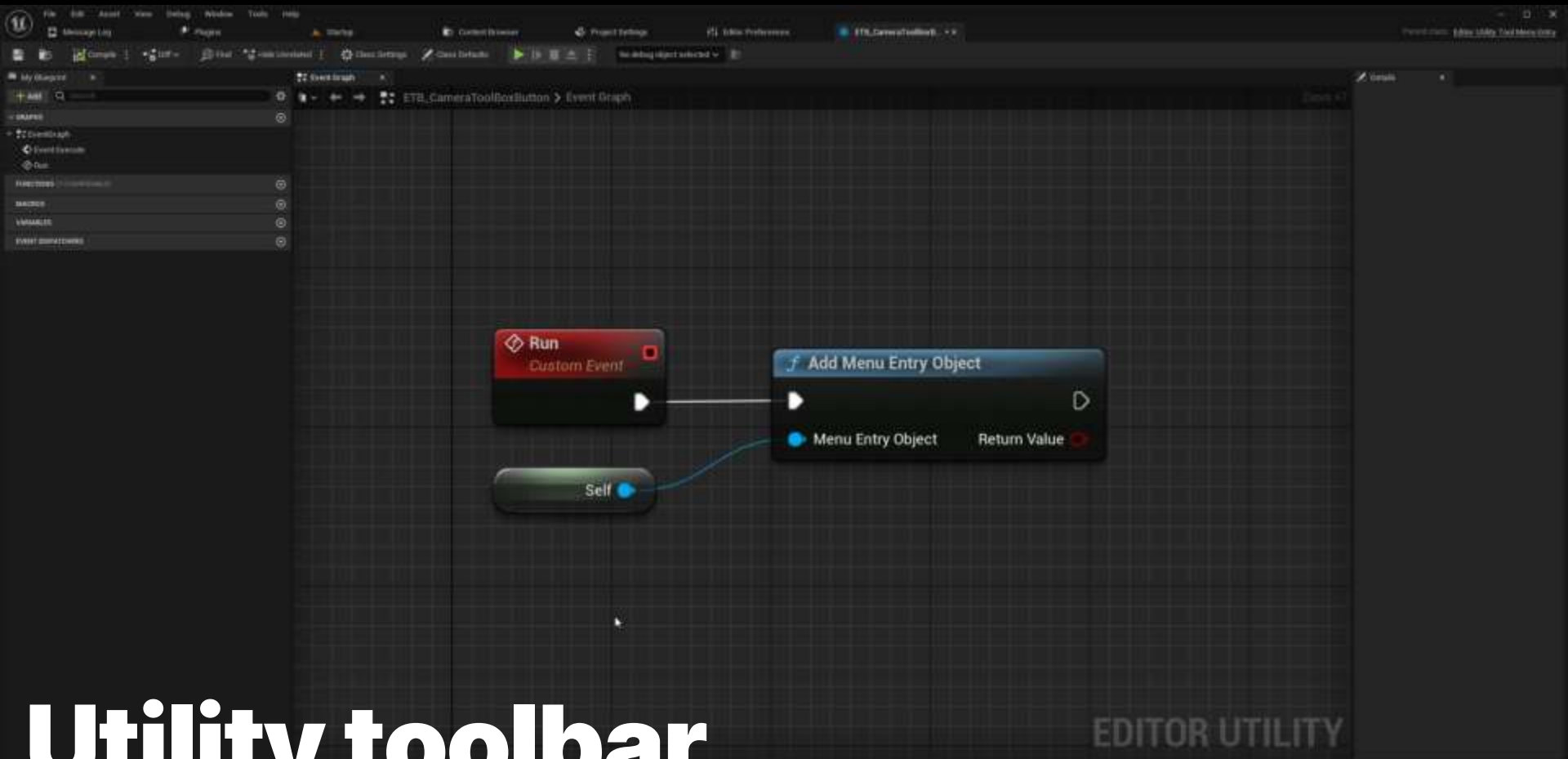
EDITOR UTILITY



Utility toolbar

Easily modify editor UI in Blueprint!

EDITOR UTILITY



Utility toolbar

Easily modify editor UI in Blueprint!

EDITOR UTILITY



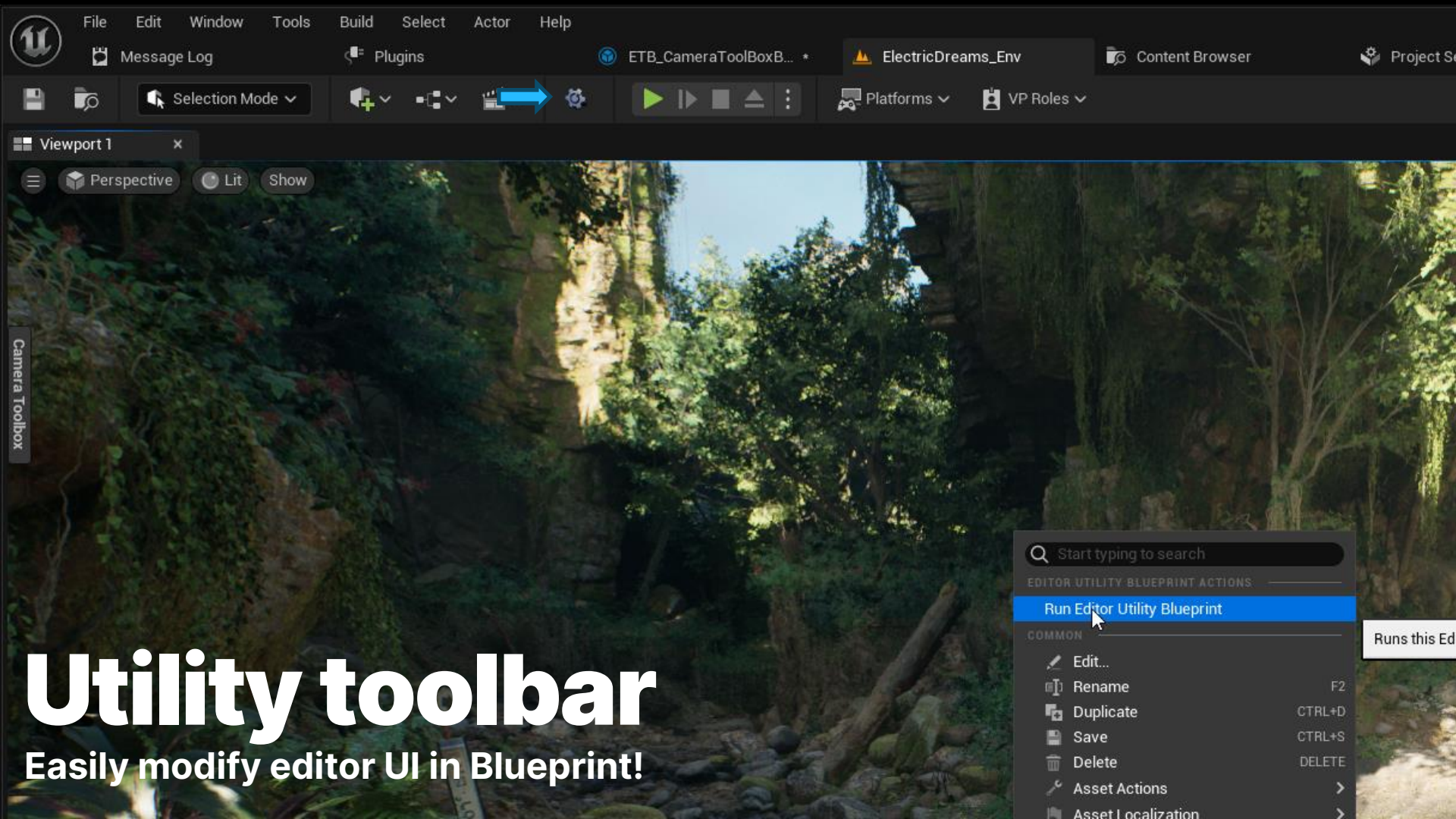
Search: New Utility Blueprint

- New Utility Blueprint
- File
- Remove
- Duplicate
- Save
- Delete
- Asset Actions
- Asset Localization
- Show in Folder View
- Copy Reference
- Copy File Path
- Reference Viewer
- Stat Map
- Asset Assets
- Shader Cook Statistics
- Connect to Revision Control
- View Documentation - Blueprint

Name the Editor Utility Blueprint

Utility toolbar

Easily modify editor UI in Blueprint!



File Edit Window Tools Build Select Actor Help

Message Log

Plugins

ETB_CameraToolBoxB... *

ElectricDreams_Env

Content Browser

Project S...

Selection Mode ▾

+

▾



Platforms ▾

VP Roles ▾

Viewport 1

Perspective Lit Show

Camera Toolbox

Utility toolbar

Easily modify editor UI in Blueprint!

Start typing to search

EDITOR UTILITY BLUEPRINT ACTIONS

Run Editor Utility Blueprint

COMMON

- Edit...
- Rename F2
- Duplicate CTRL+D
- Save CTRL+S
- Delete DELETE
- Asset Actions >
- Asset Localization >

Runs this Ed...

Slate Icon Browser

Slate Icon Browser

sirjofri - Code Plugins - Dec 2, 2022

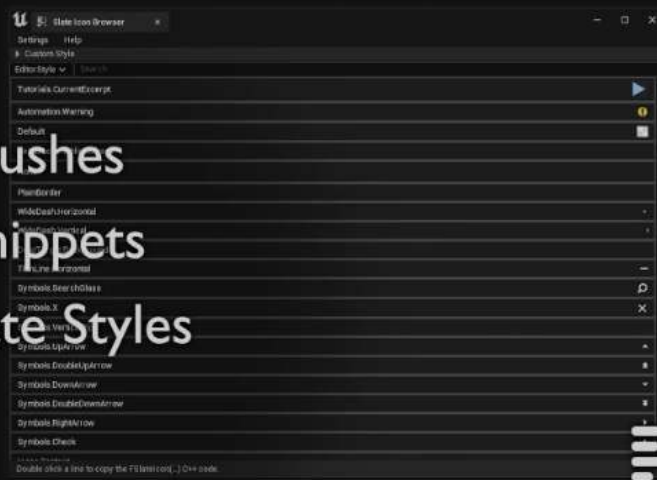
★★★★★ v 8 8 reviews written | 1 of 1 question answered

Browse Slate brushes for all Editor styles and copy their code snippets

Search for Brushes

Copy code snippets

All loaded Slate Styles



Slate Icon Browser

Search for Brushes
Copy code snippets
All loaded Slate Styles

Supported Platforms



Supported Engine Versions

5.0 - 5.3

Download Type

[Engine Plugin](#)

Open in Launcher

OR

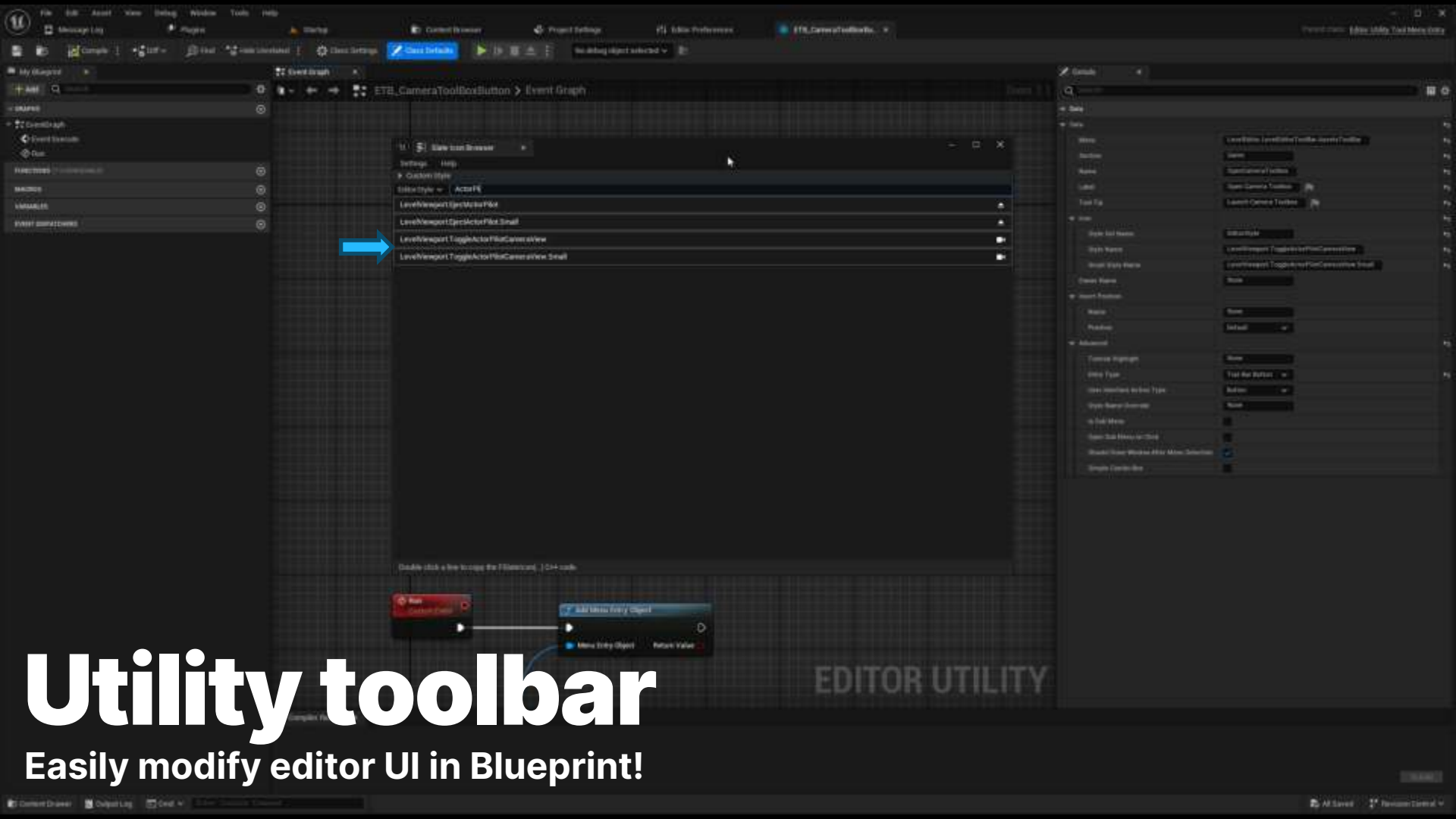
Write a Review

[Report product](#)

Slate Icon Browser

A tool to look at all the loaded Available Icons

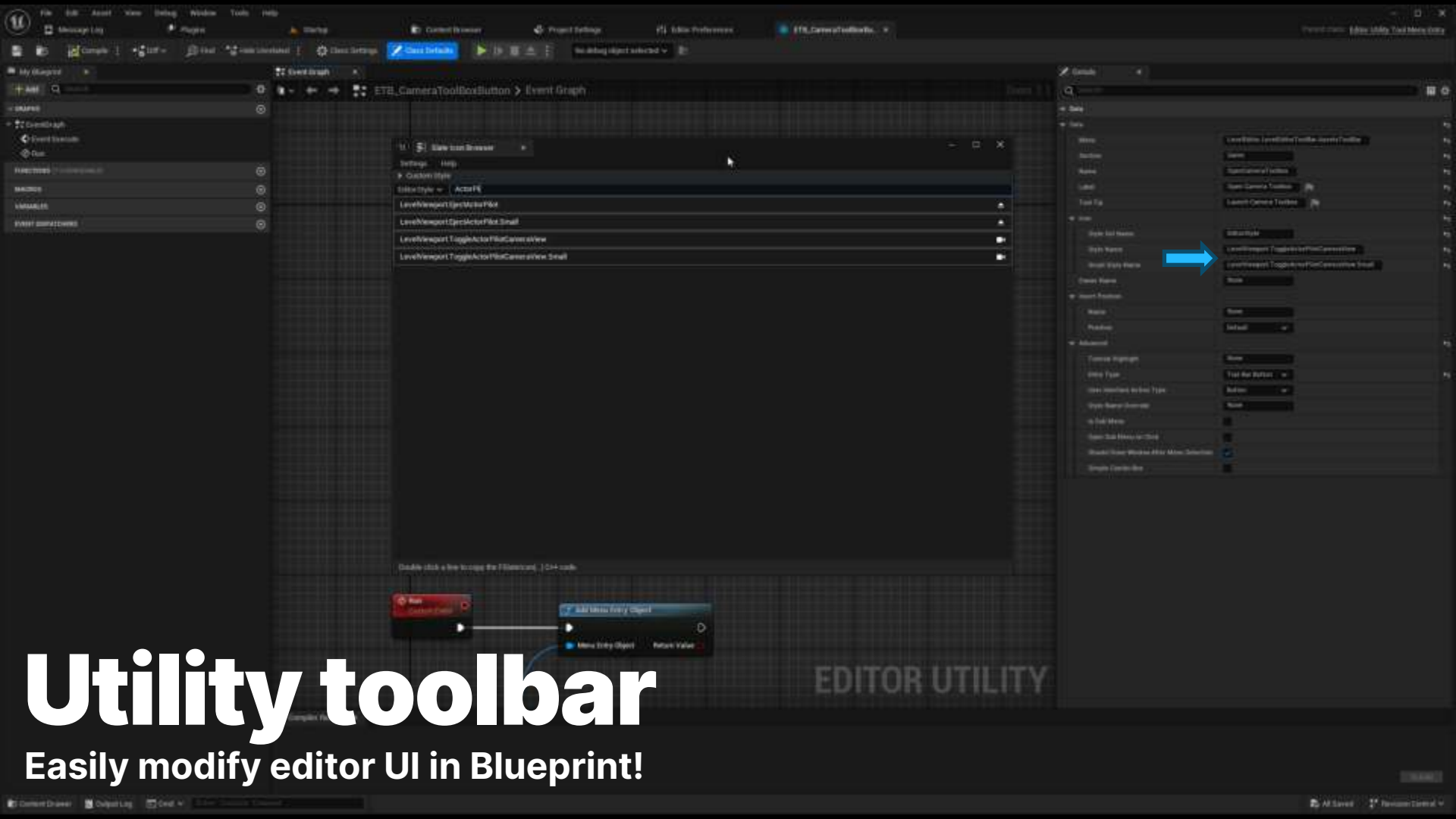
This small tool lets you browse Unreal Engine's Editor Icons/Brushes easily, search for specific ones and copy slate code for the selected icon.



Utility toolbar

Easily modify editor UI in Blueprint!

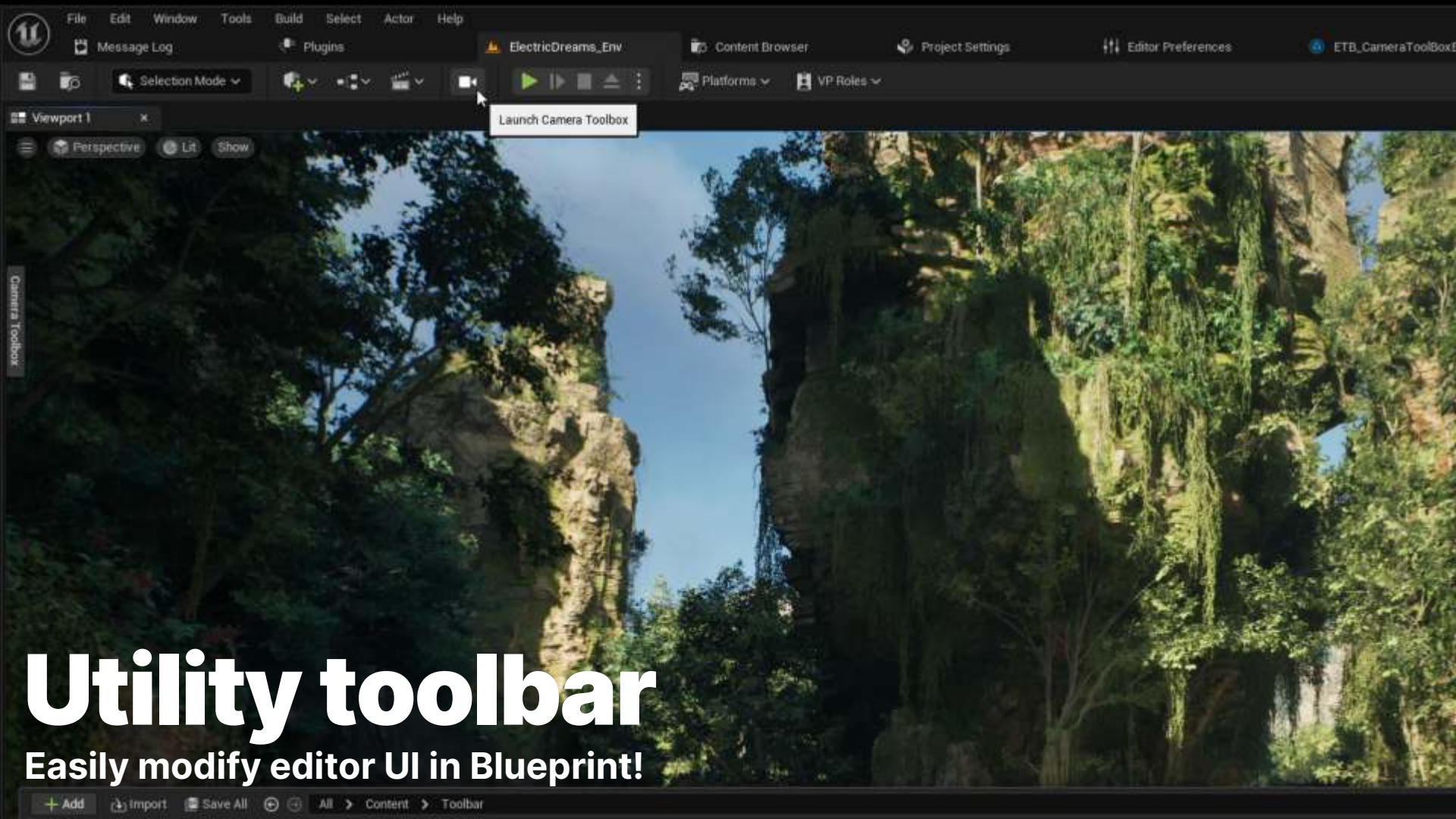
EDITOR UTILITY



Utility toolbar

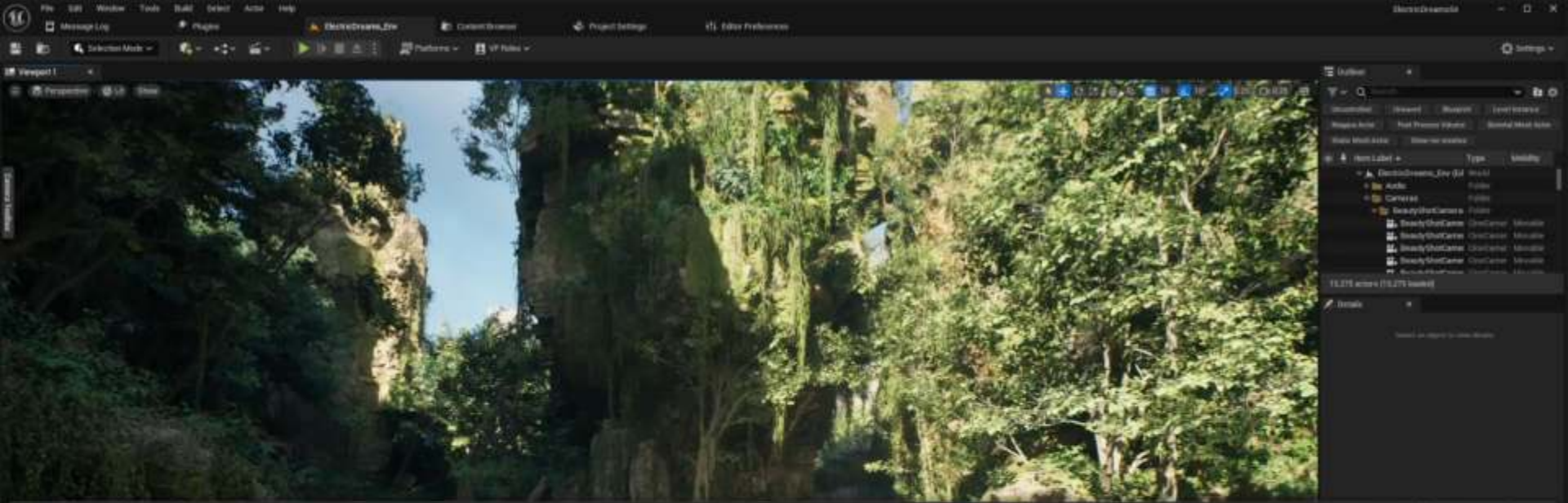
Easily modify editor UI in Blueprint!

EDITOR UTILITY



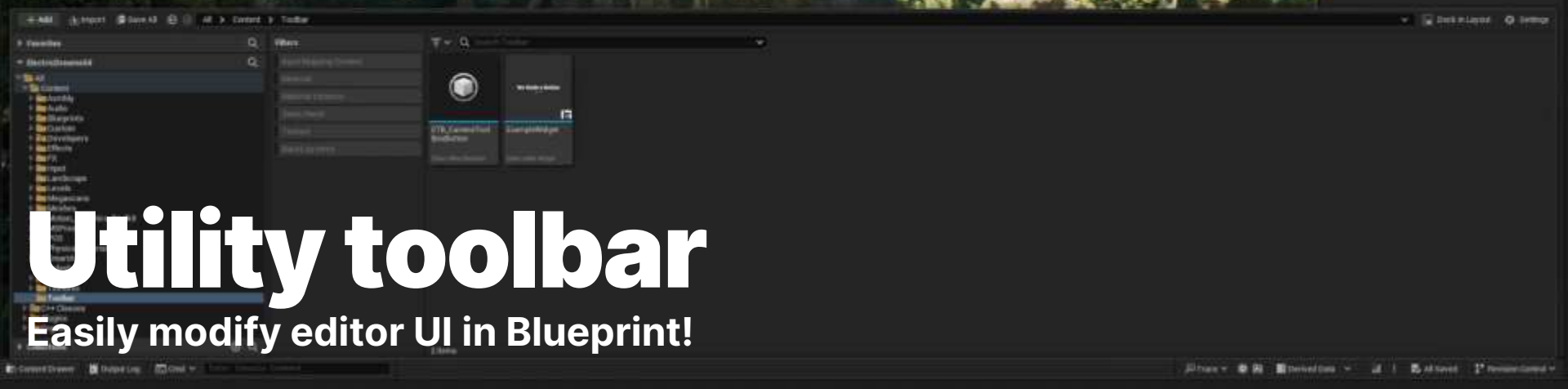
Utility toolbar

Easily modify editor UI in Blueprint!



Utility toolbar

Easily modify editor UI in Blueprint!



Utility toolbar

Run At Start up

Write

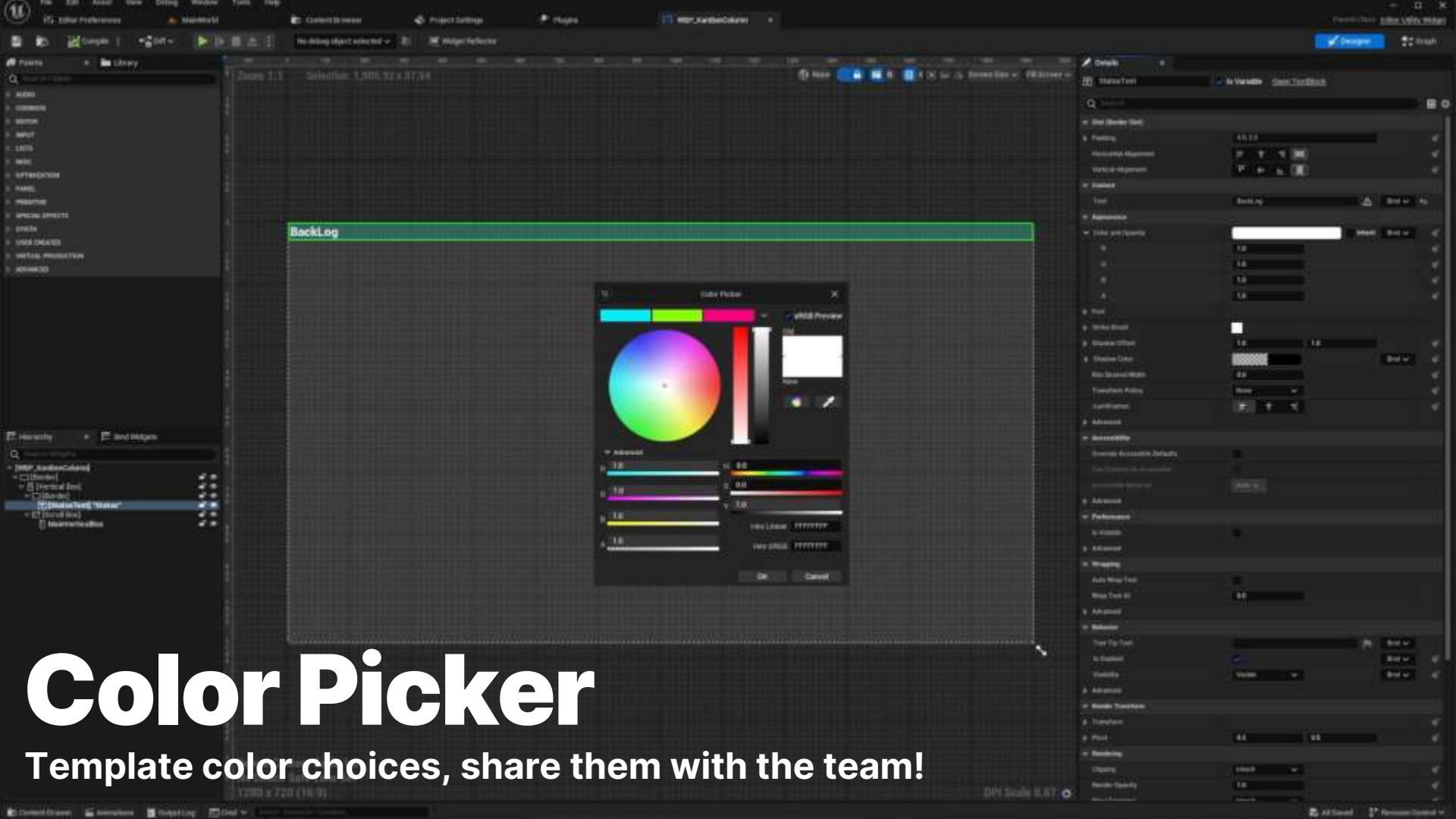
```
[/Script/Blutility.EditorUtilitySubsystem]  
StartupObjects=<Reference>
```

e.g.

```
StartupObjects=/Game/Toolbar/ETB_CameraToolBoxButton
```

Into

```
Config\DefaultEnginePerprojectUserSettings.ini
```



Color Picker

Template color choices, share them with the team!

To share is simple

Lets keep art directors happy!

Copy values from

Saved\Config\WindowsEditor\Editor
PerProjectUserSettings.ini

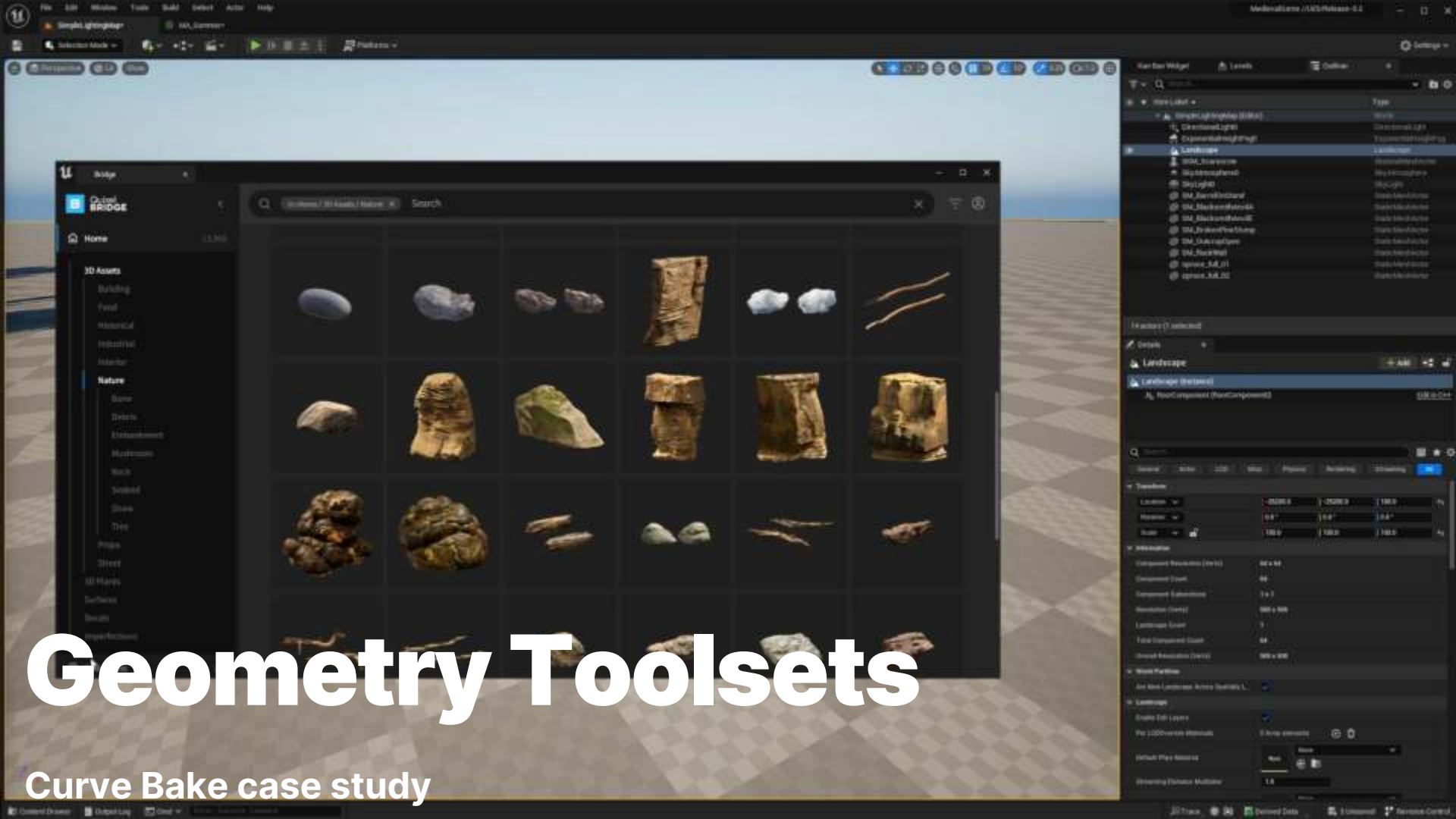
[ColorThemes]

Into

Config\DefaultEnginePerprojectUse
rSettings.ini

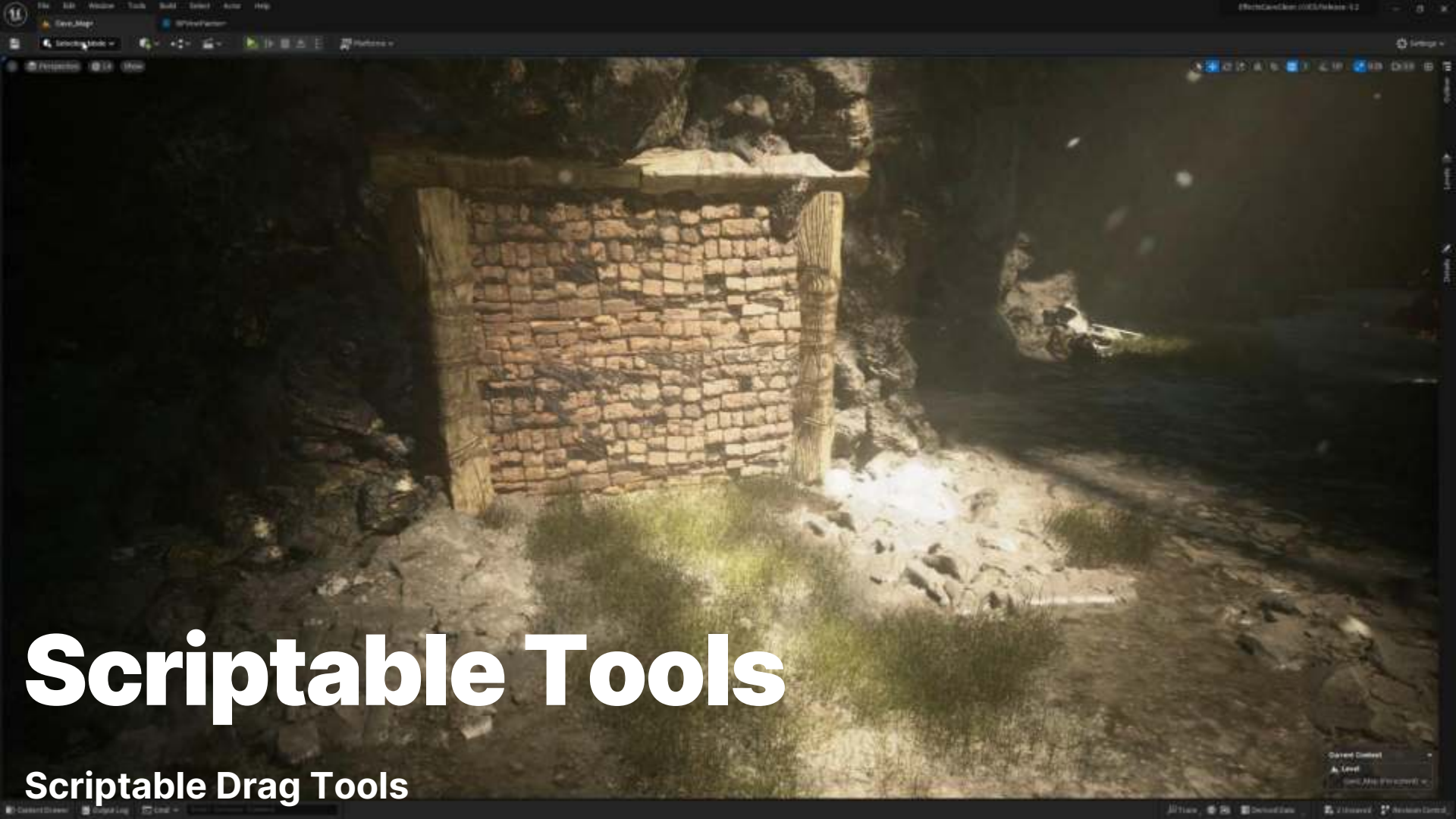
Geometry toolsets

Iterate faster In Engine!



Geometry Toolsets

Curve Bake case study



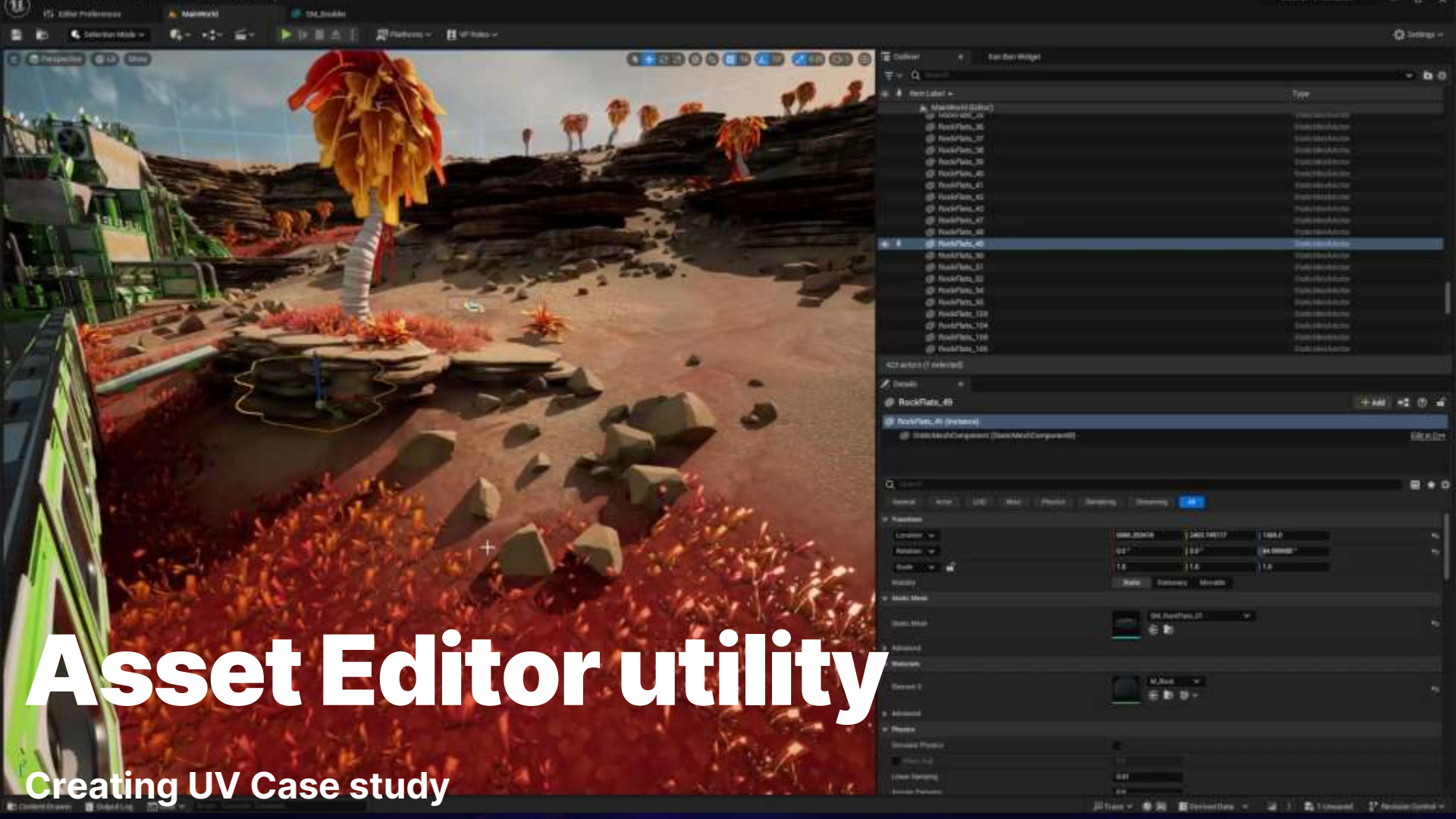
Scriptable Tools

Scriptable Drag Tools

Scripting The Editor

Works in CPP, BP & Python

- Details Button
- Asset Scripting
- Async Tasks



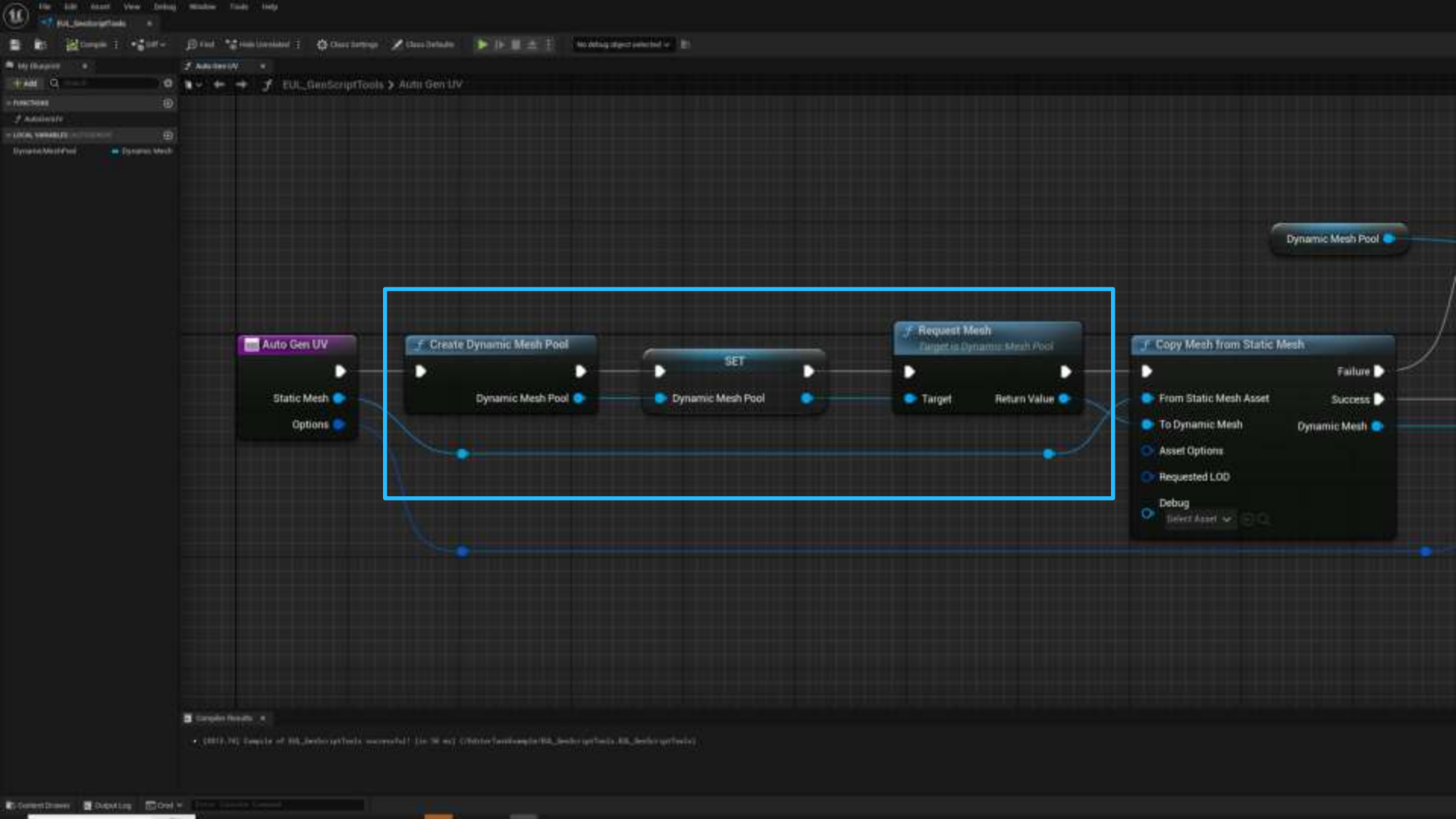
Asset Editor utility

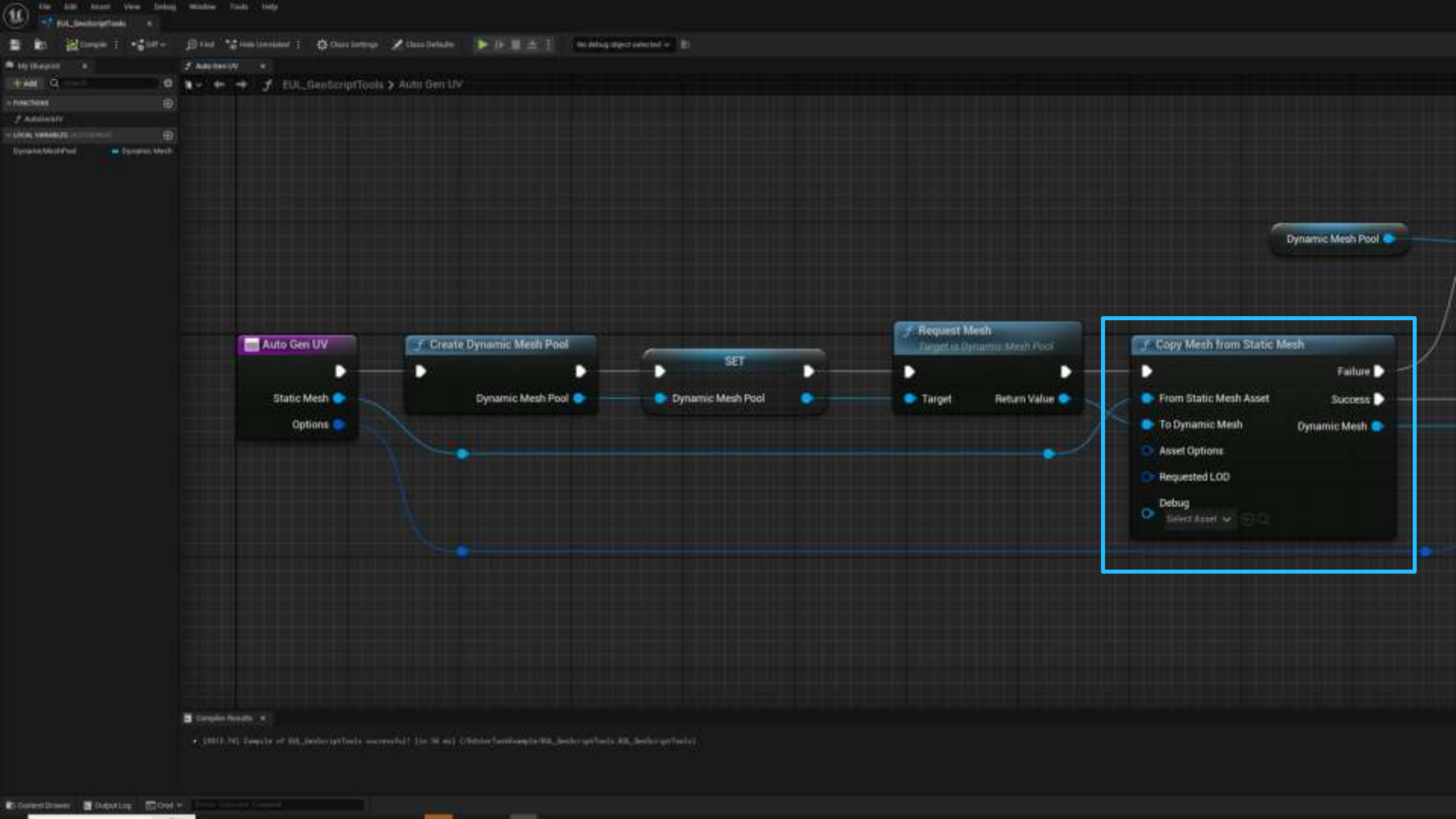
Creating UV Case study

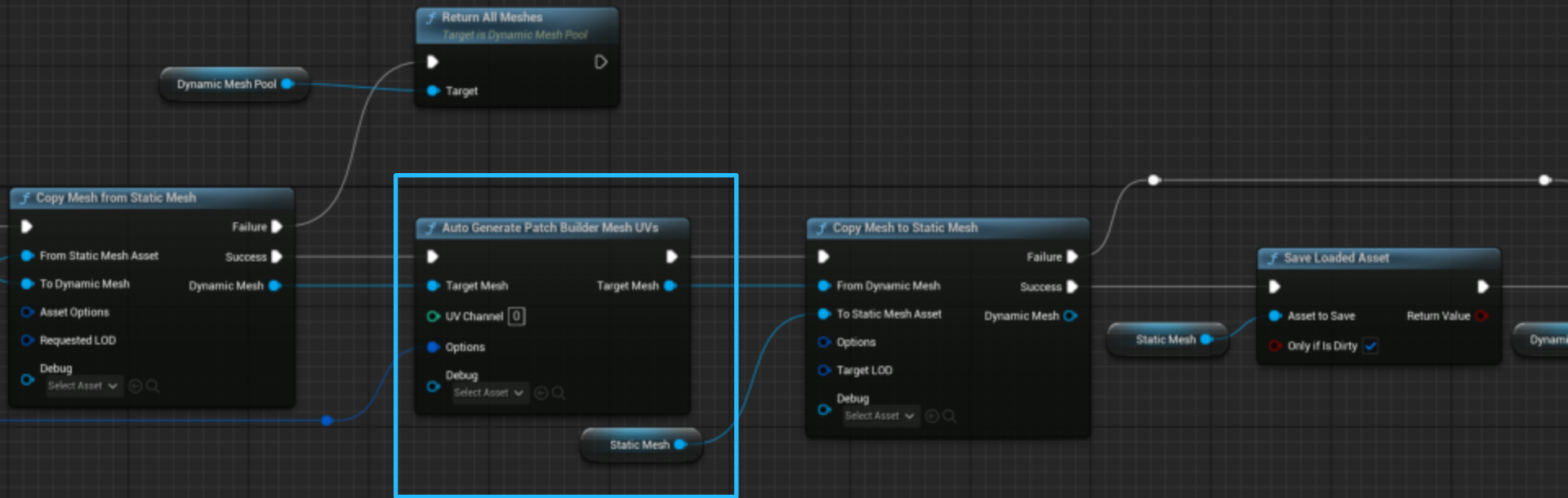


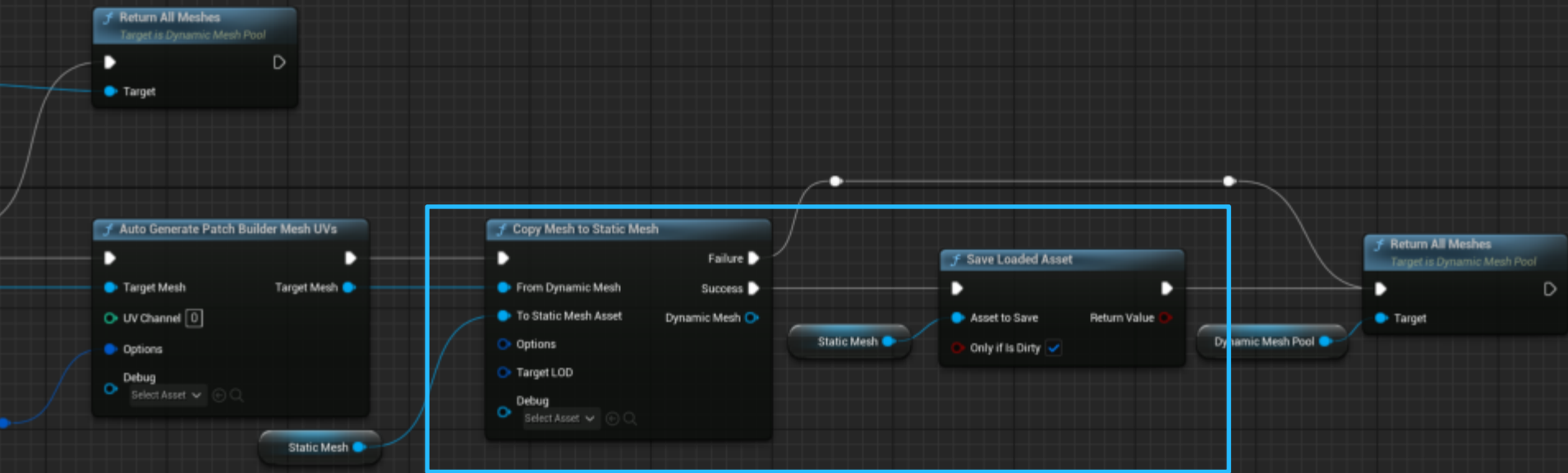
Editor Function Library

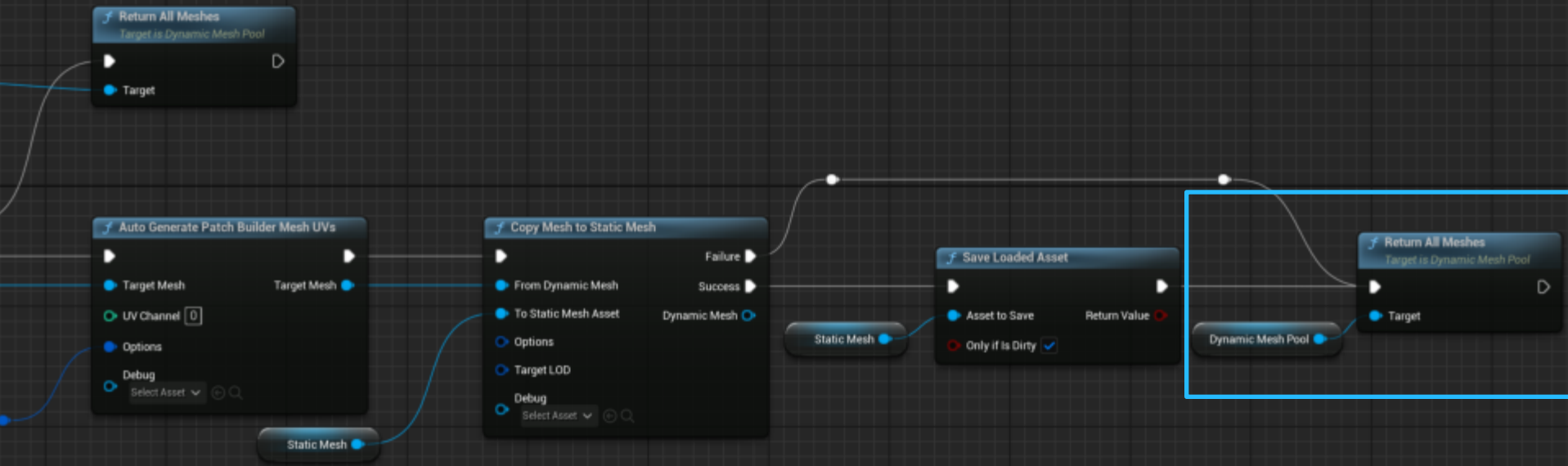
Auto Gen UV Case Study

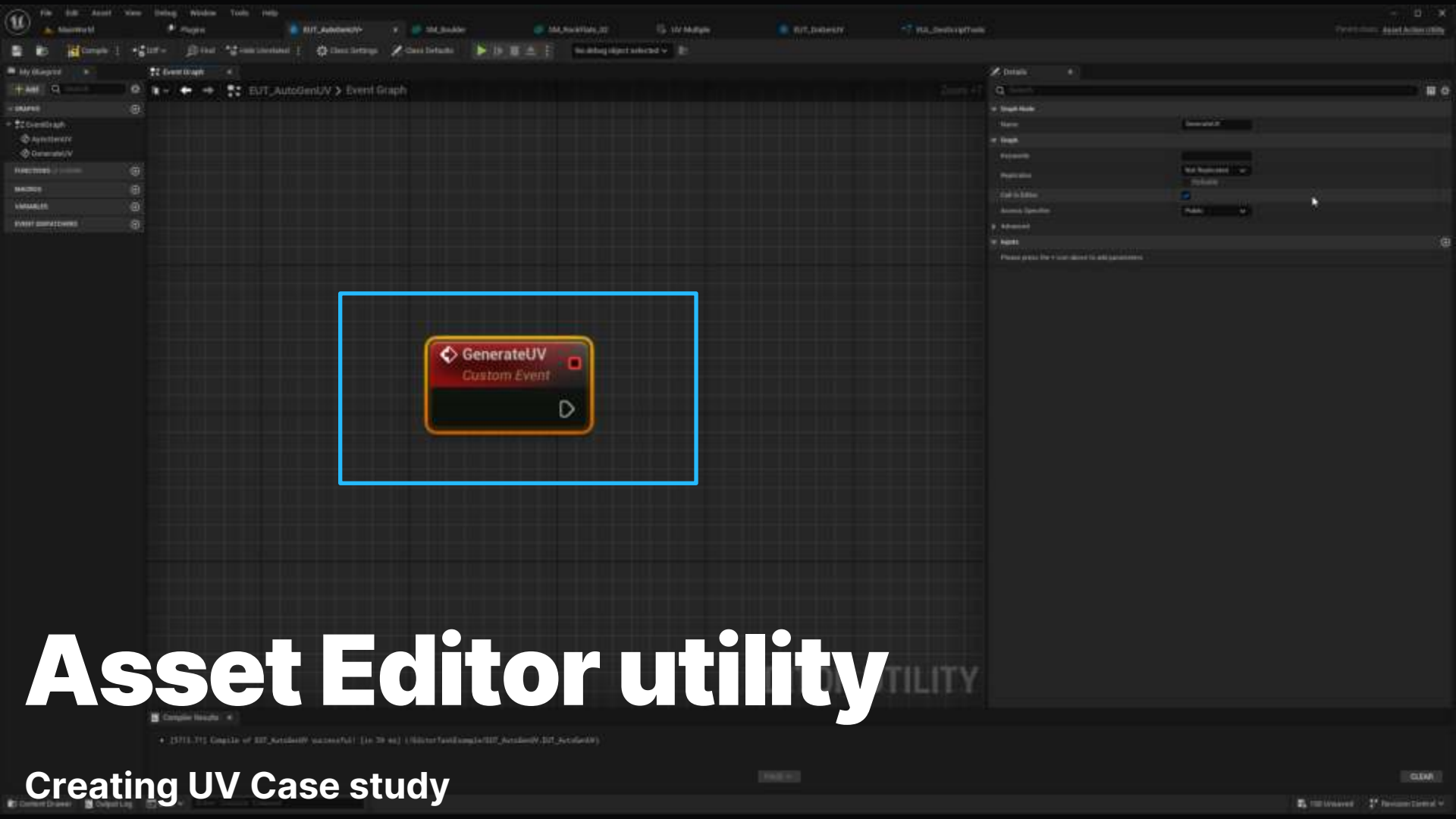






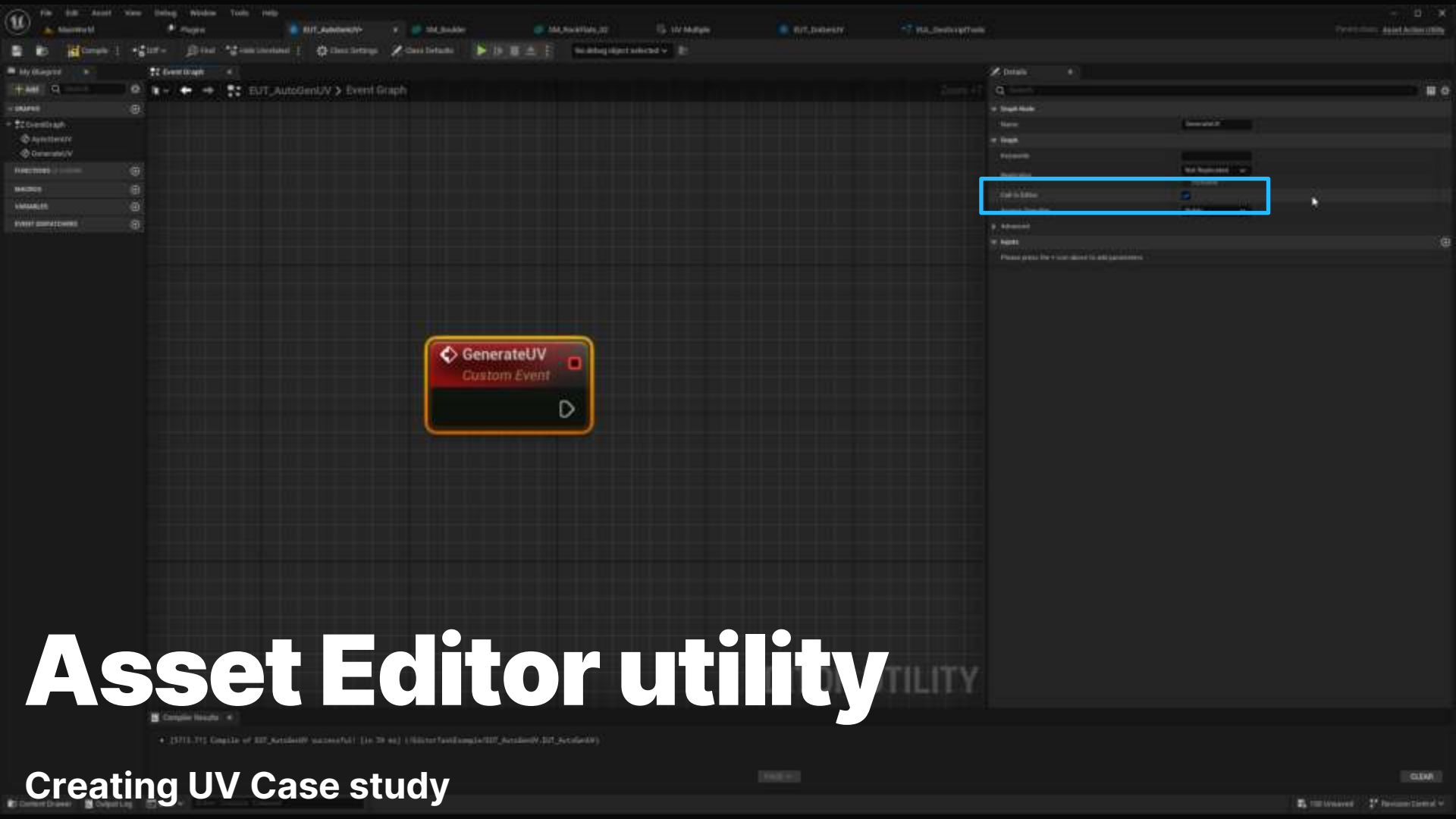






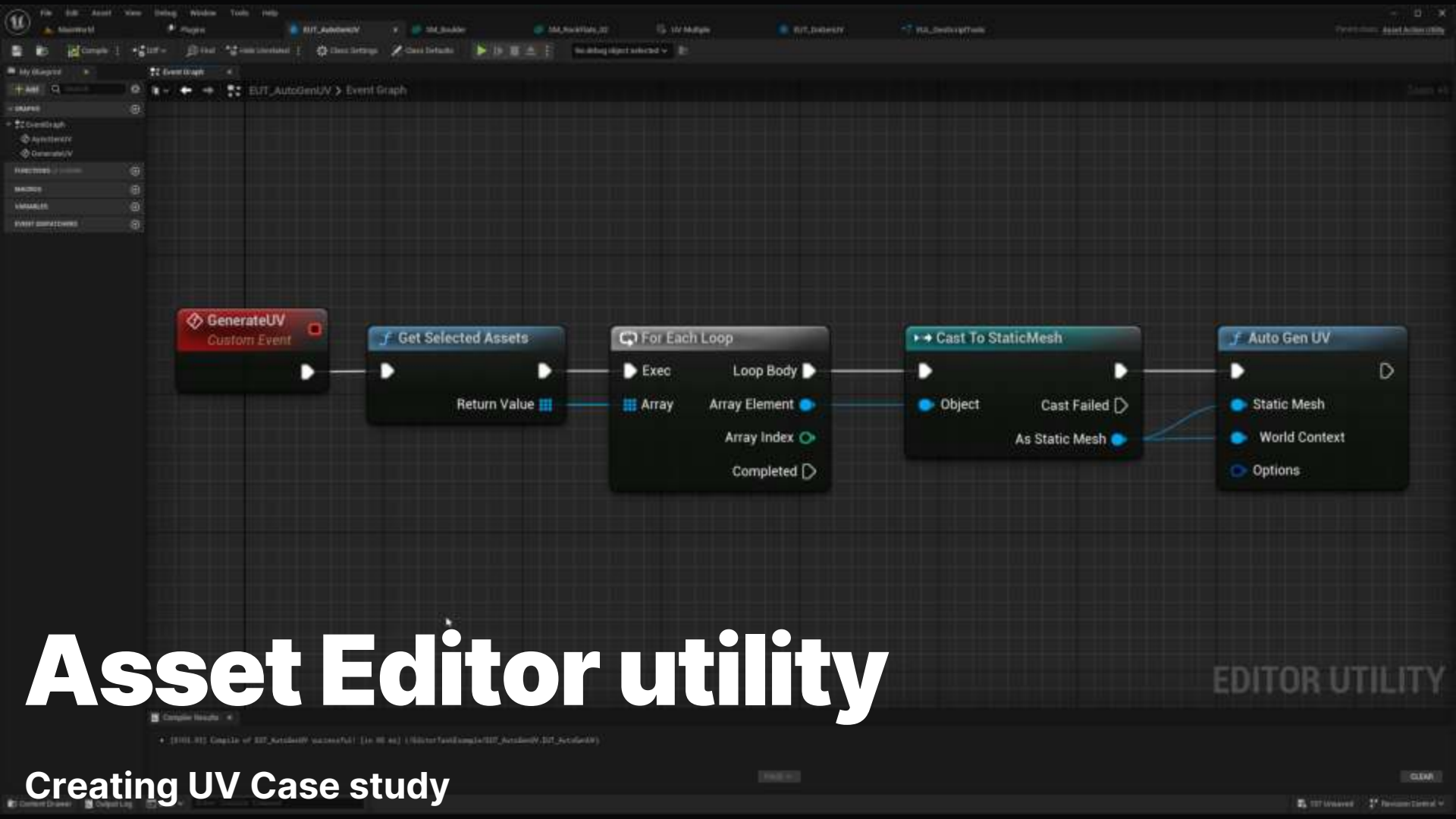
Asset Editor utility

Creating UV Case study



Asset Editor utility

Creating UV Case study

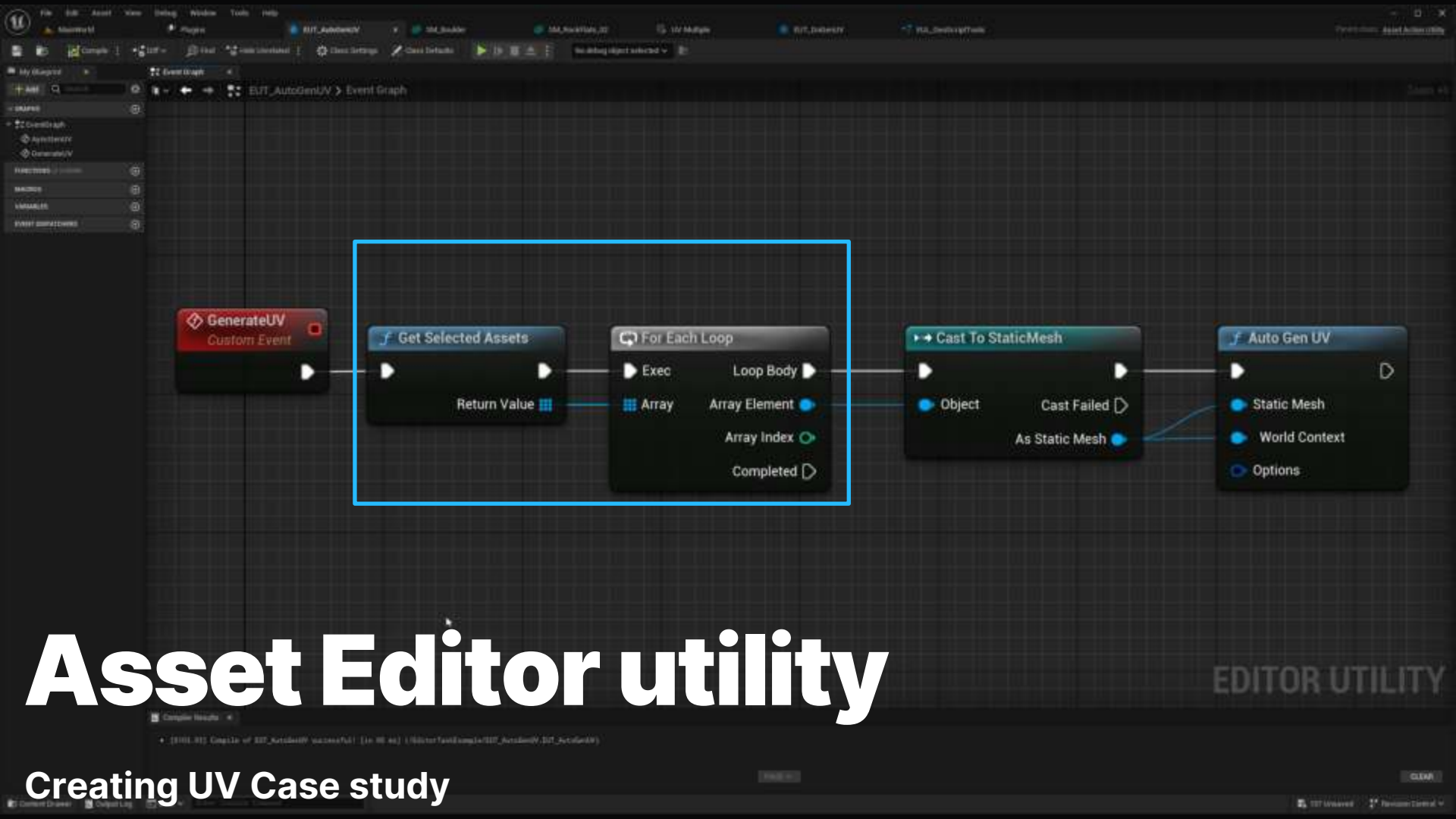


Asset Editor utility

EDITOR UTILITY

Creating UV Case study

CLEAR

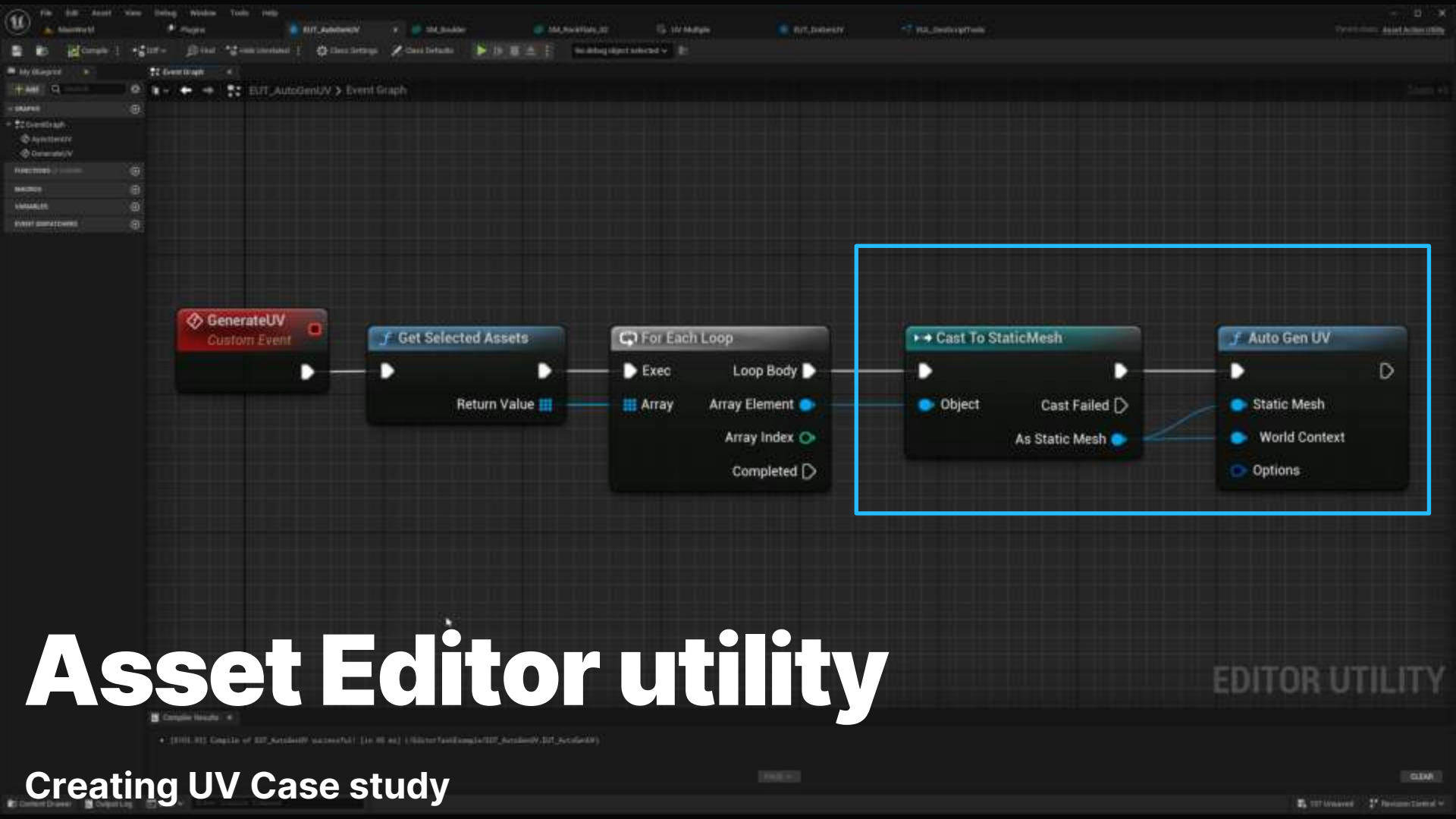


Asset Editor utility

EDITOR UTILITY

Creating UV Case study

CLEAR



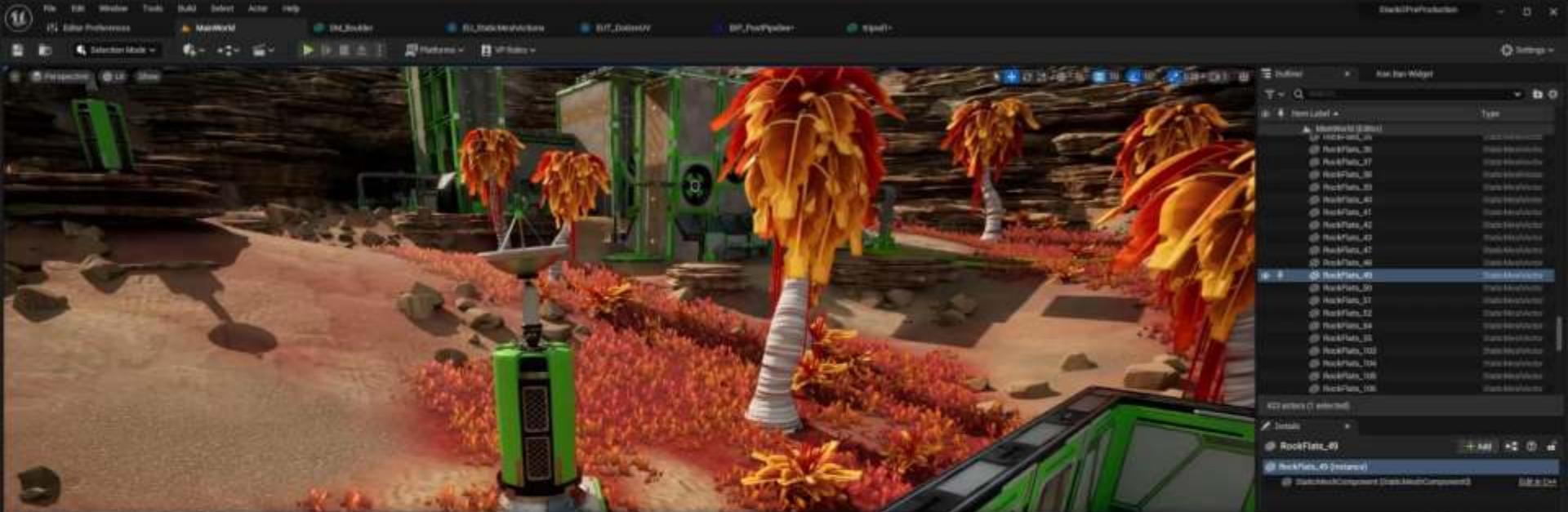
Asset Editor utility

EDITOR UTILITY

Creating UV Case study

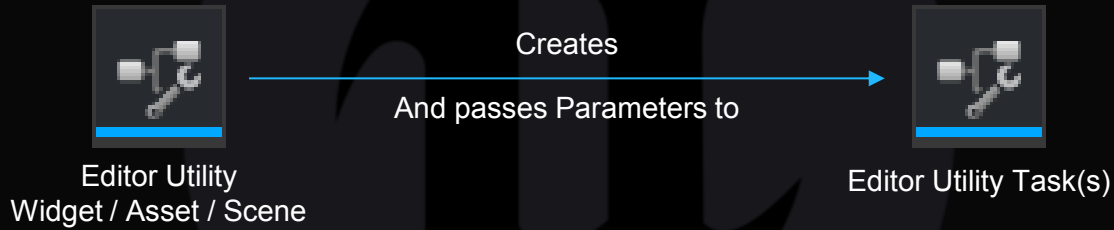
CLEAR

100% Unlabeled | Revision Control



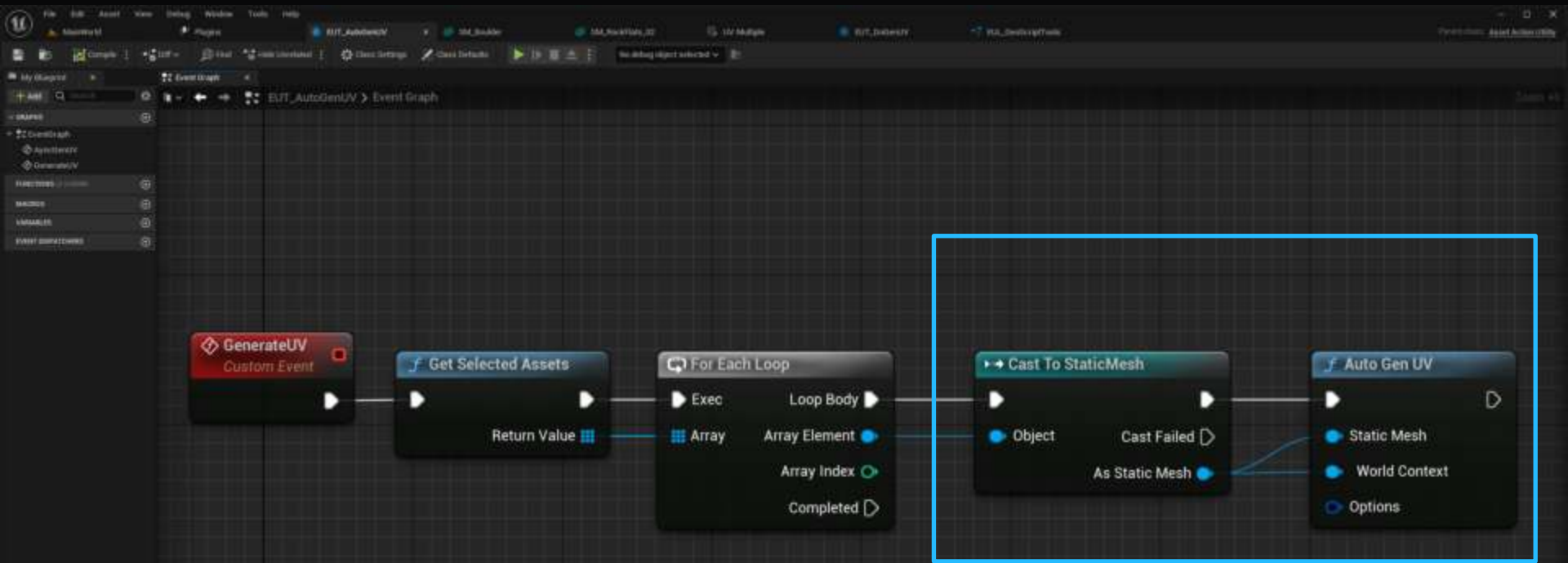
Editor Task Utility

Async Mutable tasks processing With Progress UI!



Editor Task Utility

Async Mutible tasks processing With Progress UI!

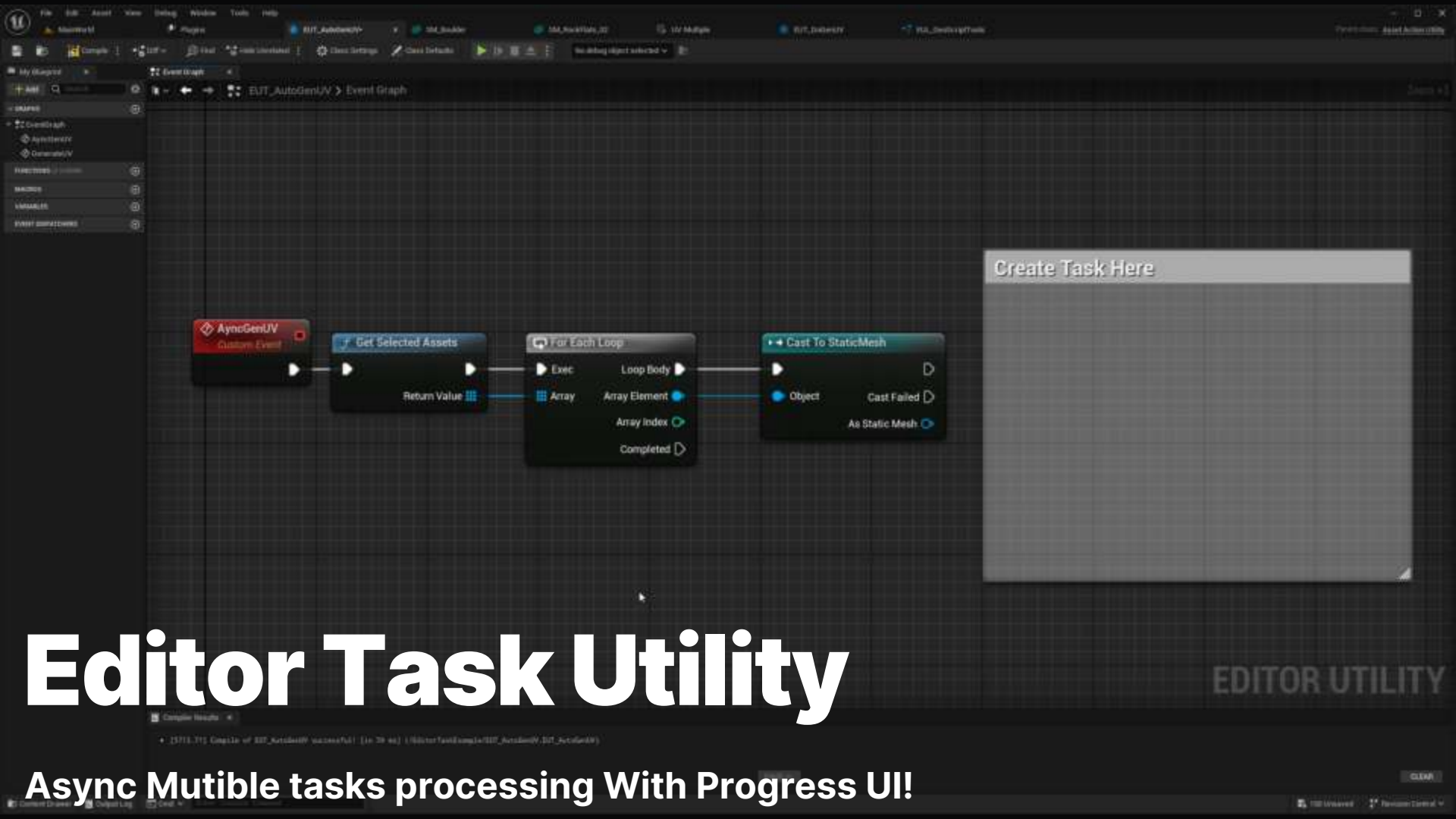


Editor Task Utility

EDITOR UTILITY

Async Mutable tasks processing With Progress UI!

CLEAR



Editor Task Utility





Async Mutable tasks processing With Progress UI!

EDITOR UTILITY


CLEAR

Pick Parent Class

COMMON

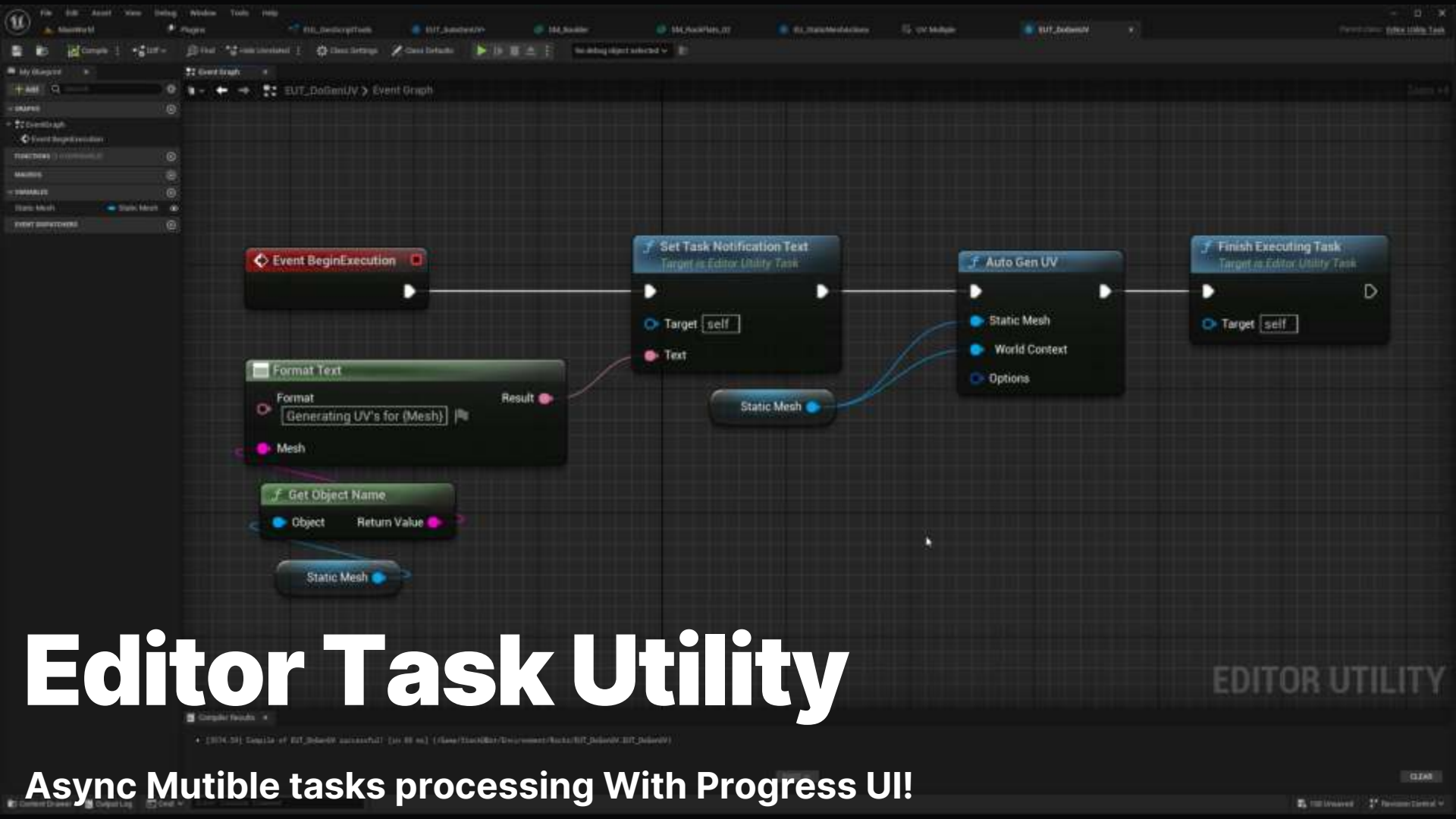
-  Editor Utility Actor Editor Utility Actor
-  Editor Utility Object Editor Utility Object
-  Asset Action Utility Base class for all asset action-related utilities
Any functions/events that are exposed on derived classes
-  Editor Function Library Library of static functions that can use the editor APIs

ALL CLASSES

-  EditorUtilityTask

1 item (1 selected)

Select **Cancel**

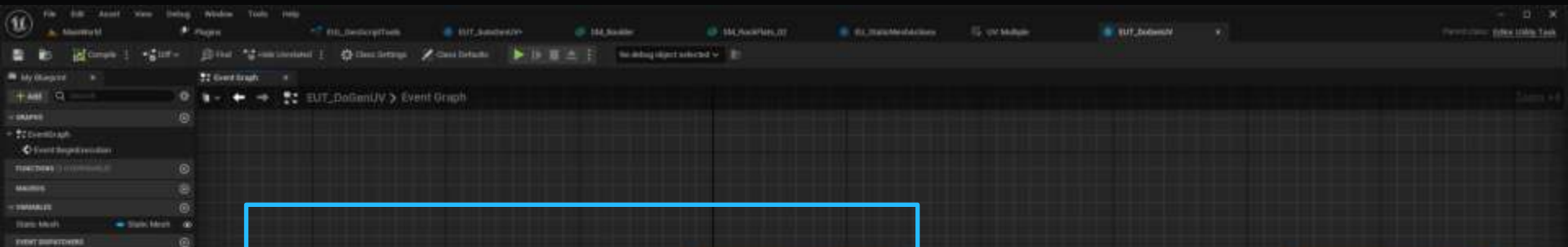


Editor Task Utility

EDITOR UTILITY

Async Mutible tasks processing With Progress UI!

CLEAR

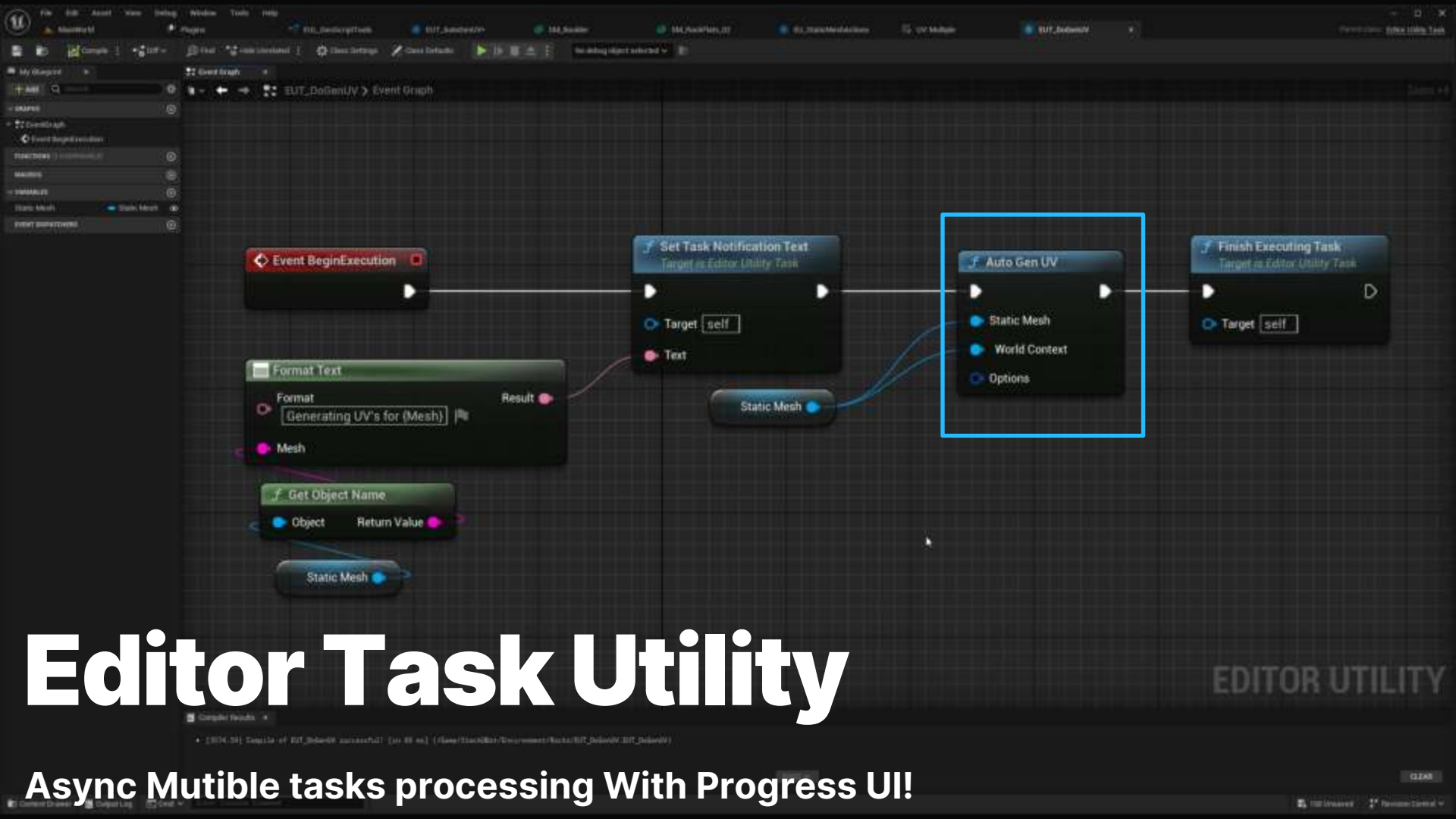


Editor Task Utility

EDITOR UTILITY

Async Mutible tasks processing With Progress UI!

CLEAR



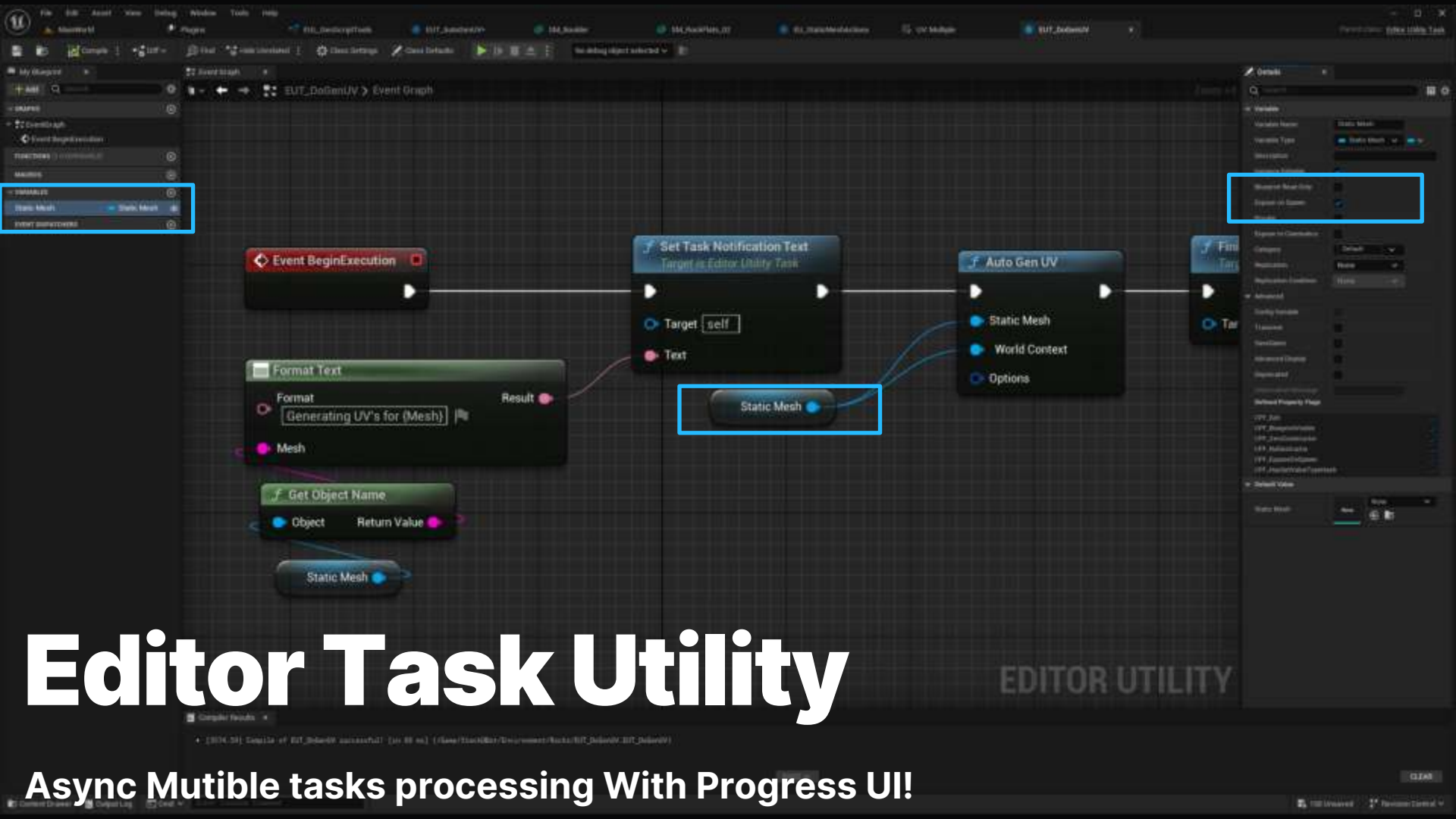
Editor Task Utility

EDITOR UTILITY

Async Mutable tasks processing With Progress UI!

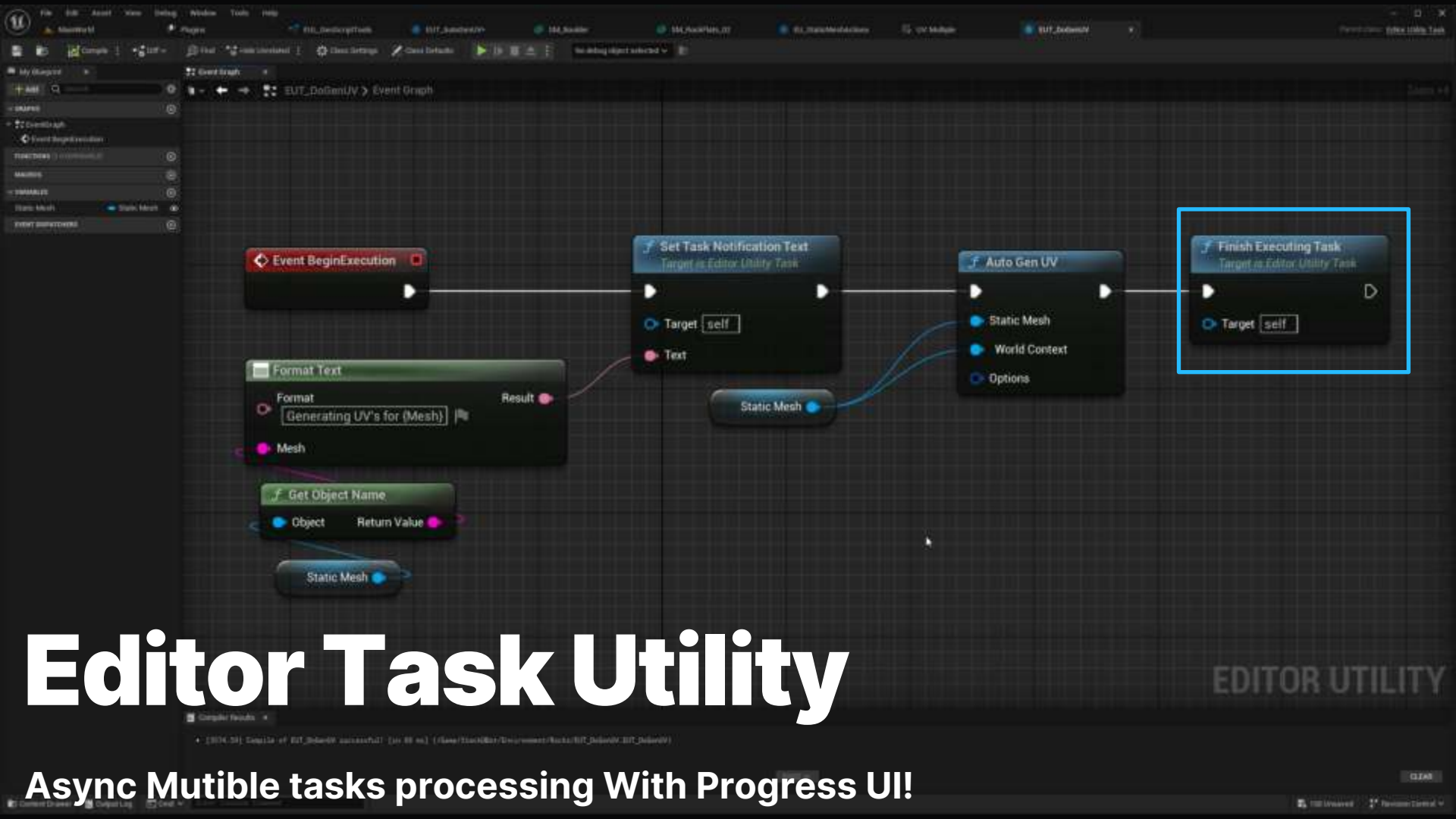
CLEAR

100% Unkown | 100% Unkown Control



Editor Task Utility

Async Mutable tasks processing With Progress UI!

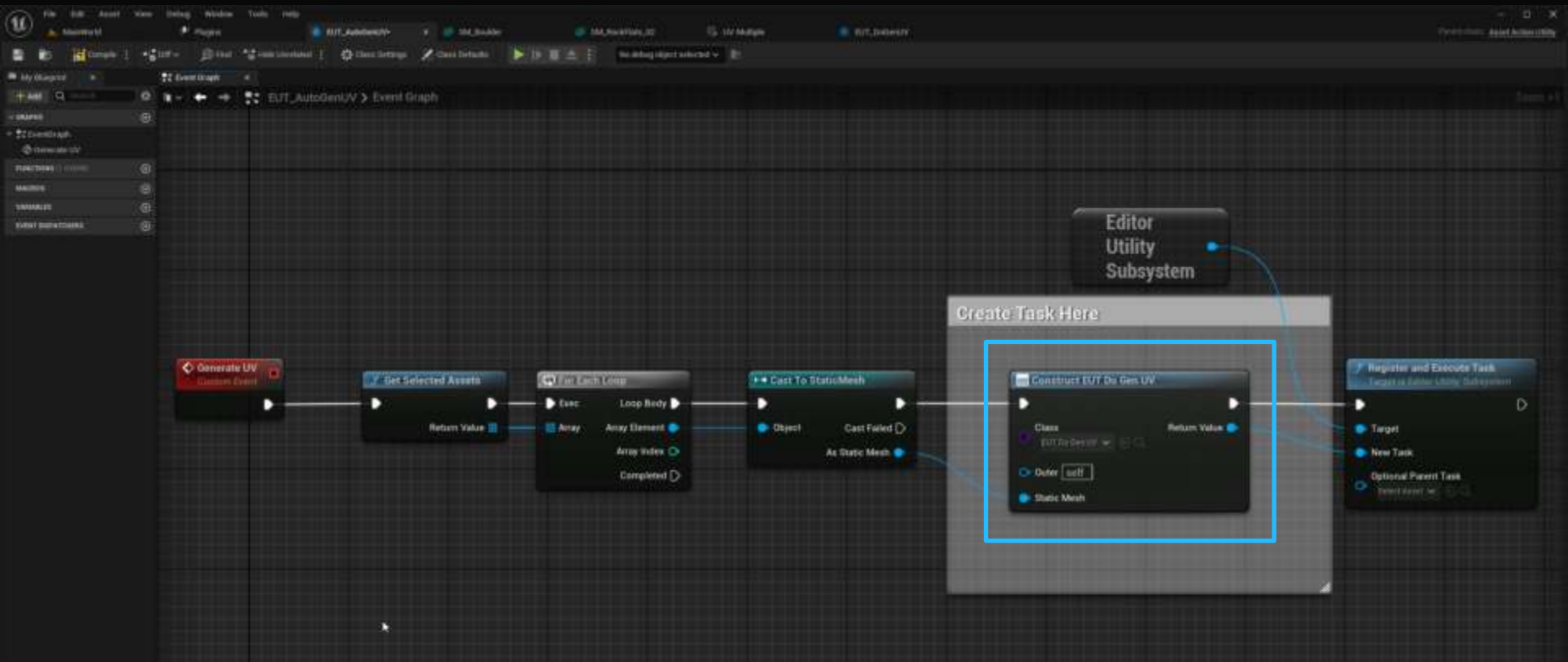


Editor Task Utility

EDITOR UTILITY

Async Mutible tasks processing With Progress UI!

CLEAR



Editor Task Utility

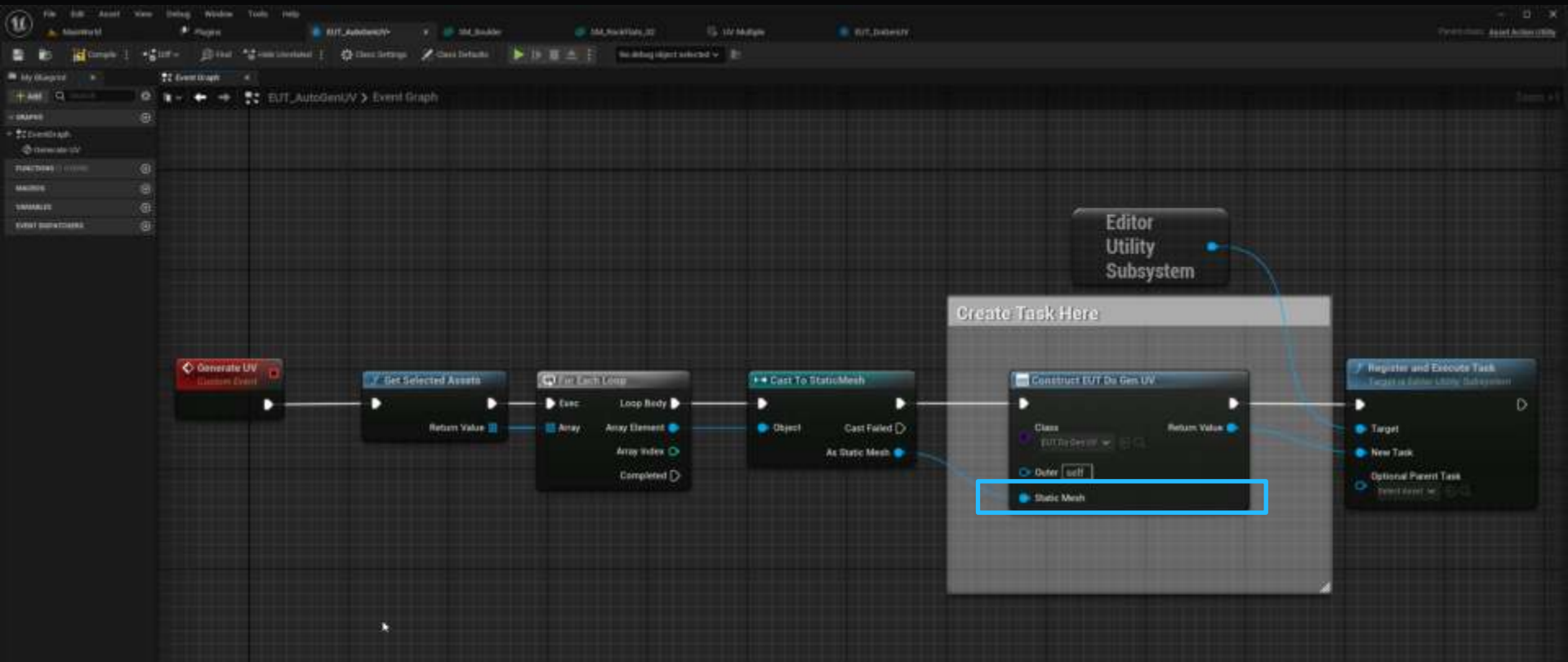
EDITOR UTILITY

Async Mutible tasks processing With Progress UI!

• (1981.04) Compila of EUT_KernelUP successful [in 34 sec] (EditorPathExample\EUT_AutoGenUV_EUT_AutoGenUV)

CLEAR

100 Unkowned 100% Resource Control



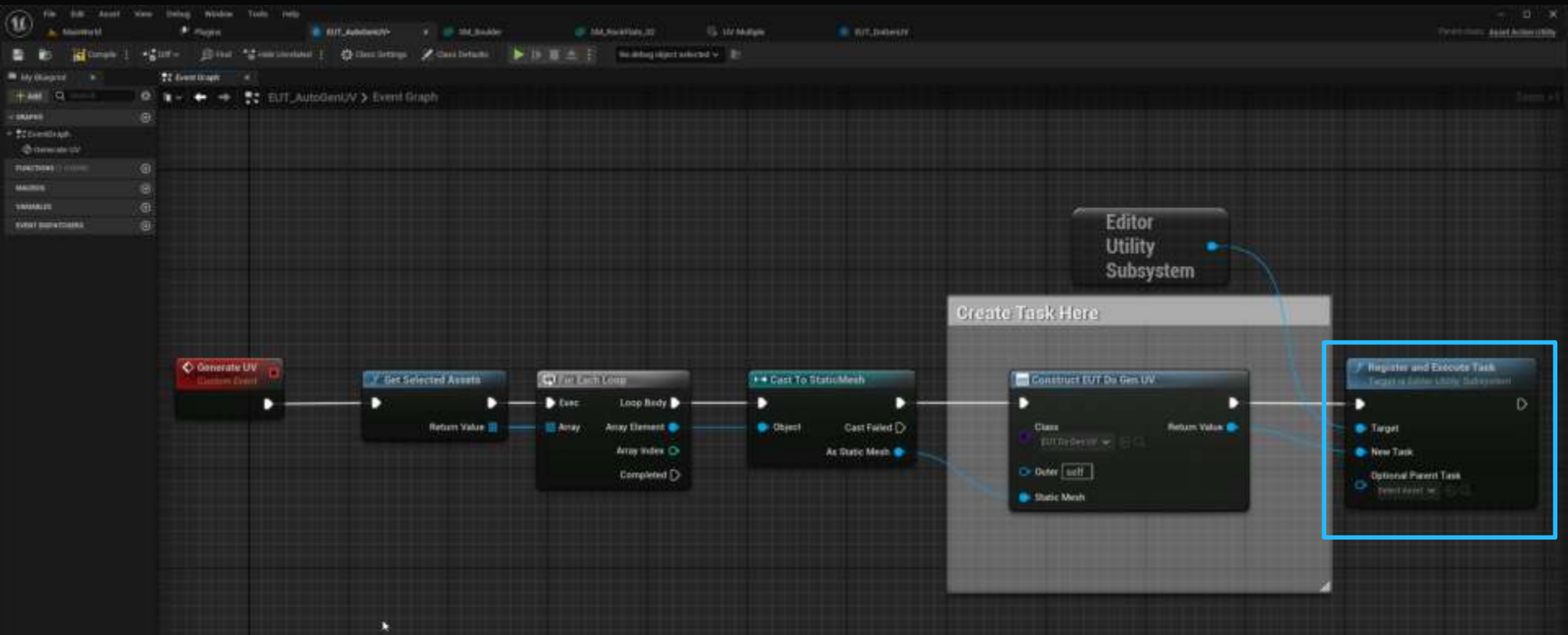
Editor Task Utility

Async Mutible tasks processing With Progress UI!

EDITOR UTILITY

CLEAR

100 Unsaved | Previous Control



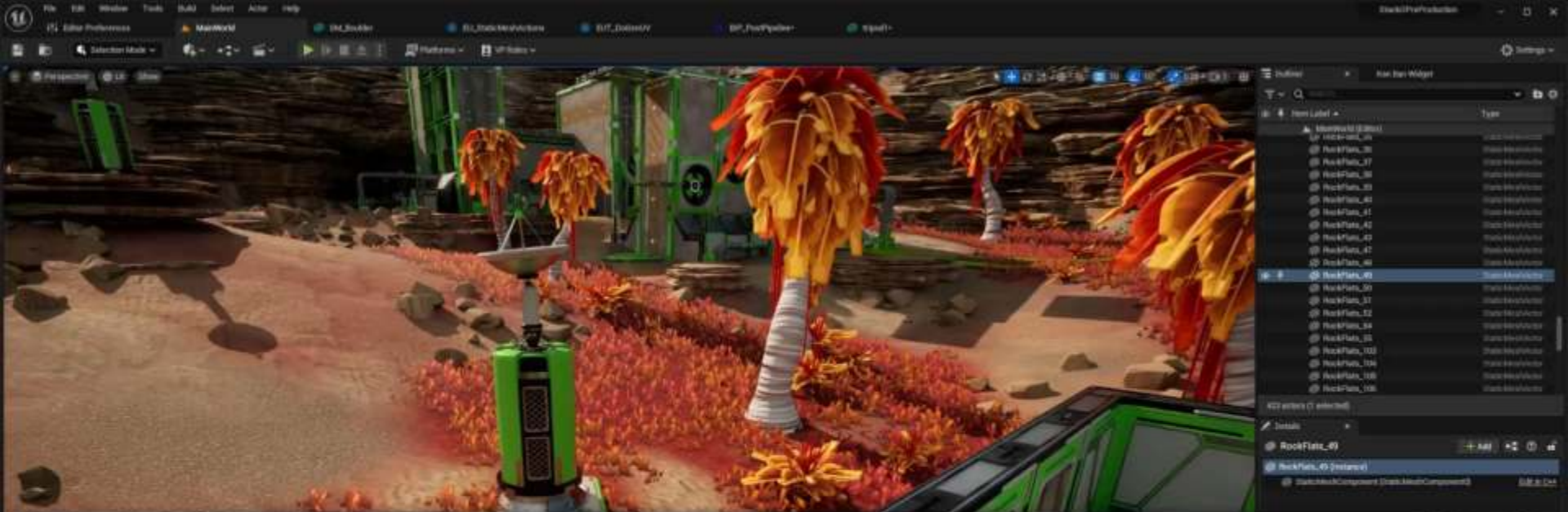
Editor Task Utility

Async Mutible tasks processing With Progress UI!

EDITOR UTILITY

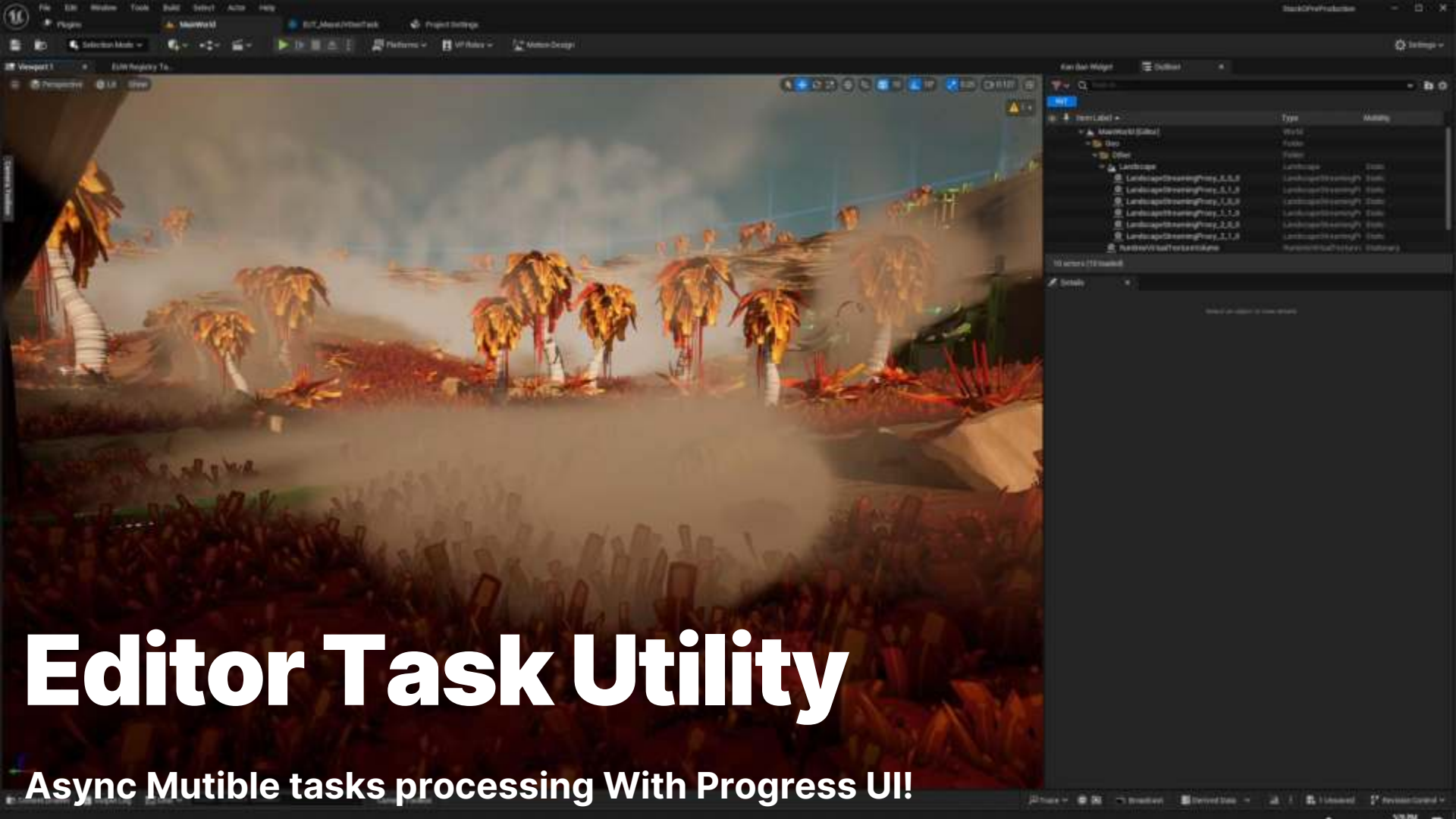
CLEAR

100 Unsaved | Previous Control



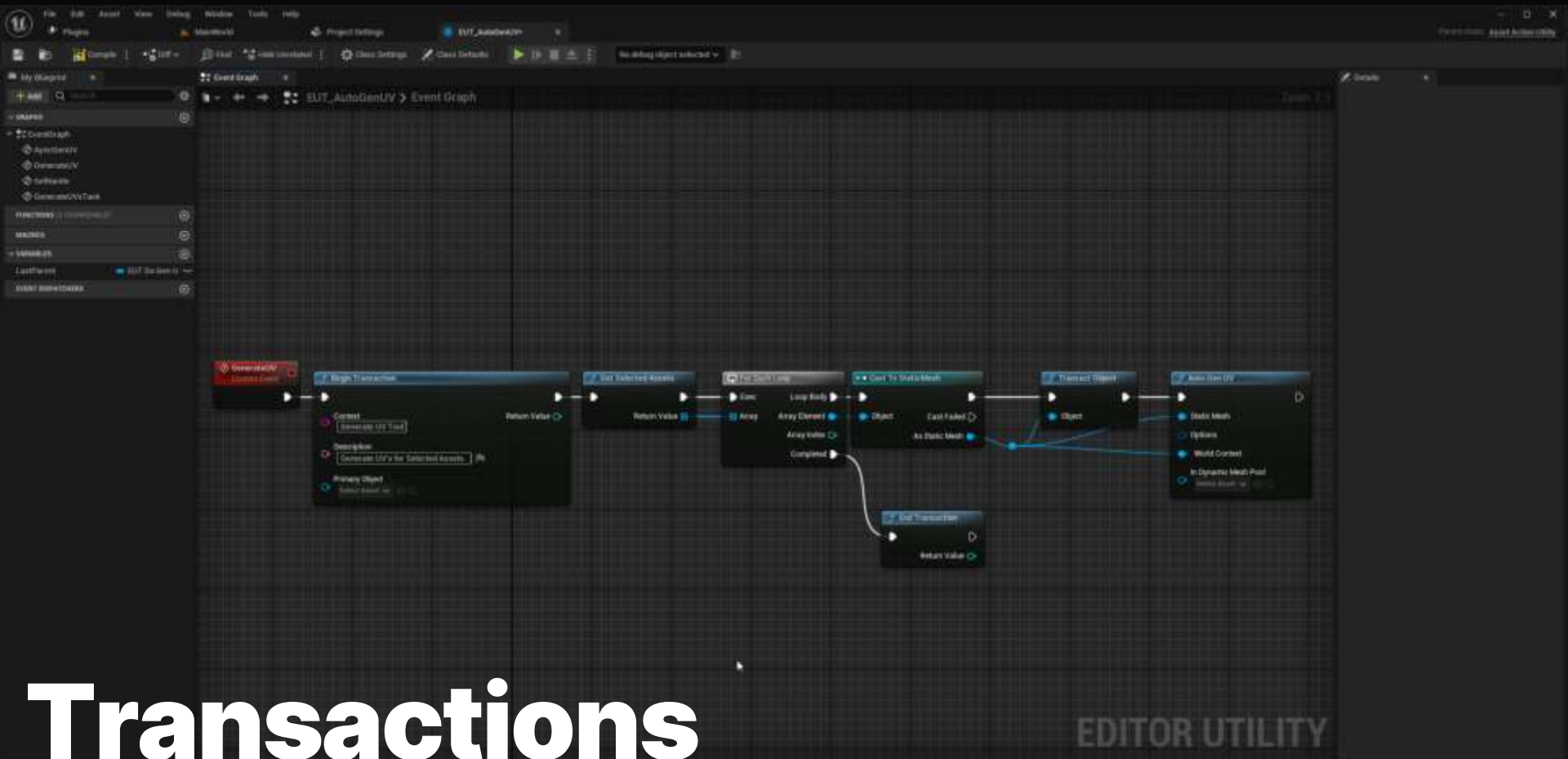
Editor Task Utility

Async Mutable tasks processing With Progress UI!



Editor Task Utility

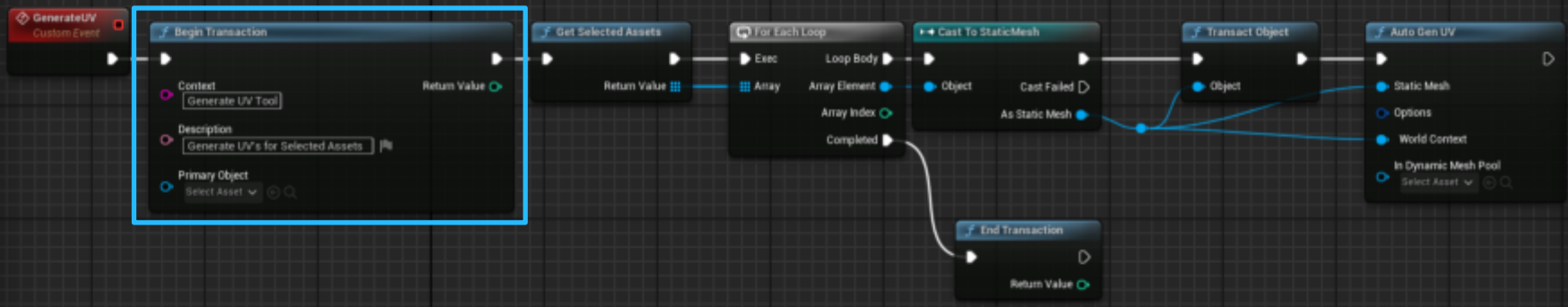
Async Mutable tasks processing With Progress UI!



Transactions

Add your actions to history! (Allow Ctrl + Z)

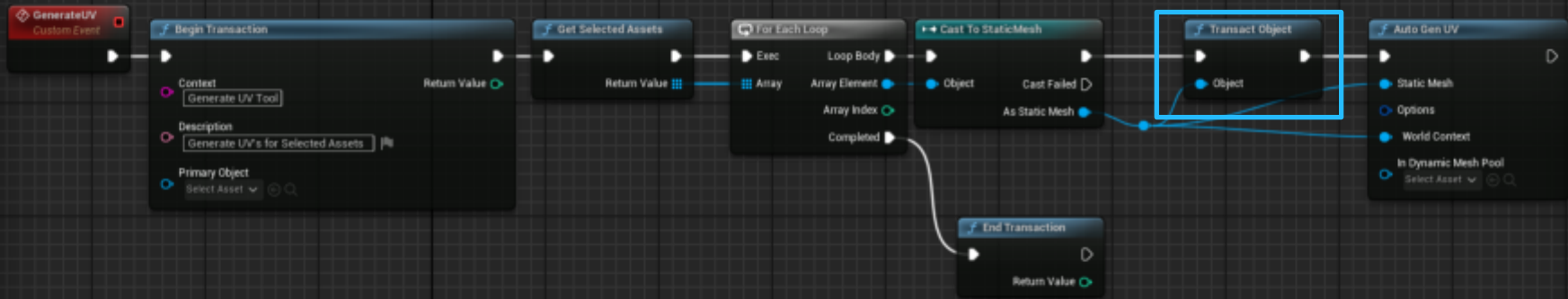
EDITOR UTILITY



Transactions

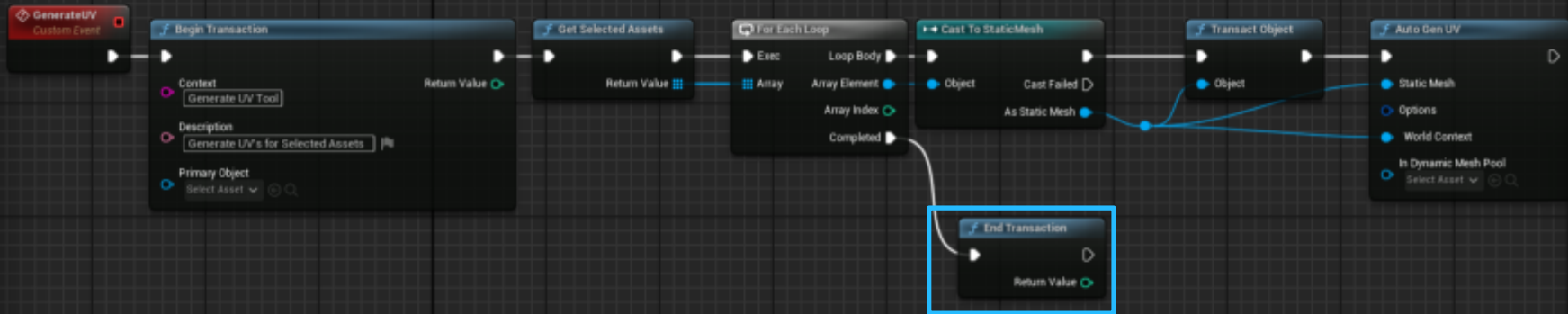
Add your actions to history! (Allow Ctrl + Z)

EDITOR UTILITY



Transactions

Add your actions to history! (Allow Ctrl + Z)



Transactions

Add your actions to history! (Allow Ctrl + Z)

Content Pipeline

Sreamlining your everyday

Import Pipelines

A big part of making a world is going to be **done outside of Unreal Engine**- handling this is done with the Import Pipeline and it's a big deal.

An **Import pipeline** can;



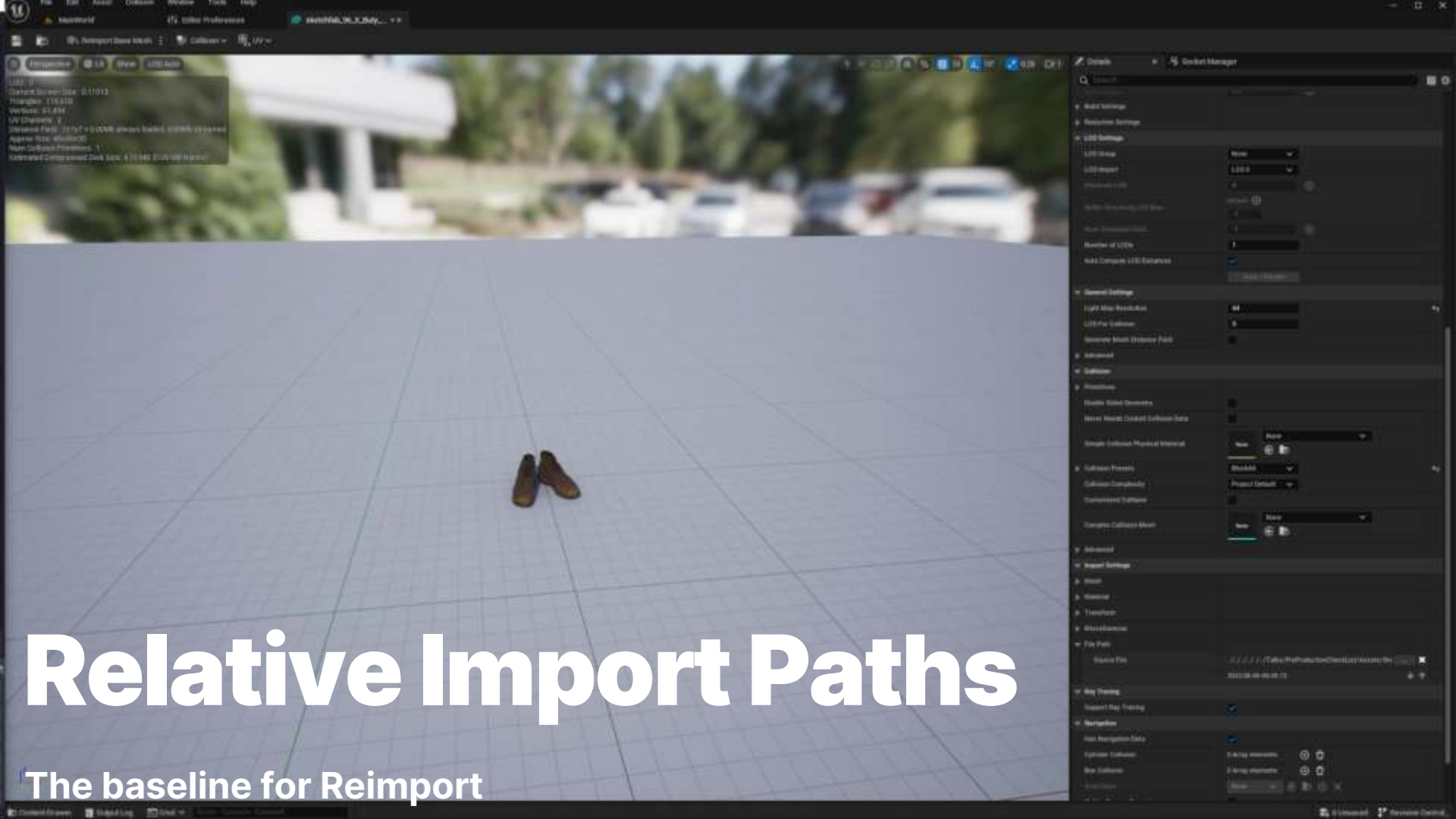
Import Pipelines

A big part of making a world is going to be **done outside of Unreal Engine**- handling this is done with the Import Pipeline and it's a big deal.

An **Import pipeline** can;

- Enforce standards
- Minimize repetitive tasks
- Make onboarding easier
- Allow you to (re)import mass data.
- work nondestructively and predictably.





Relative Import Paths

The baseline for Reimport

Pipeline integration (The Old Way)

Extensive features to integrate Unreal Engine into your existing processes

- Datasmith: seamless data conversion
- Python scripting for pipeline integration and automation
- FBX, USD, Alembic, and glTF support
- Visual Dataprep lets you create import recipes



The New Way! Interchange

New import and export framework for Unreal Engine.

- Aims to be file format **agnostic**



The New Way! Interchange

New import and export framework for Unreal Engine. (Experimental)

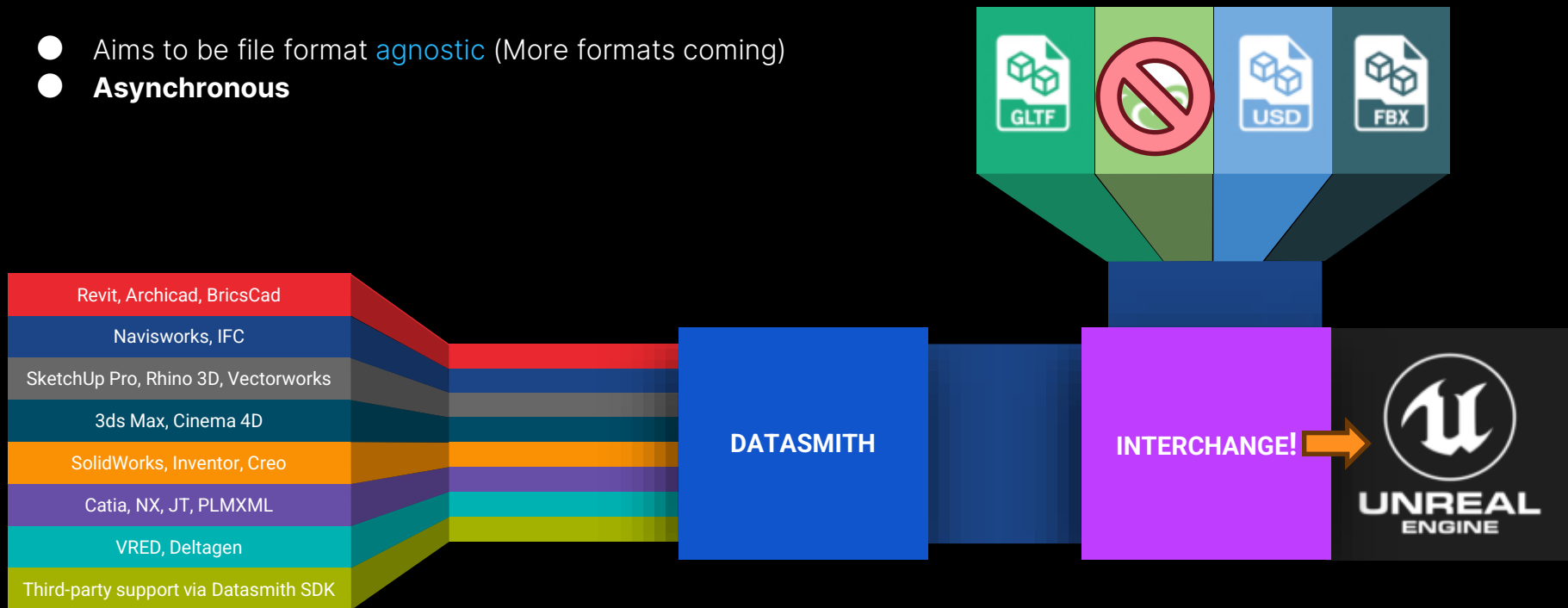
- Aims to be file format **agnostic** (More formats coming)



The New Way! Interchange

New import and export framework for Unreal Engine. (Experimental)

- Aims to be file format **agnostic** (More formats coming)
- **Asynchronous**



The New Way! Interchange

New import and export framework for Unreal Engine. (Experimental)

- Aims to be file format **agnostic** (More formats coming)
- **Asynchronous**
- **Customizable**

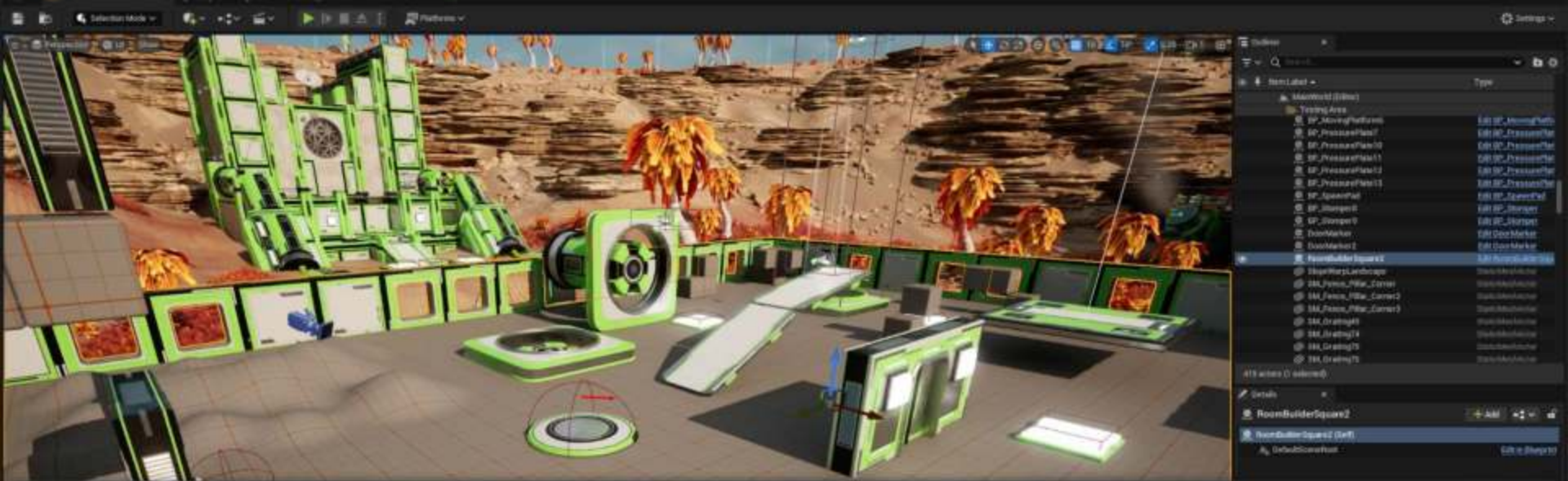


The New Way! Interchange

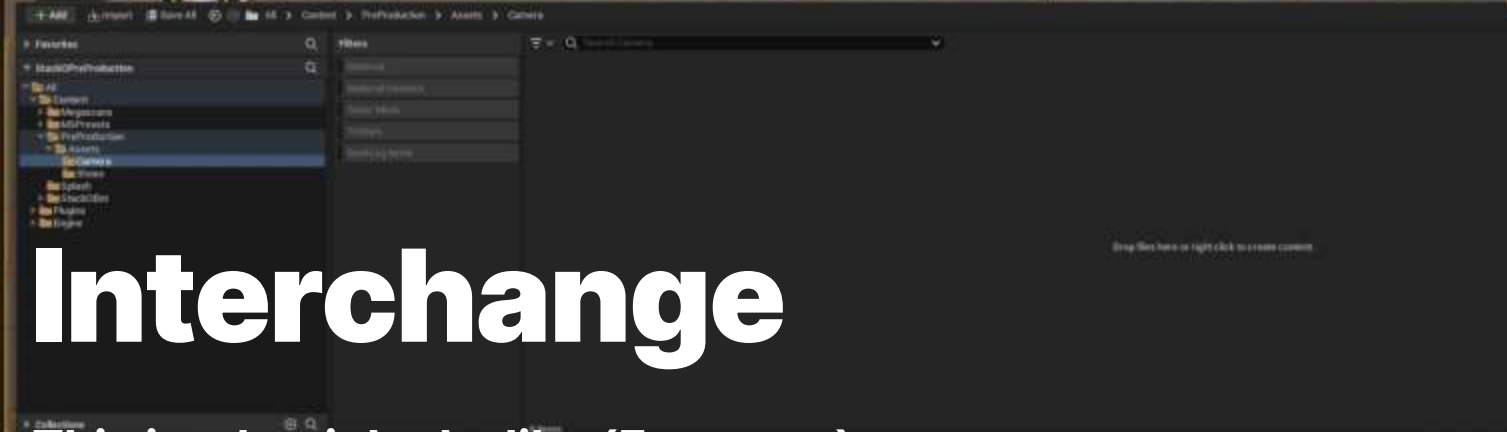
New import and export framework for Unreal Engine. (Experimental)

- Aims to be file format **agnostic** (More formats coming)
- **Asynchronous**
- **Customizable**
- Works At **Run-time** too!





Item Label	Type
MacWorld (Scene)	
Testing Area	
BP_MovePlatform	Light BP_MovingLight
BP_PressurePlate7	Light BP_PressurePlate
BP_PressurePlate0	Light BP_PressurePlate
BP_PressurePlate1	Light BP_PressurePlate
BP_PressurePlate2	Light BP_PressurePlate
BP_PressurePlate3	Light BP_PressurePlate
BP_PressurePlate4	Light BP_PressurePlate
BP_PressurePlate5	Light BP_PressurePlate
BP_PressurePlate6	Light BP_PressurePlate
BP_PressurePlate7	Light BP_PressurePlate
BP_PressurePlate8	Light BP_PressurePlate
BP_PressurePlate9	Light BP_PressurePlate
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BP_PressurePlate91	Light BP_PressurePlate
BP_PressurePlate92	Light BP_PressurePlate
BP_PressurePlate93	Light BP_PressurePlate
BP_PressurePlate94	Light BP_PressurePlate
BP_PressurePlate95	Light BP_PressurePlate
BP_PressurePlate96	Light BP_PressurePlate
BP_PressurePlate97	Light BP_PressurePlate
BP_PressurePlate98	Light BP_PressurePlate
BP_PressurePlate99	Light BP_PressurePlate



Interchange

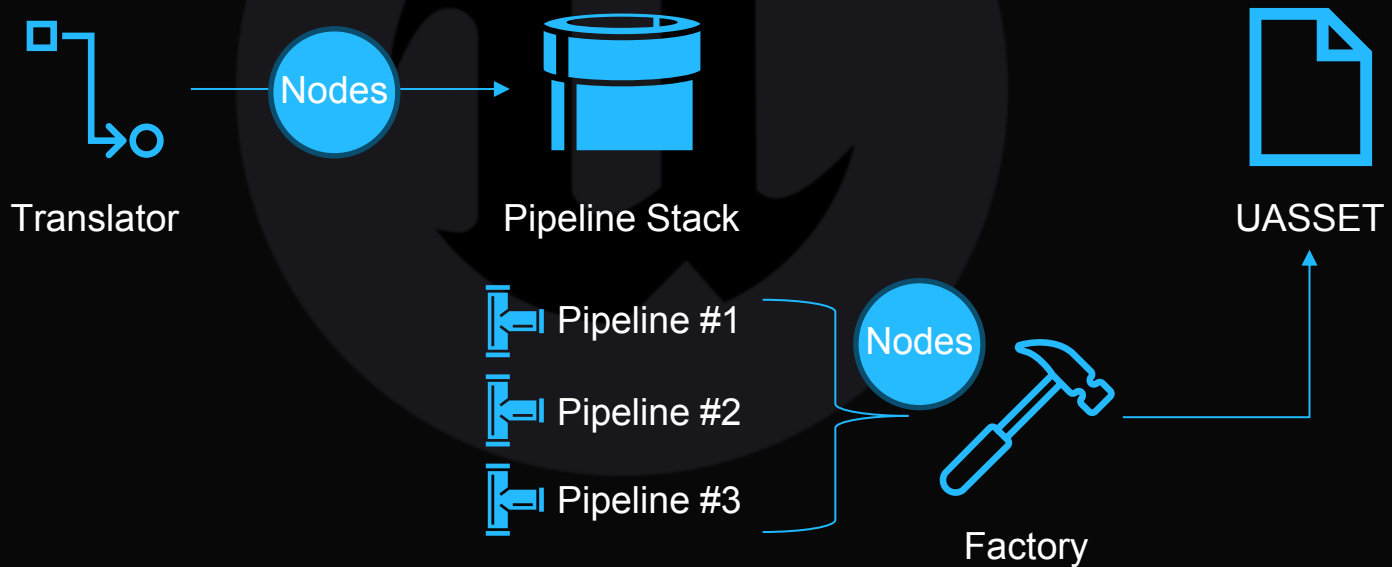
This is what it looks like (For now..)

**So it's a more
complicated
Importer?**

Why should I care as an Artist?

Customization!

Interchange Key Terms



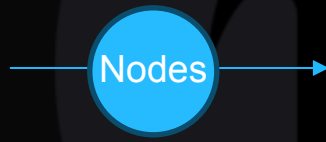
Interchange Key Terms



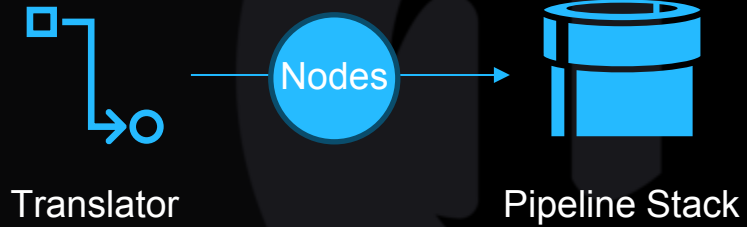
Translator



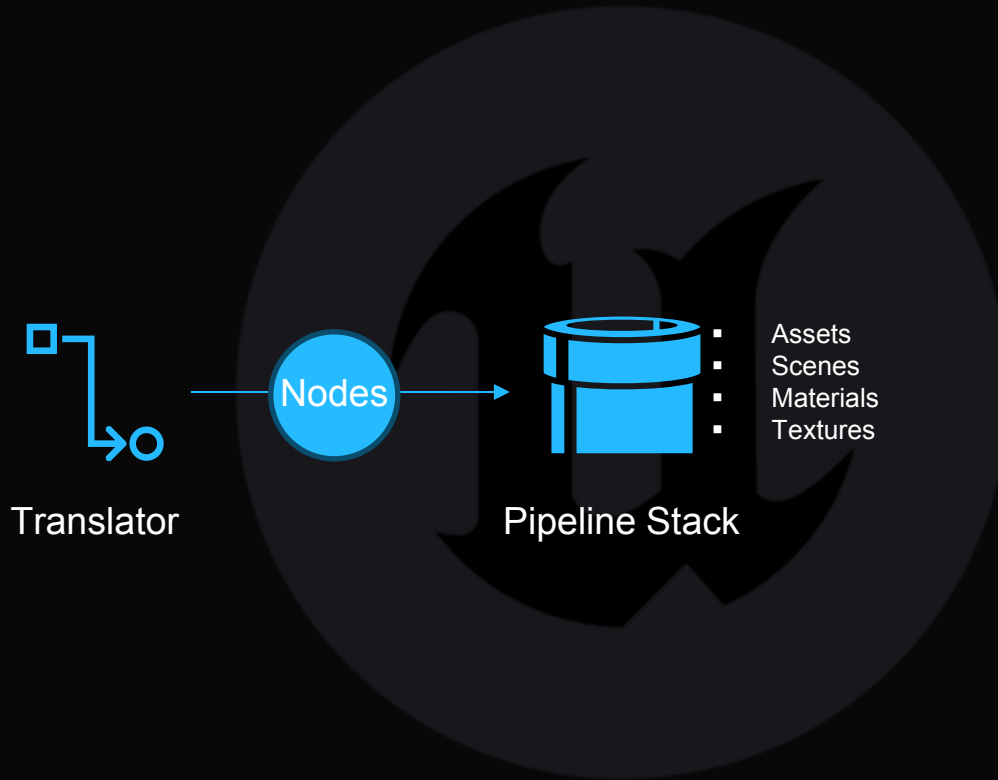
Interchange Key Terms



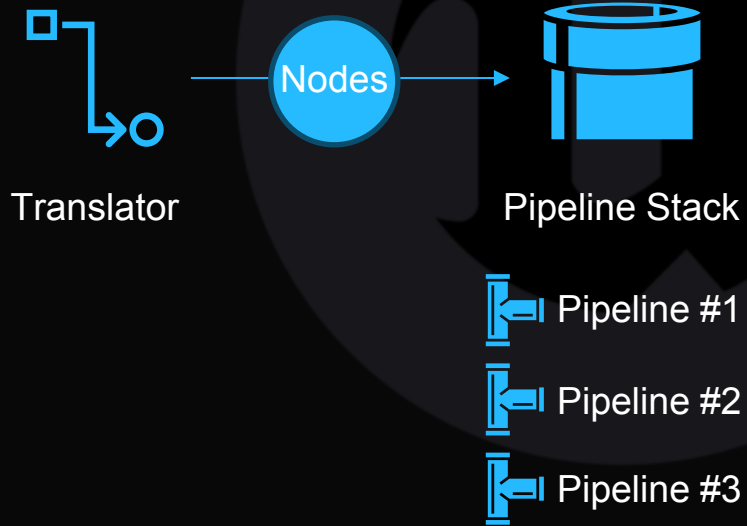
Interchange Key Terms



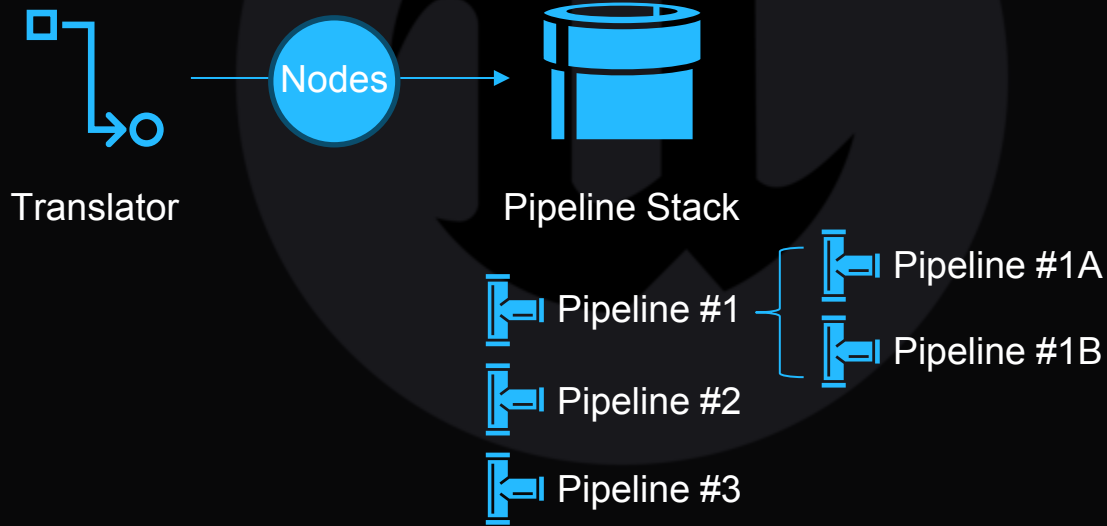
Interchange Key Terms



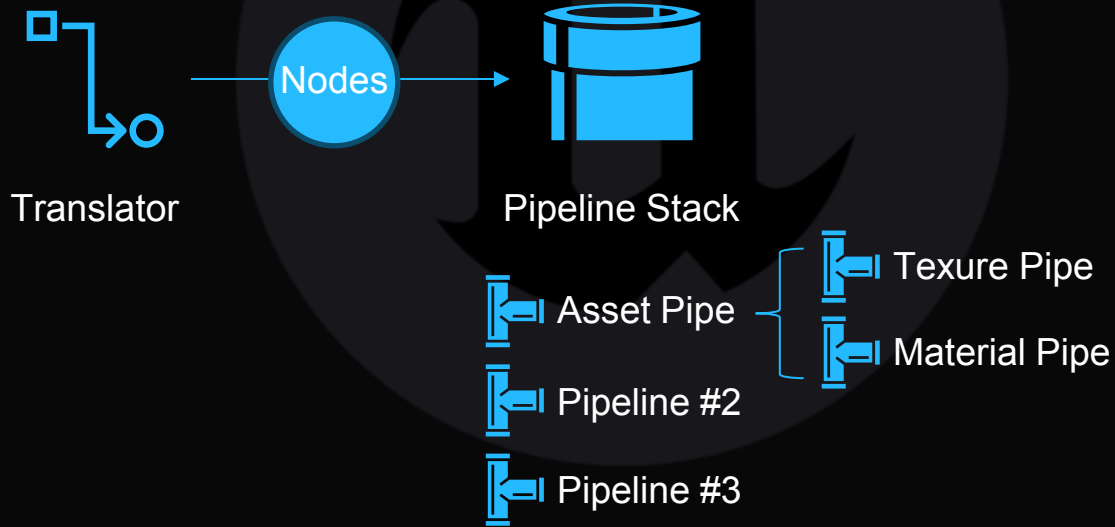
Interchange Key Terms



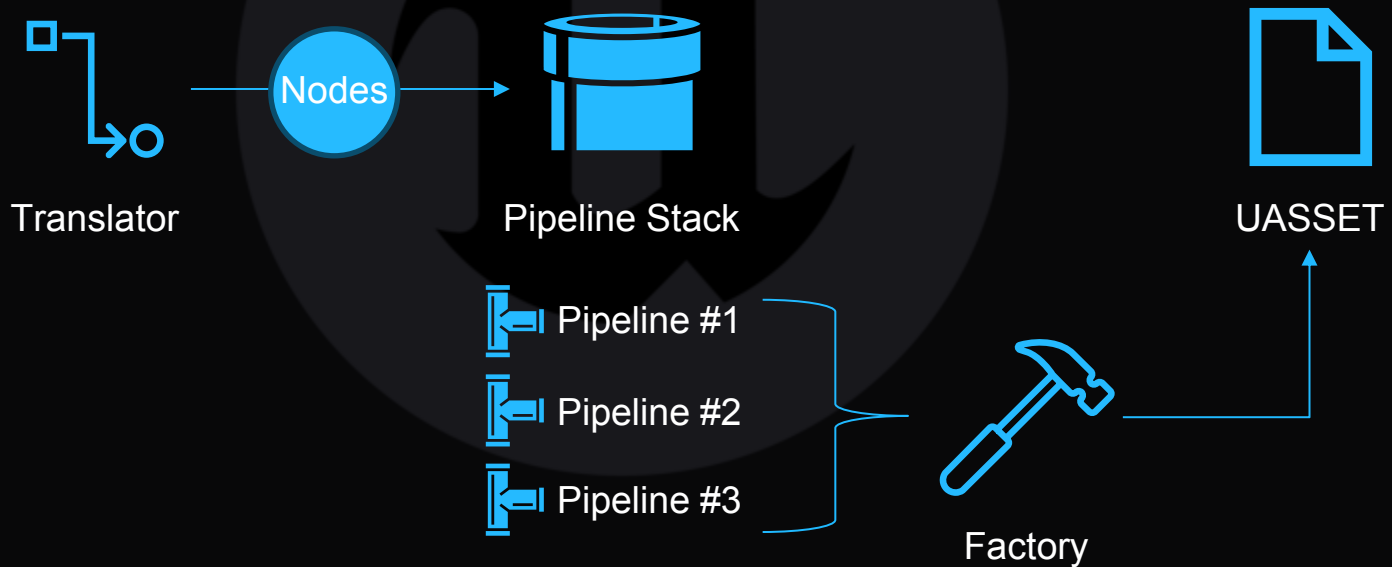
Interchange Key Terms



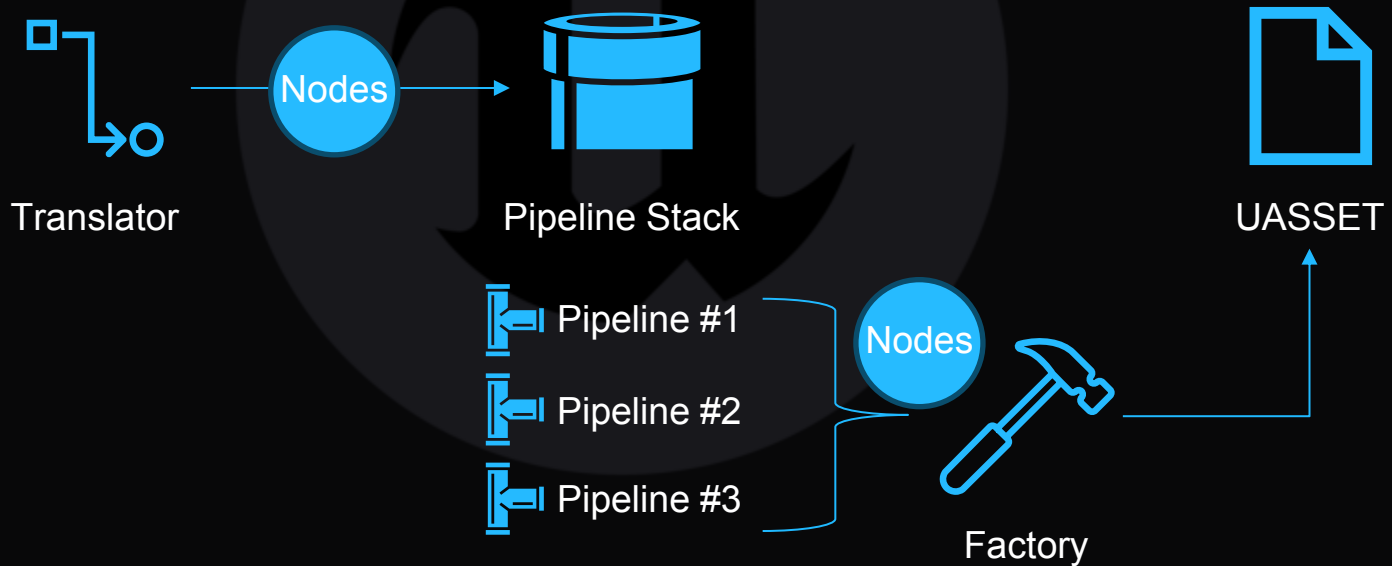
Interchange Key Terms

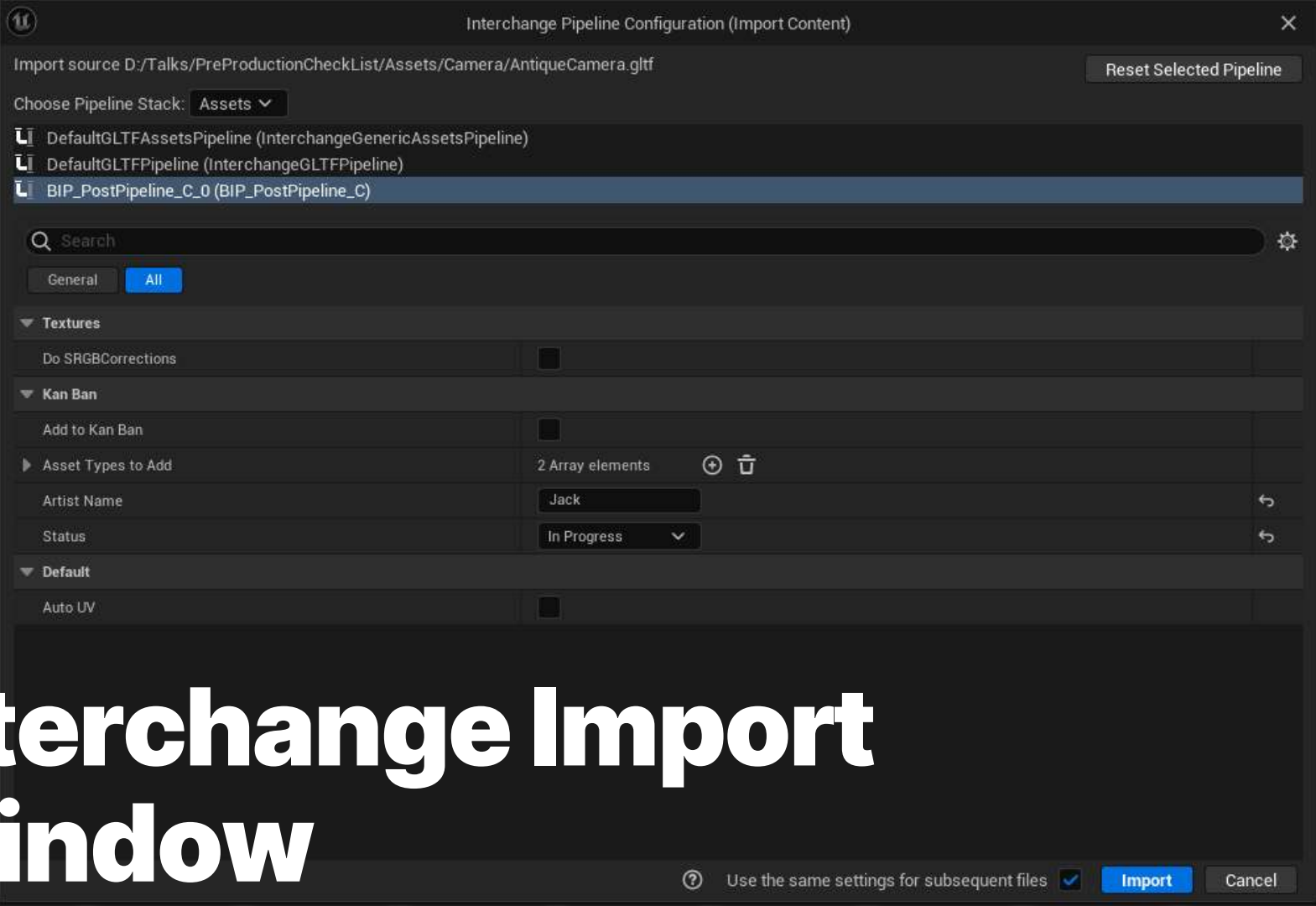


Interchange Key Terms



Interchange Key Terms





Interchange Import Window

Import source D:/Talks/PreProductionCheckList/Assets/Camera/AntiqueCamera.gltf

Reset Selected Pipeline

Choose Pipeline Stack: Assets ▾

DefaultGLTFAssetsPipeline (InterchangeGenericAssetsPipeline)

DefaultGLTFPipeline (InterchangeGLTFPipeline)

BIP_PostPipeline_C_0 (BIP_PostPipeline_C)

Search

General

All

▼ Textures

Do SRGBCorrections



▼ Kan Ban

Add to Kan Ban



▶ Asset Types to Add

2 Array elements



Artist Name

Jack



Status

In Progress ▾



▼ Default

Auto UV



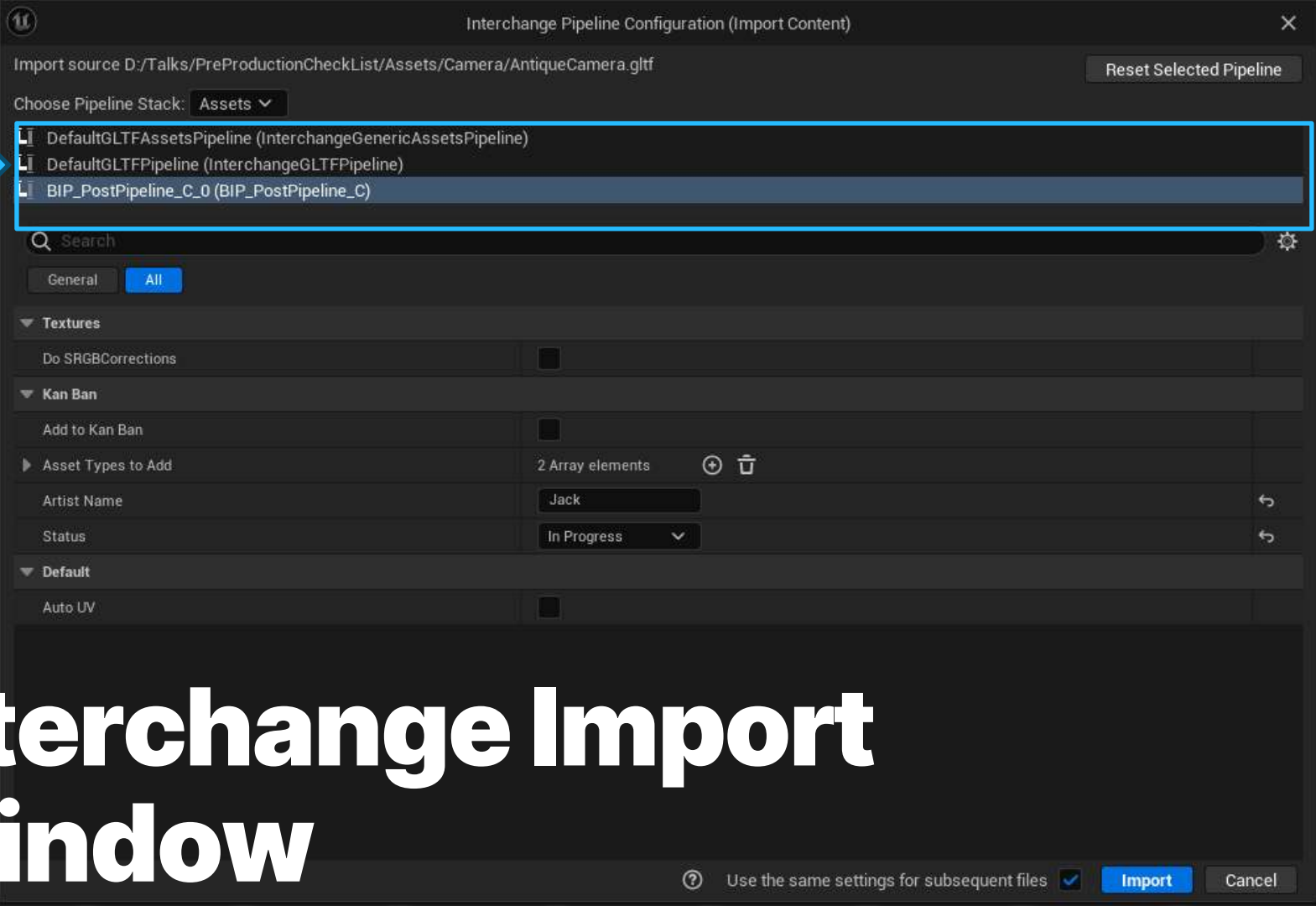
Use the same settings for subsequent files



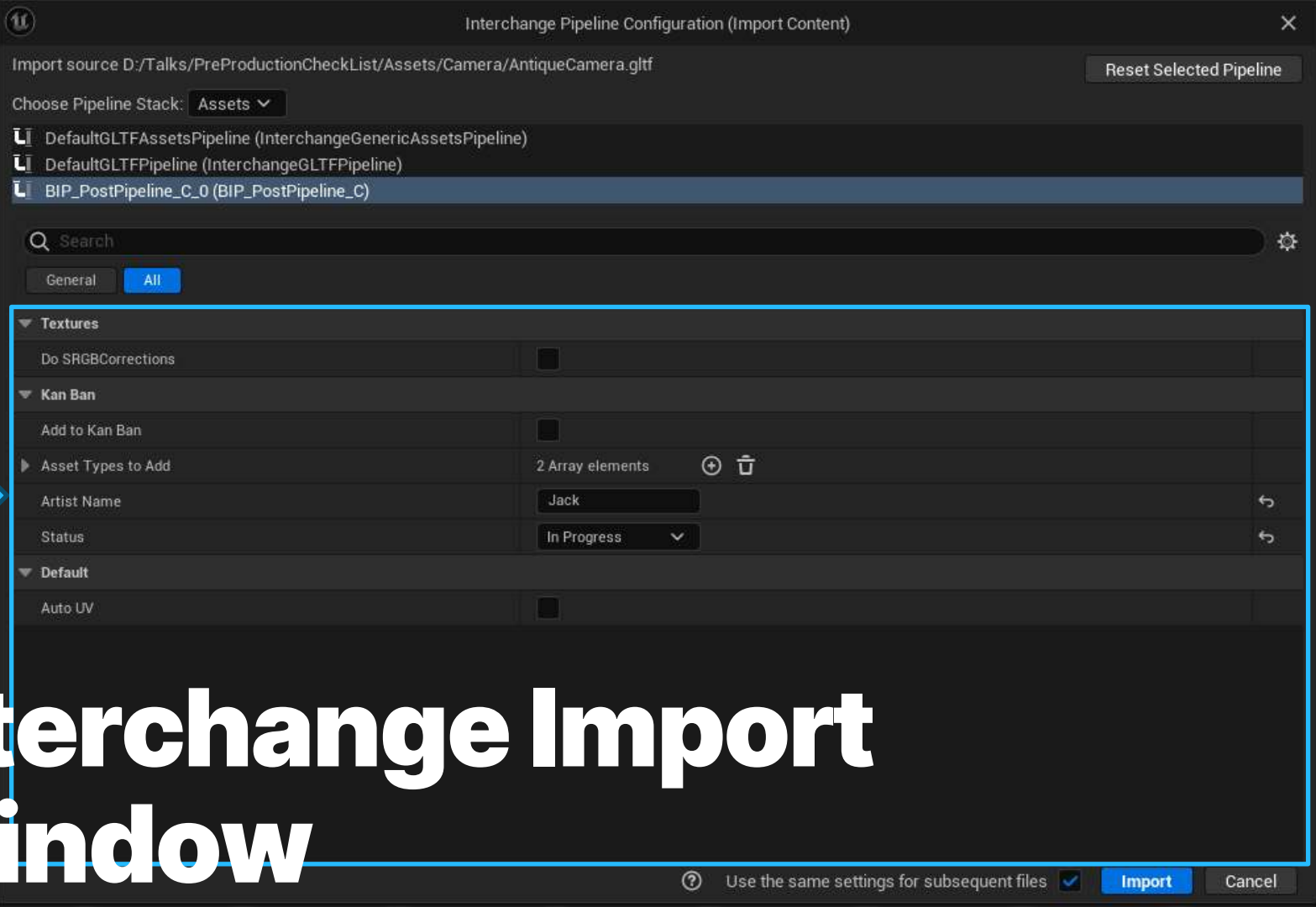
Import

Cancel

Interchange Import Window



Interchange Import Window



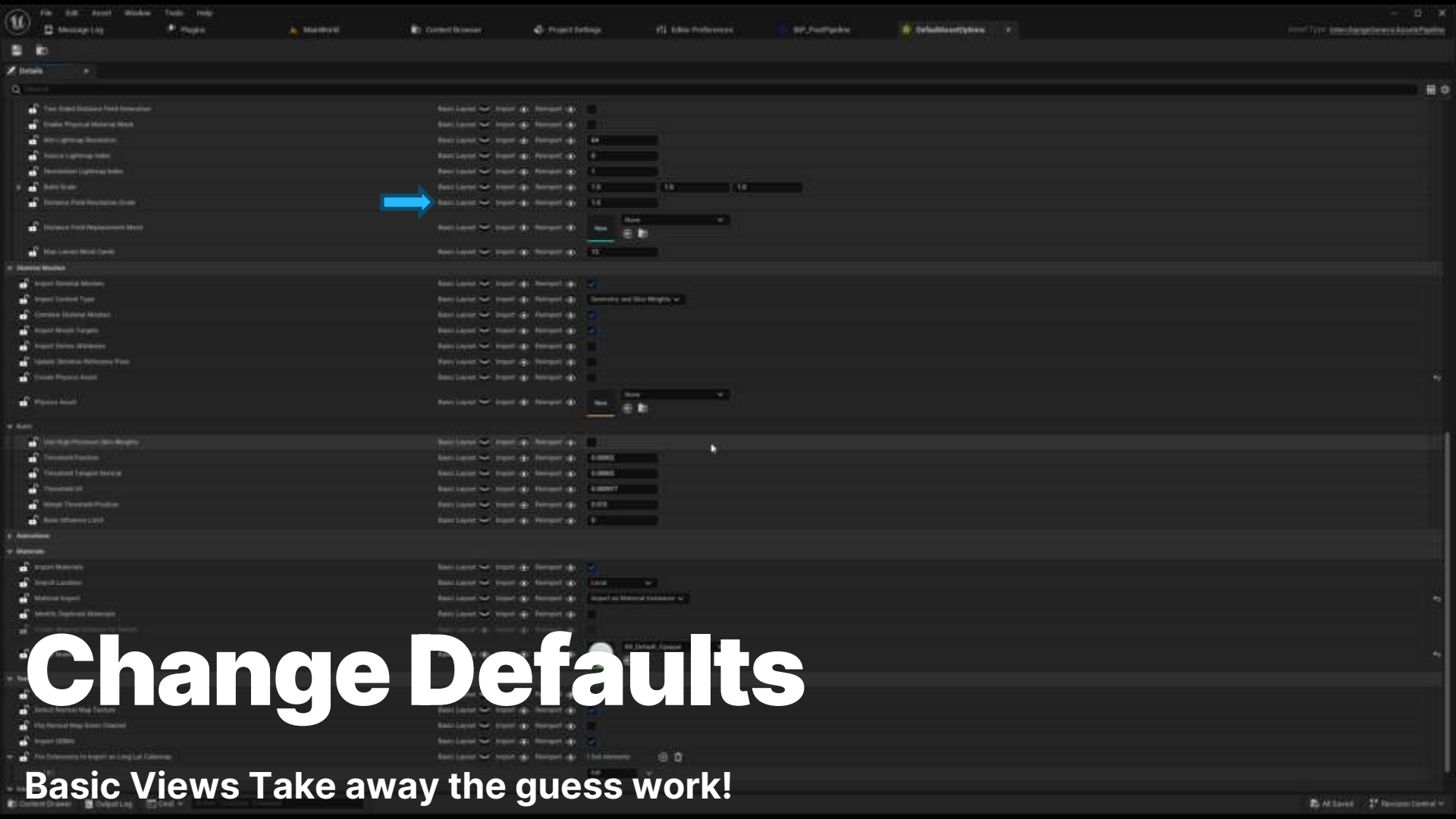
Interchange Import Window

**Enough Theory,
Show us the goods!**



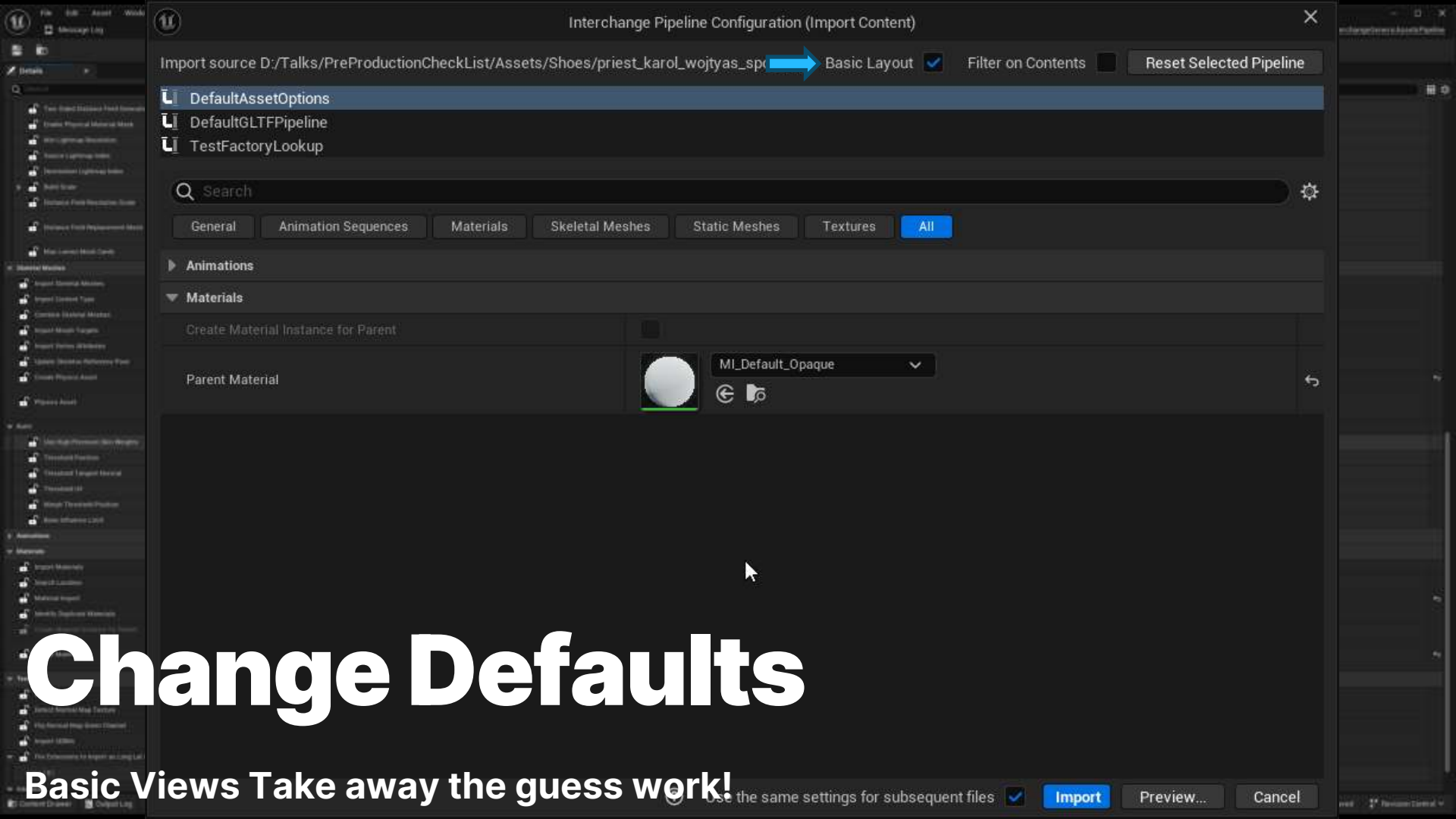
Change Defaults

Take away the guess work!



Change Defaults

Basic Views Take away the guess work!



Change Defaults

Basic Views Take away the guess work!

Import Content

Content Import Settings

Pipeline Stacks

Assets

Pipelines

Per Translator Pipelines

Materials

Textures

3 Map elements

2 members

2 Array elements

2 Array elements

2 members

2 members

Assets

3 Map elements

Materials

Textures

InterchangePipelineConfiguratorGeneric

3

1 Map elements



Import Info Level

Scene Import Settings

Pipeline Stacks

Scene

Pipelines

Per Translator Pipelines

1 Map elements

2 members

3 Array elements

2 Array elements

Scene

InterchangePipelineConfiguratorGeneric

3



Different Imports by Type

Customize for your project

Index [0]

Translator

Translator

Index [0]

Index [1]

3 Map elements

2 members

1 Array element

DefaultAssetsPipeline

2 Array elements

2 members

InterchangeMaterialXTranslator

2 Array elements

2 members

InterchangeGLTFTranslator

2 Array elements

2 members

DefaultGLTFAssetsPipeline

2 members

2 members

Assets

2 Map elements

Materials

Textures

Assets

Materials

Textures

Assets

1 Map elements

Materials

Textures

1 Map elements

Different Imports by Type

Customize for your project

Index [0]

Per Translator Pipelines

Index [0]

Translator

Pipelines

Index [1]

Translator

Pipelines

Index [0]

Index [1]

Materials

Textures

Default Pipeline Stack

Default Pipeline Stack Override

Materials

Textures

Materials

Textures

Materials

Textures

Import Into Level

Pipeline Stacks

3 Map elements

2 members

1 Array element

DefaultAssetsPipeline

2 Array elements

2 members

InterchangeMaterialXTranslator

2 Array elements

2 members

InterchangeGLTFTranslator

2 Array elements

DefaultGLTFAssetsPipeline

2 members

DefaultGLTFPipeline

2 members

Assets

2 Map elements

Materials

Textures

InterchangeMaterialXTranslator

1 Map elements

Materials

Textures

1 Map elements

Different Imports by Type

Customize for your project



Different Imports by Type

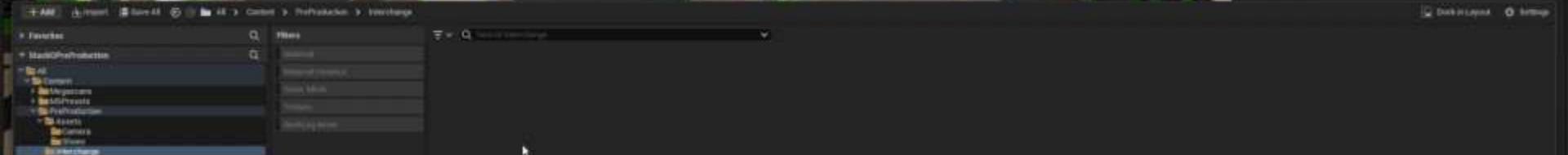
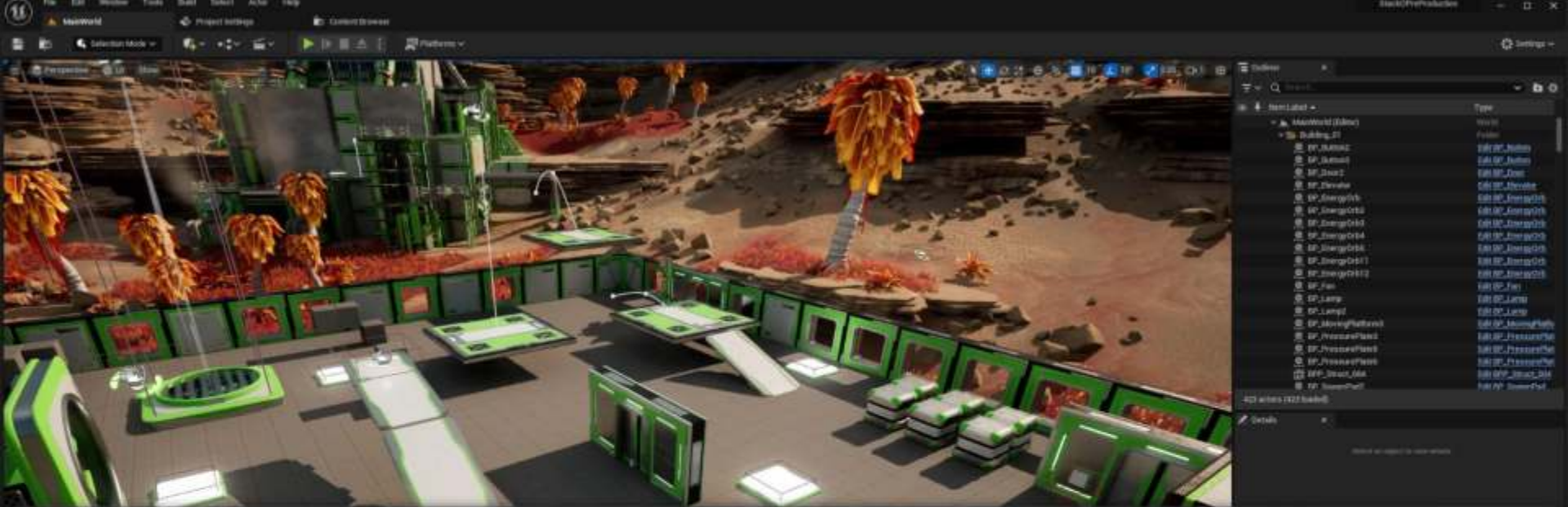
Customize for your project

Different Imports by Type

Customize for your project

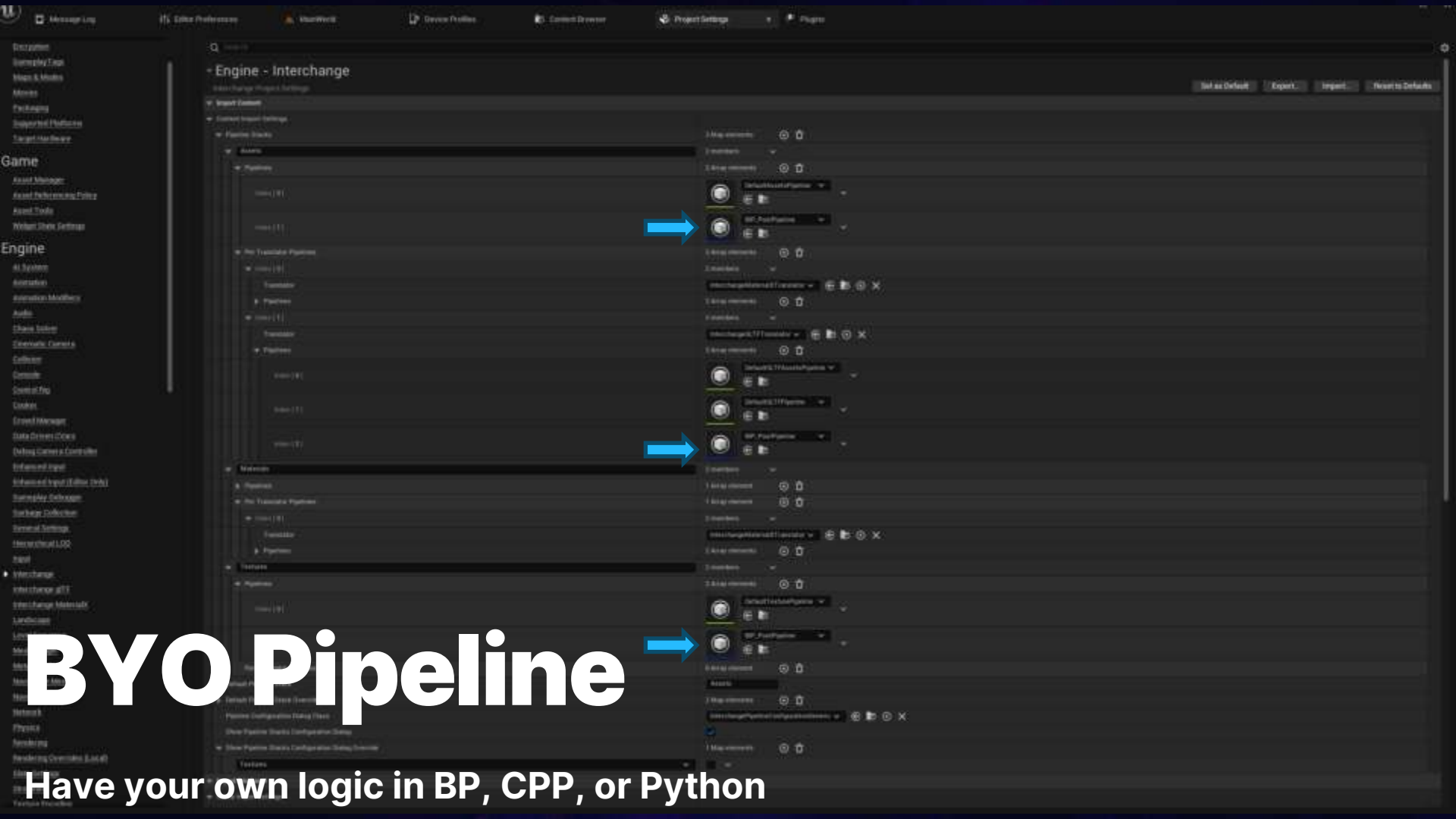
Building your Own

**Create your own pipelines for your specific needs!
Blueprint, CPP & Python**



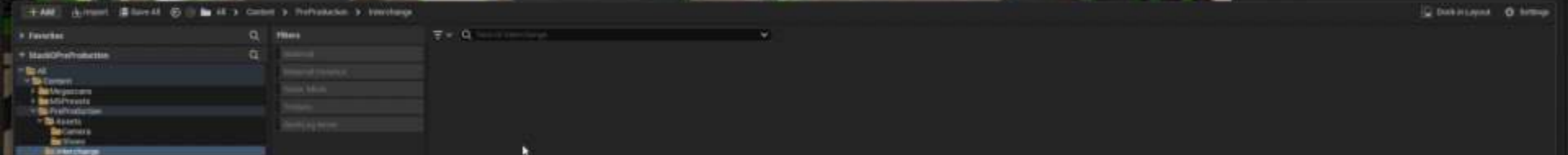
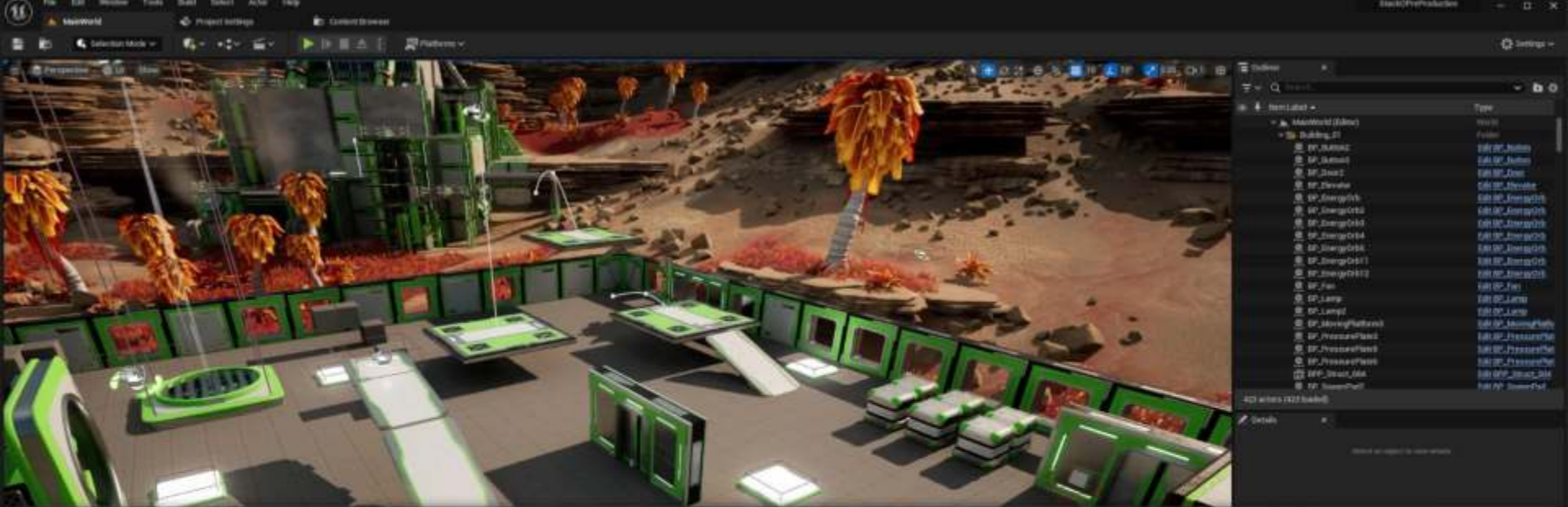
BYO Pipeline

Have your own logic in BP, CPP, or Python



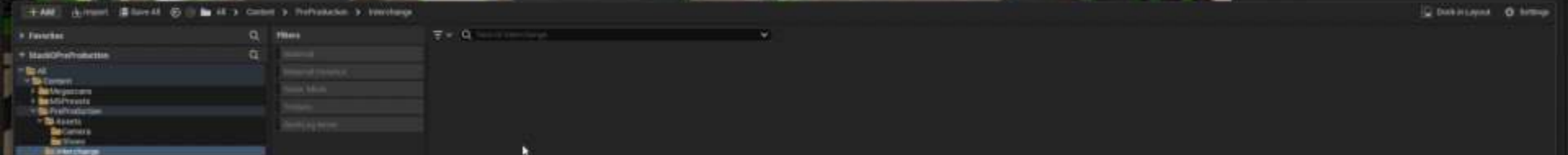
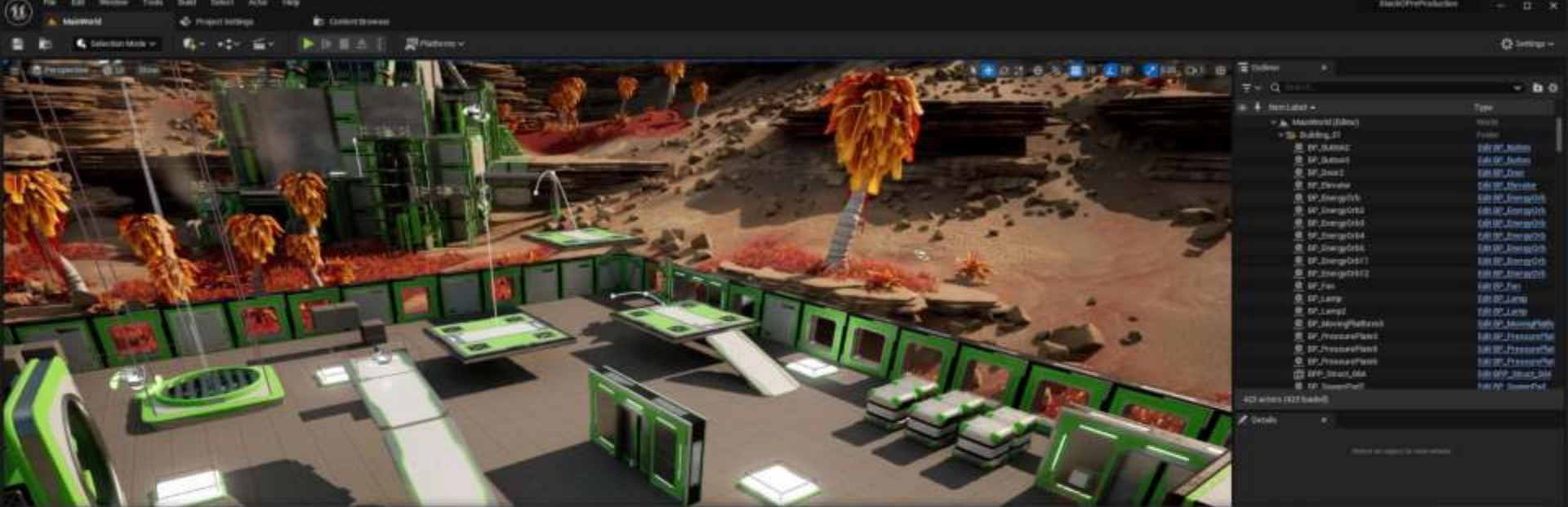
BYO Pipeline

Have your own logic in BP, CPP, or Python



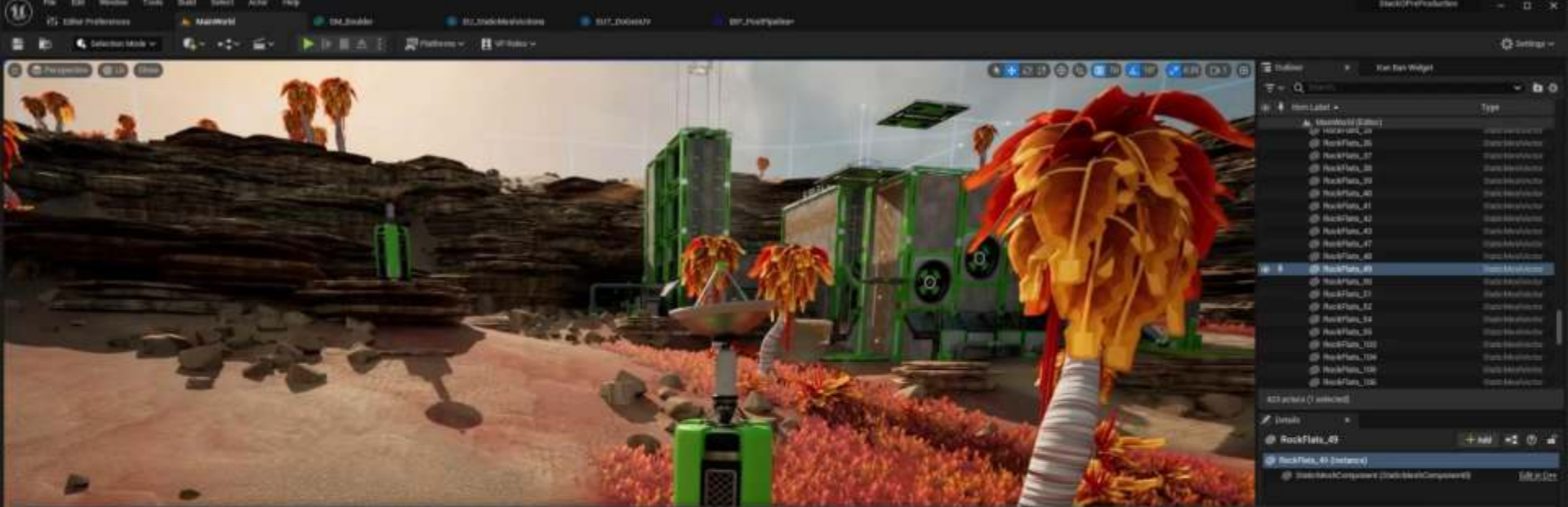
BYO Pipeline

Have your own logic in BP, CPP, or Python



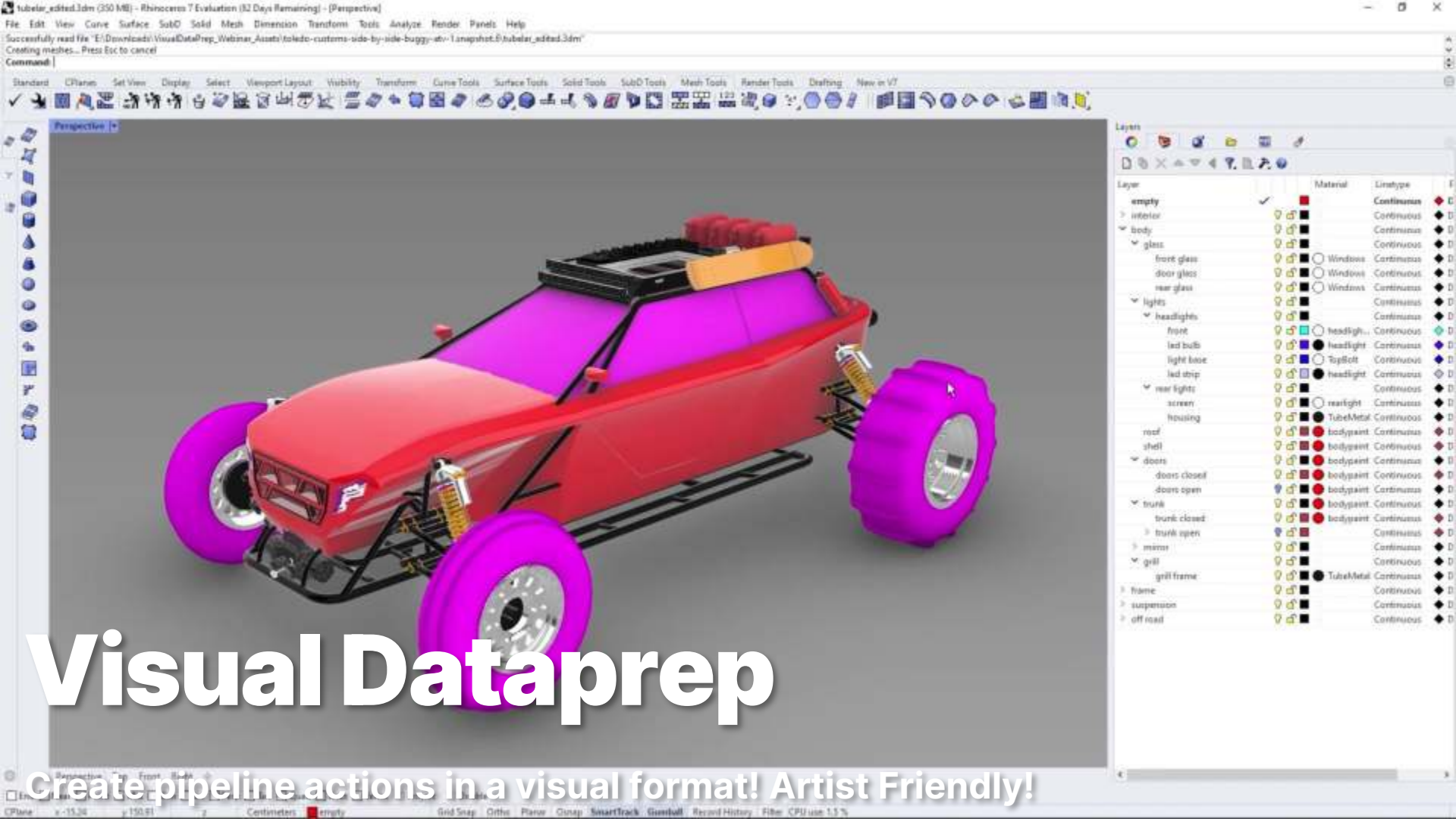
BYO Pipeline

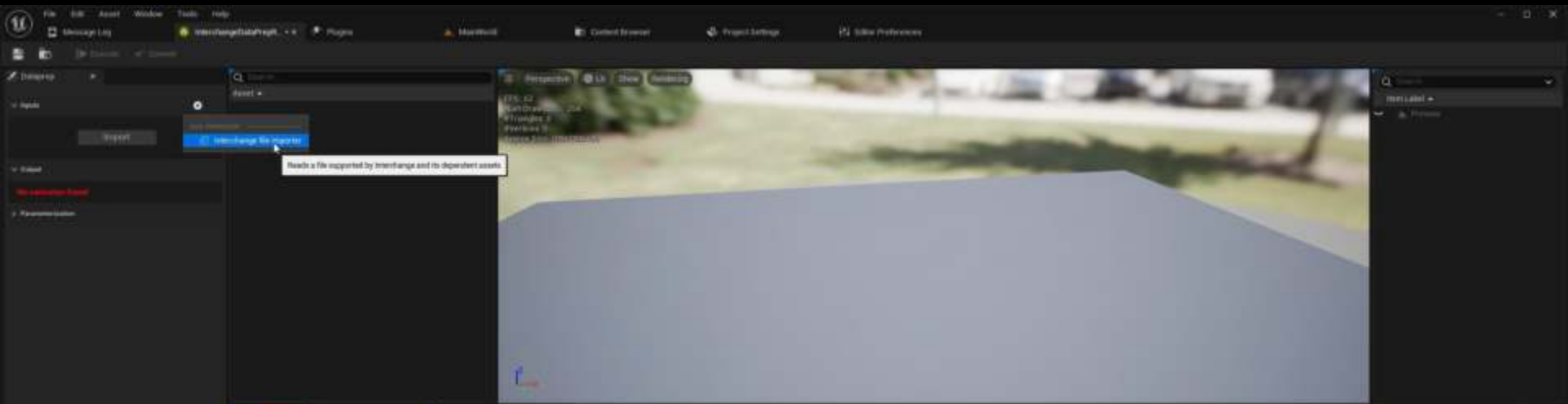
Have your own logic in BP, CPP, or Python



Scripting on Import

Its possible with Interchange as well!





Visual Dataprep

Implimented with Interchange!

Modify Factory nodes

Reuse code! Change what you need to!

A glTF Case Study



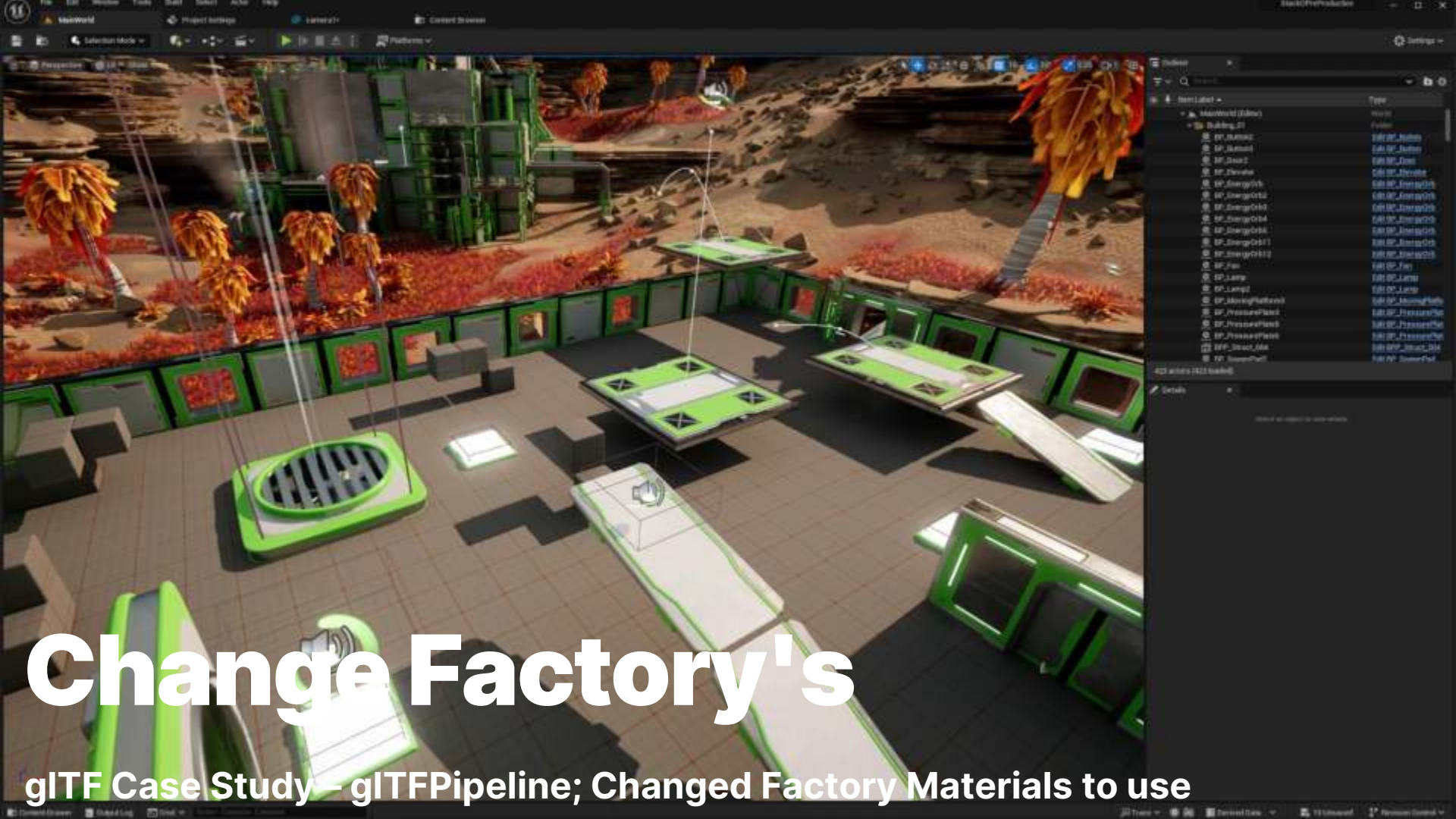
Change Factory's

gITF Case Study - Run Standard Asset Pipeline



Change Factory's

gITF Case Study - GenericLevelPipeline handle Scene



Change Factory's

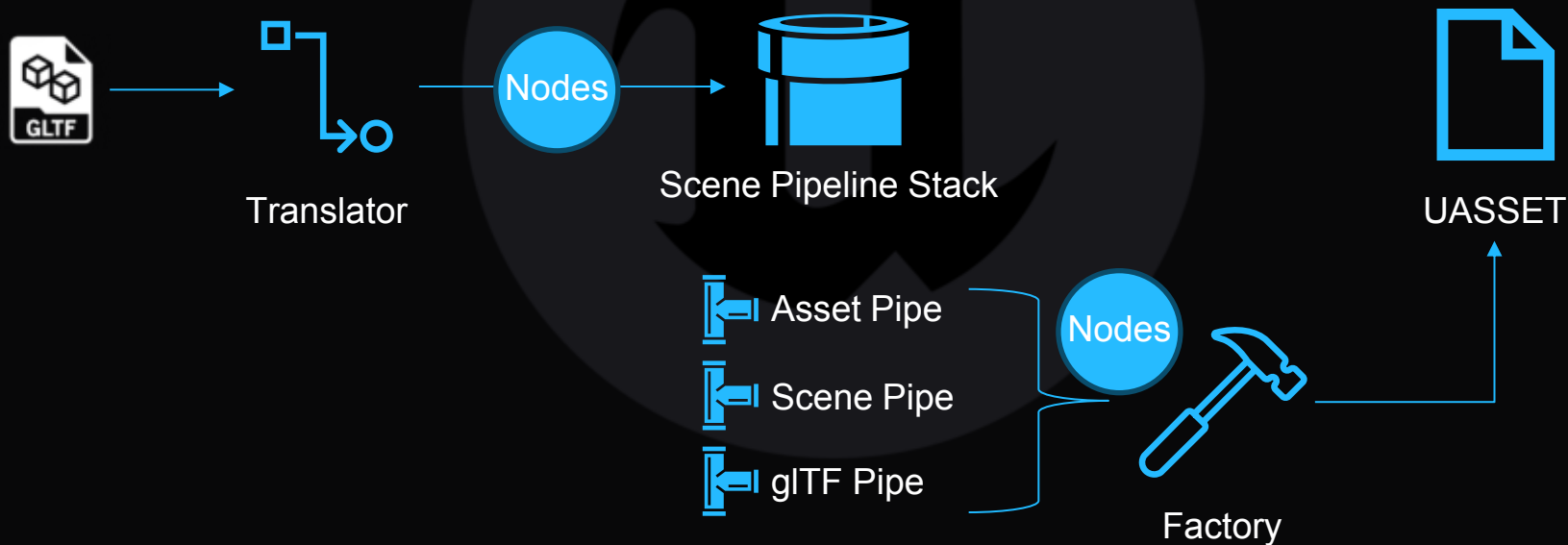
gITF Case Study – gITFPipeline; Changed Factory Materials to use



Change Factory's

gITF Case Study – Customised Via UDeveloperSettings

gITF Case Study



gITF Case Study



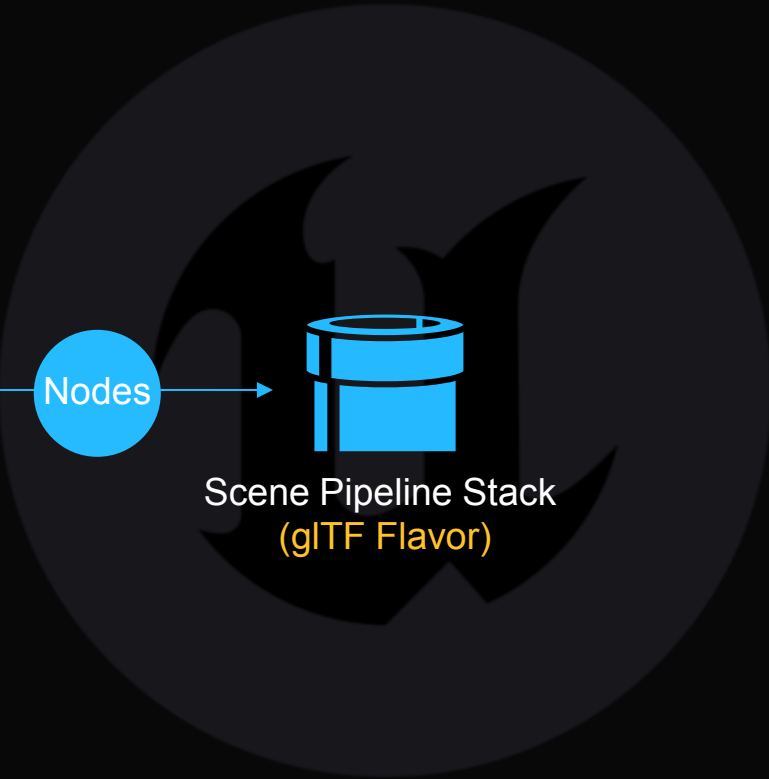
gITF Translator



Nodes



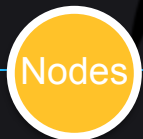
Scene Pipeline Stack
(gITF Flavor)



gITF Case Study



gITF Translator



Nodes



Scene Pipeline Stack
(gITF Flavor)

gITF Case Study



gITF Translator



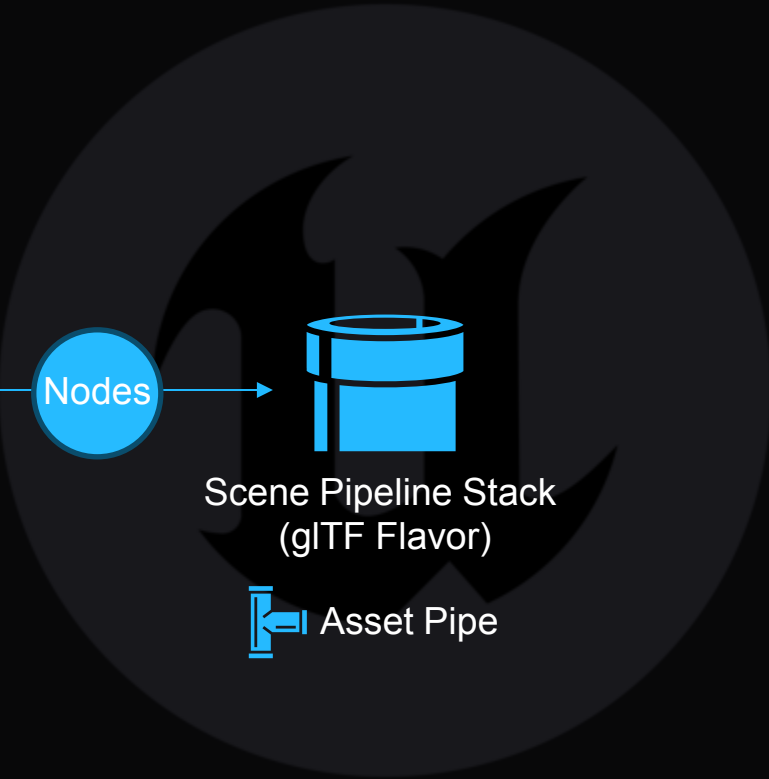
Nodes



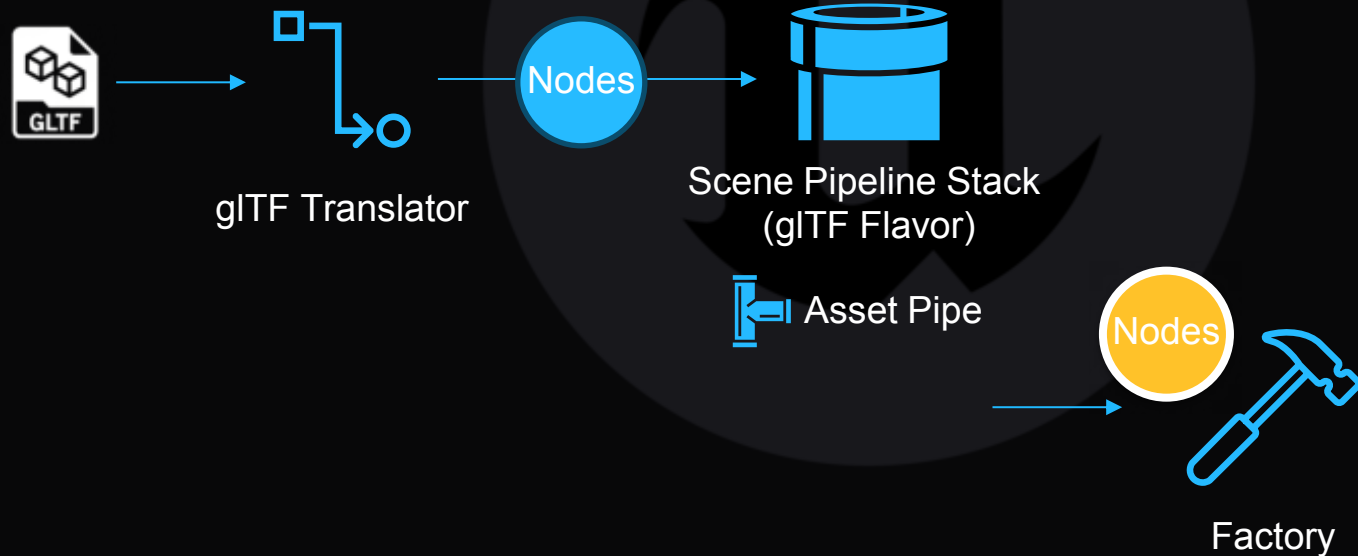
Scene Pipeline Stack
(gITF Flavor)



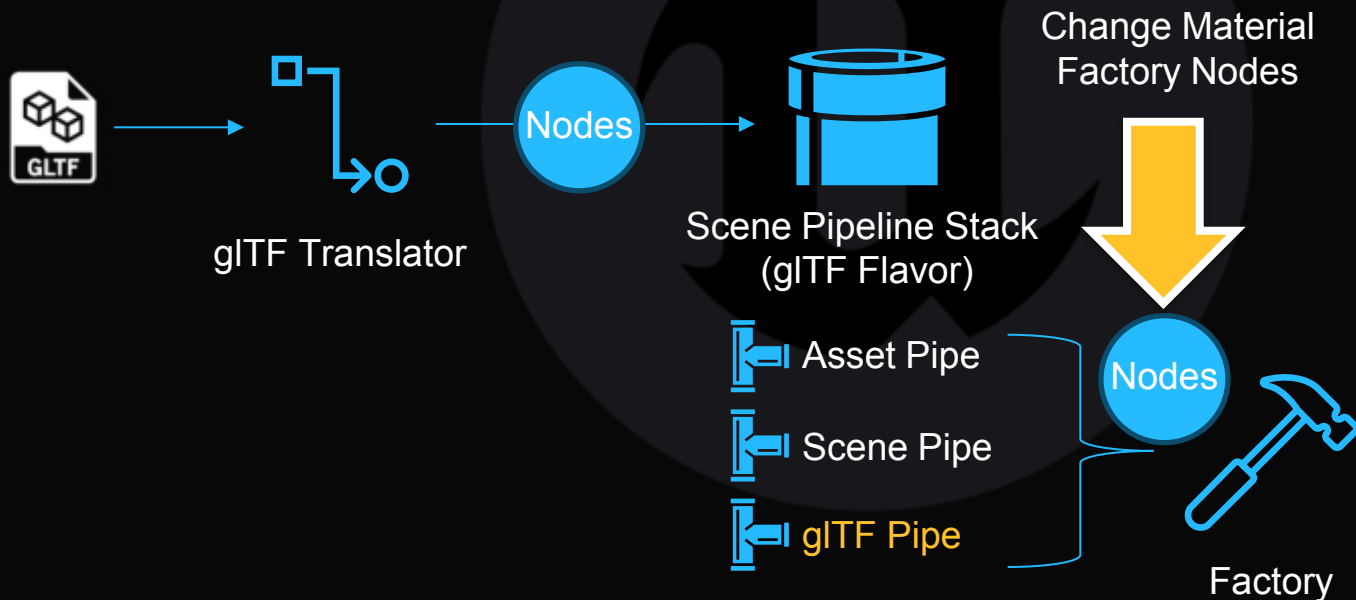
Asset Pipe



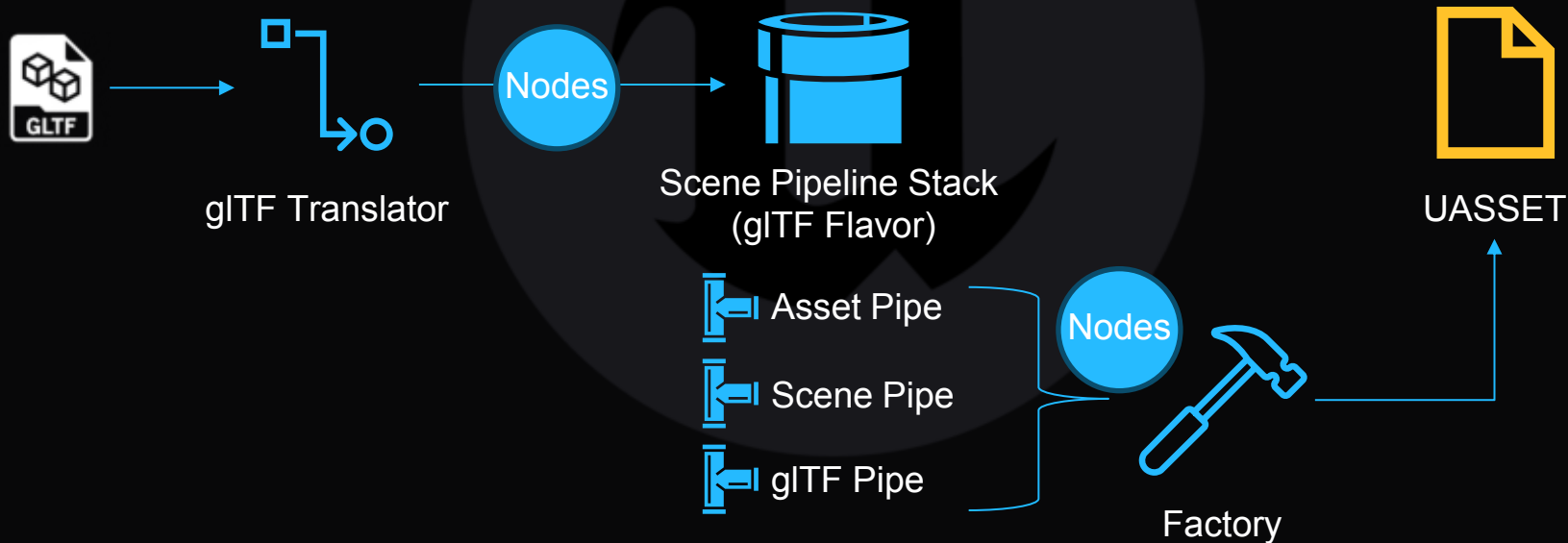
glTF Case Study



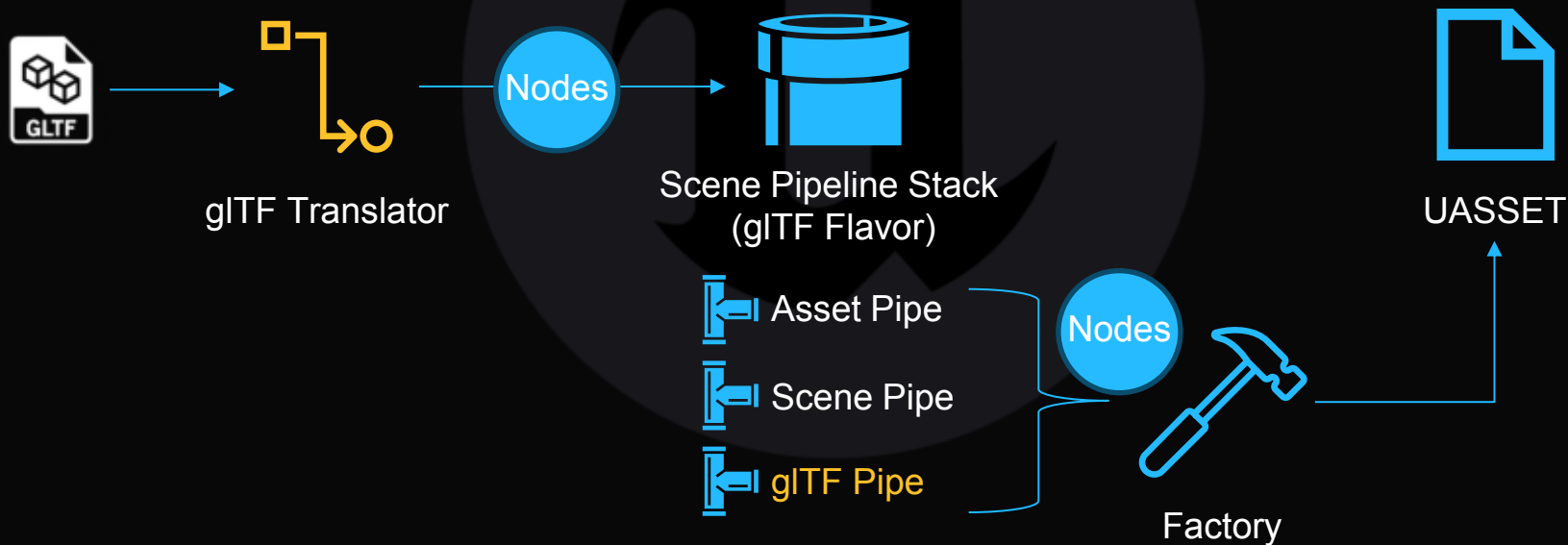
gITF Case Study

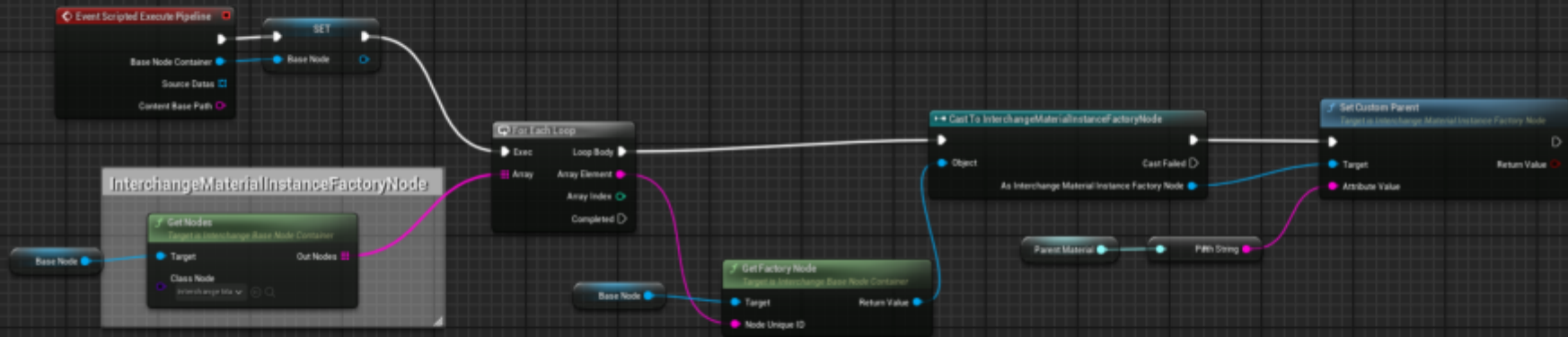


glTF Case Study



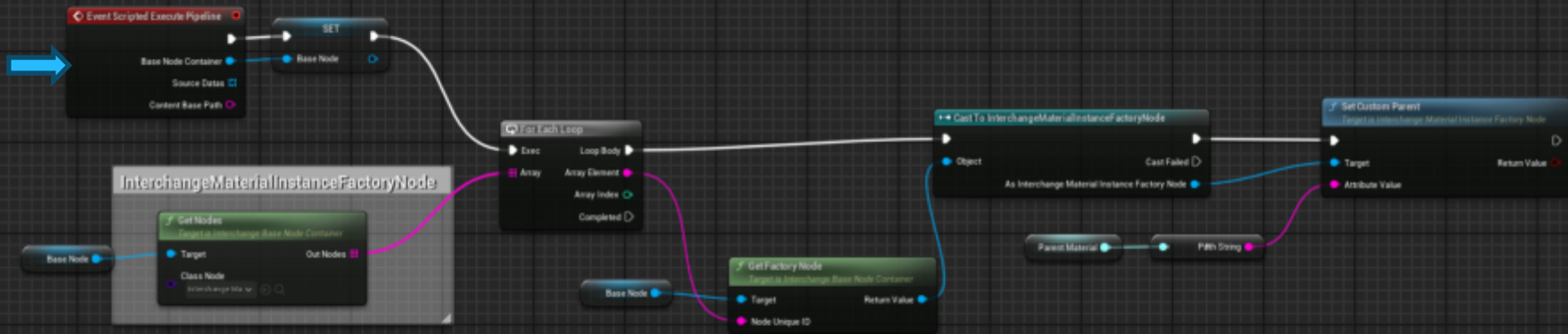
gITF Case Study





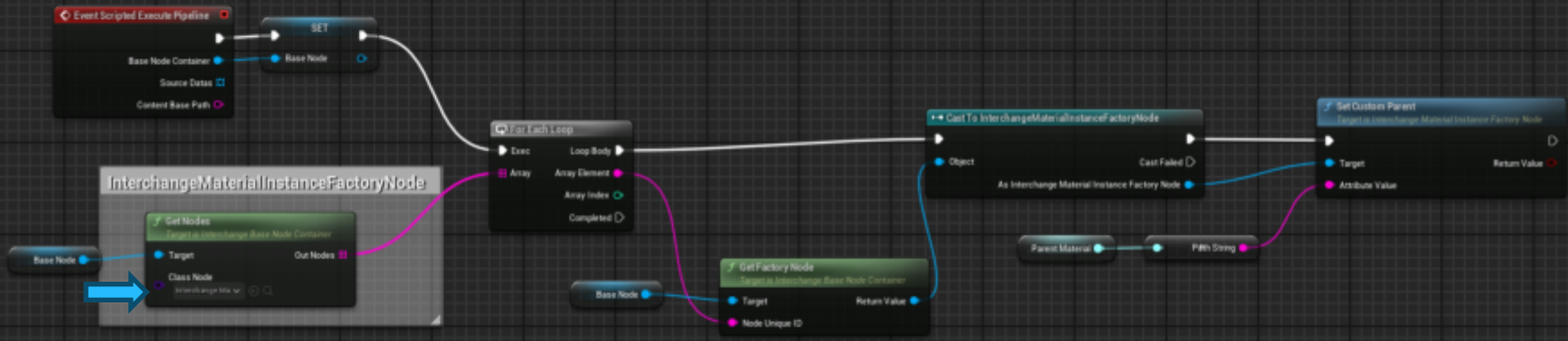
Change Factory's

Simple Blueprint Example, Replace Material Parent



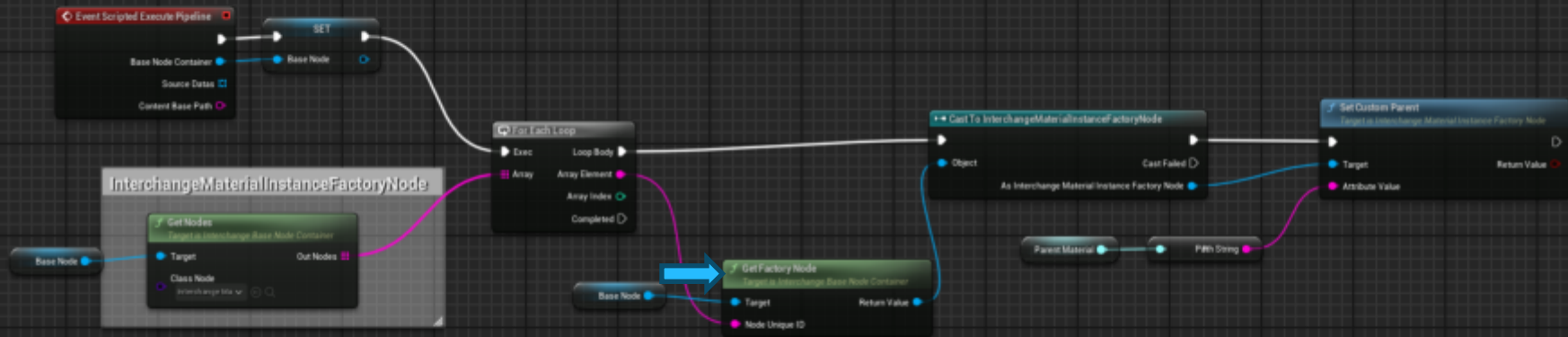
Change Factory's

Simple Blueprint Example, Replace Material Parent



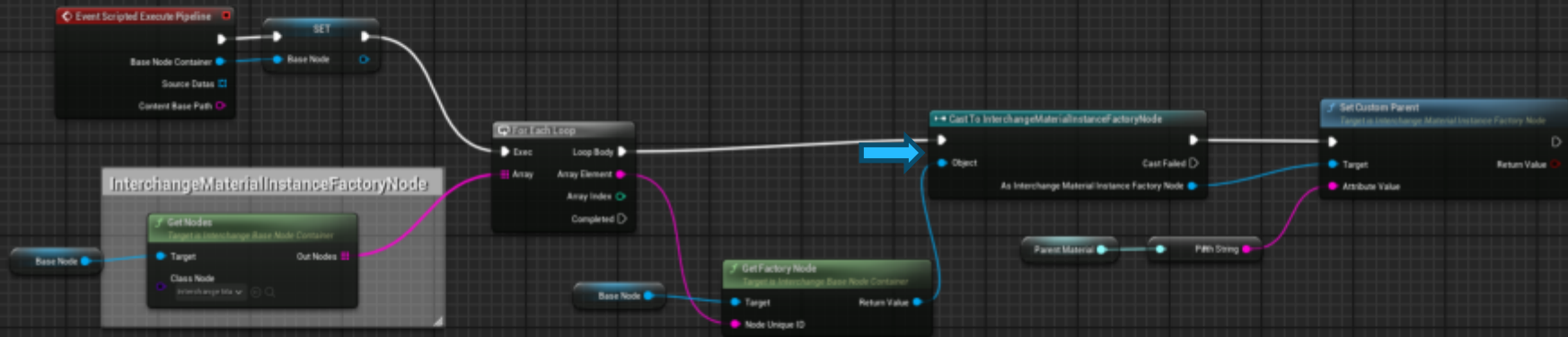
Change Factory's

Simple Blueprint Example, Replace Material Parent



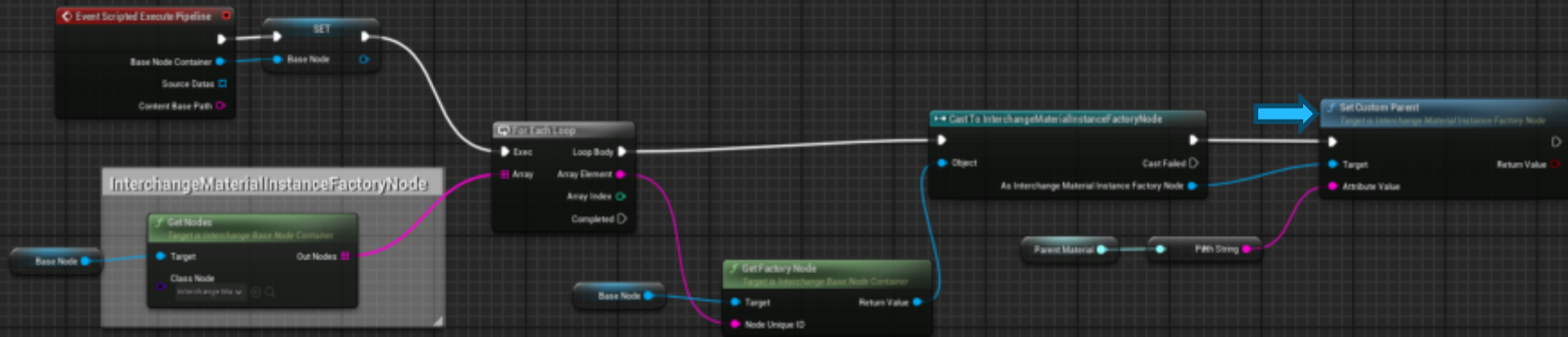
Change Factory's

Simple Blueprint Example, Replace Material Parent



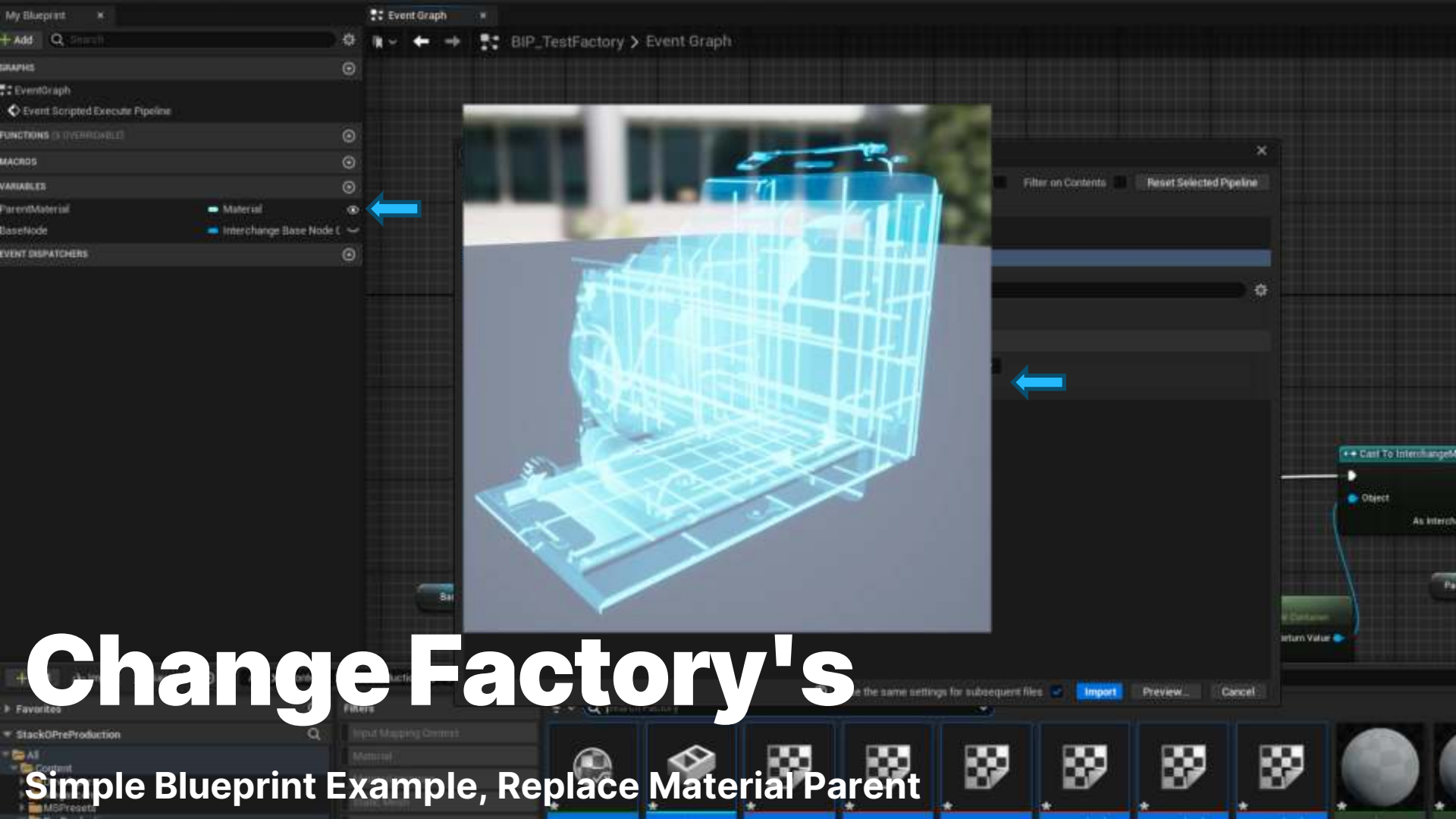
Change Factory's

Simple Blueprint Example, Replace Material Parent



Change Factory's

Simple Blueprint Example, Replace Material Parent



Change Factory's

Simple Blueprint Example, Replace Material Parent

Cool Use Cases for your own Pipelines

- Set correct parent Material Instances to take the guess work out of your art pipeline
- Create derived assets such as creating DataAssets or Foliage
- Perform geometry modifications for your art pipeline



Metadata

And how it can help

Metadata & the Asset Registry

- [Asset Metadata](#) & Metadata in the [Asset Registry](#) **are not the same.**
- Both are useful tools depending what your doing!
- Asset Metadata can be [set In editor OR your DCC](#) and read during / post import.
- Asset Metadata is saved to the [UASSET file on disk](#). This means
 - The Asset must be [loaded](#) in order to read the Data.
 - The asset is [Dirtied](#) if the Metadata changes.

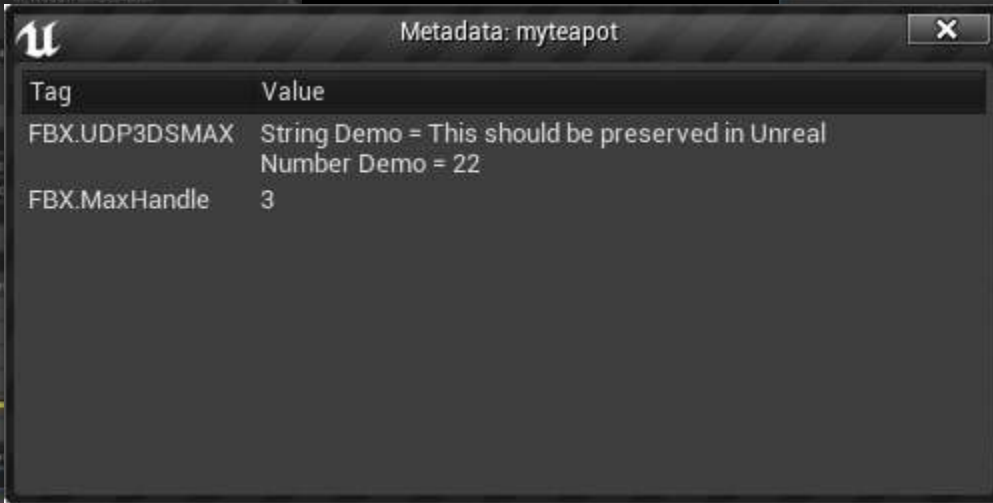
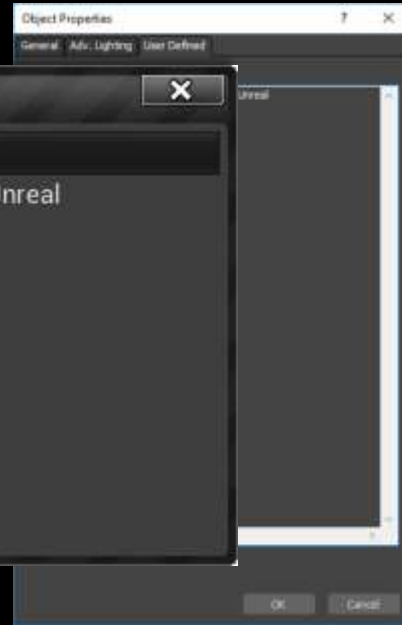


Meta data from your DCC

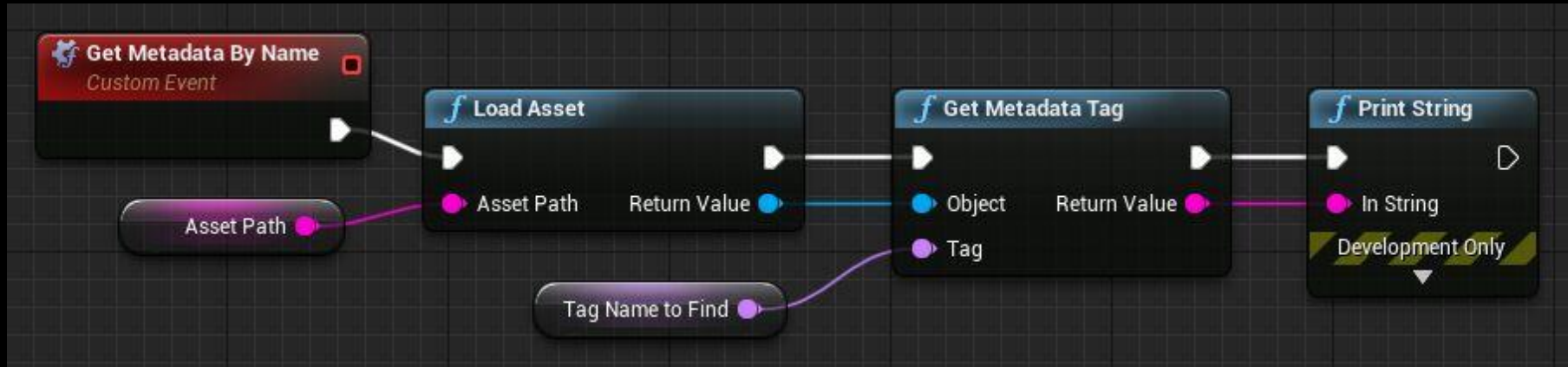
Maya



3ds Max

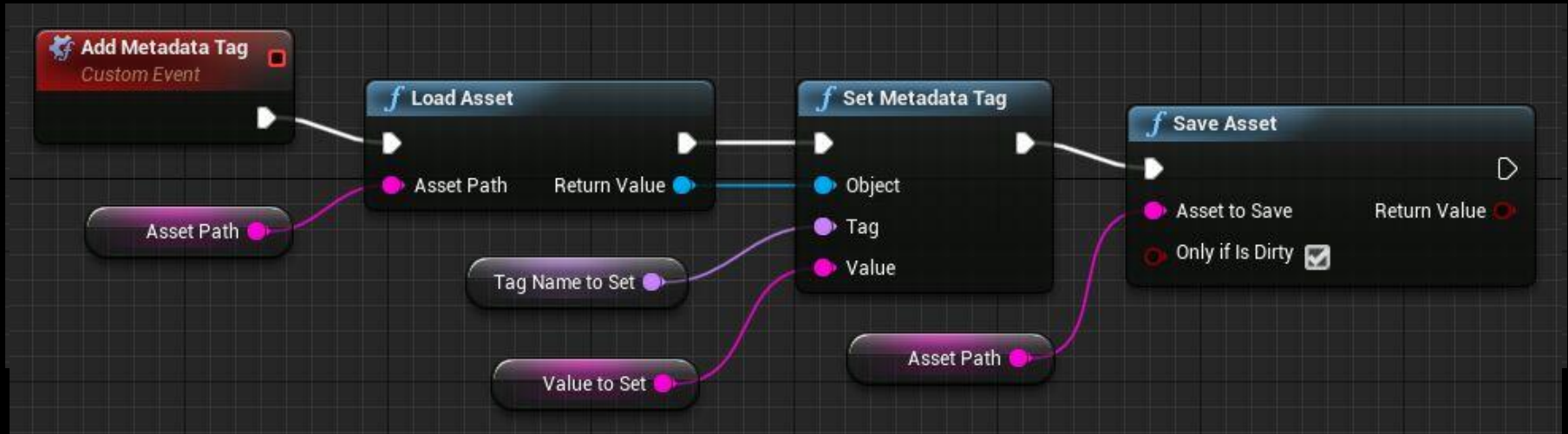


Get MetaData

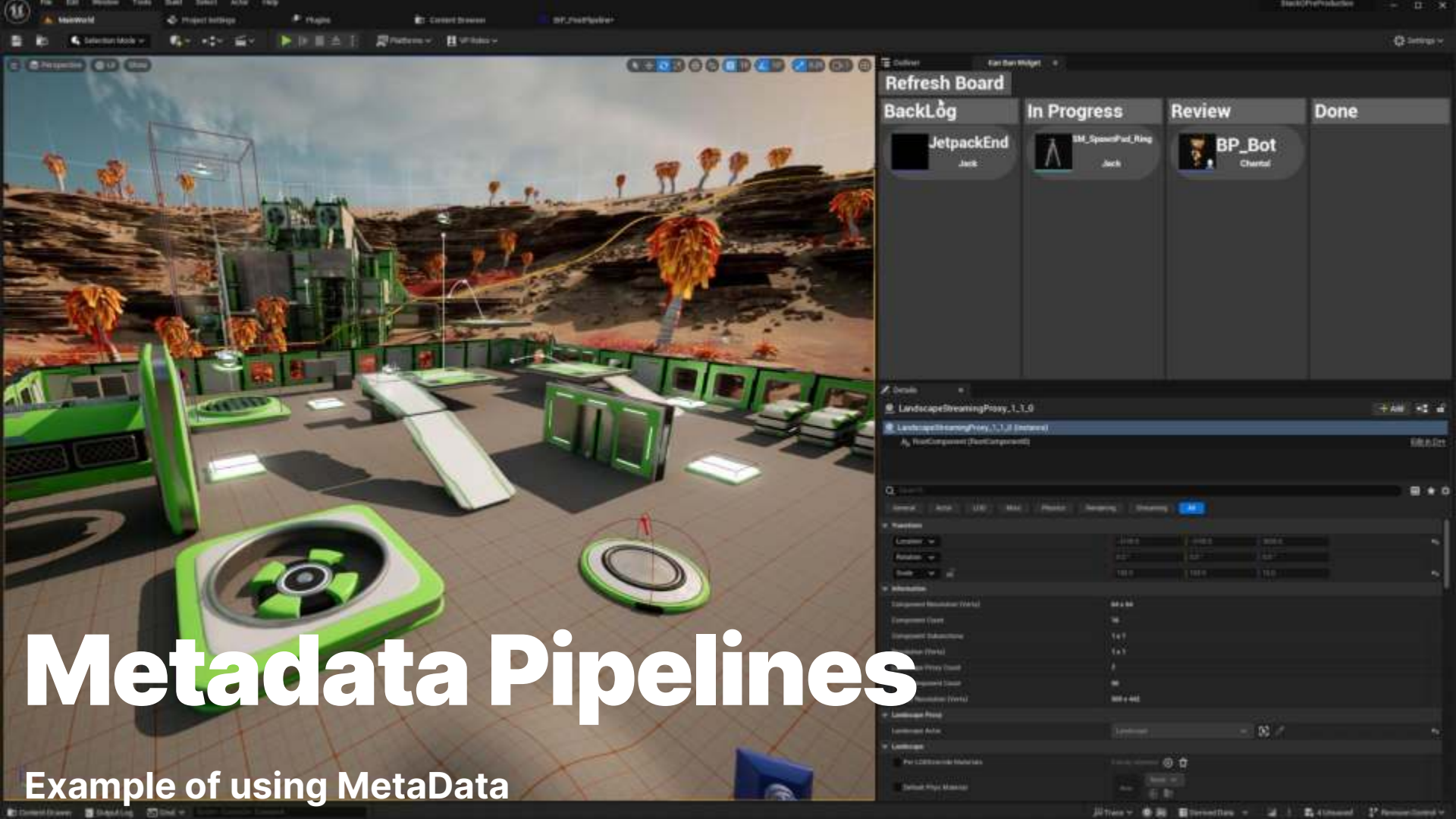


To use these nodes, your Blueprint class must be derived from an Editor-only class, such as the `PlacedEditorUtilityBase`

Set Metadata

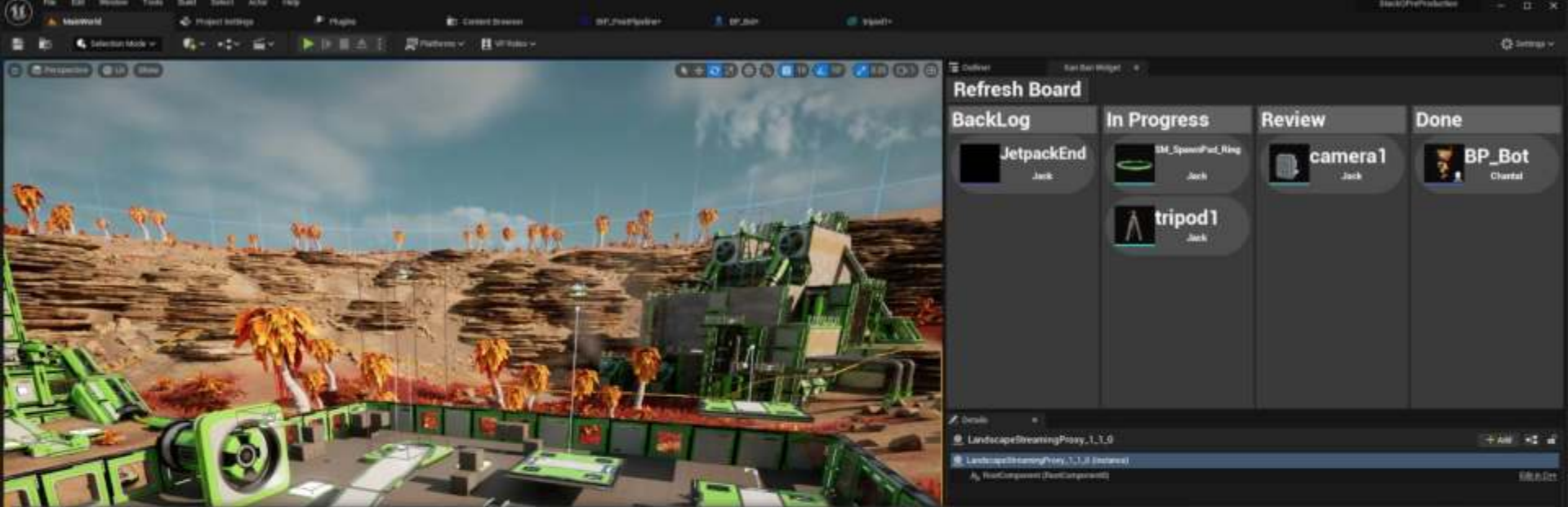


To use these nodes, your Blueprint class must be derived from an Editor-only class, such as the `PlacedEditorUtilityBase`



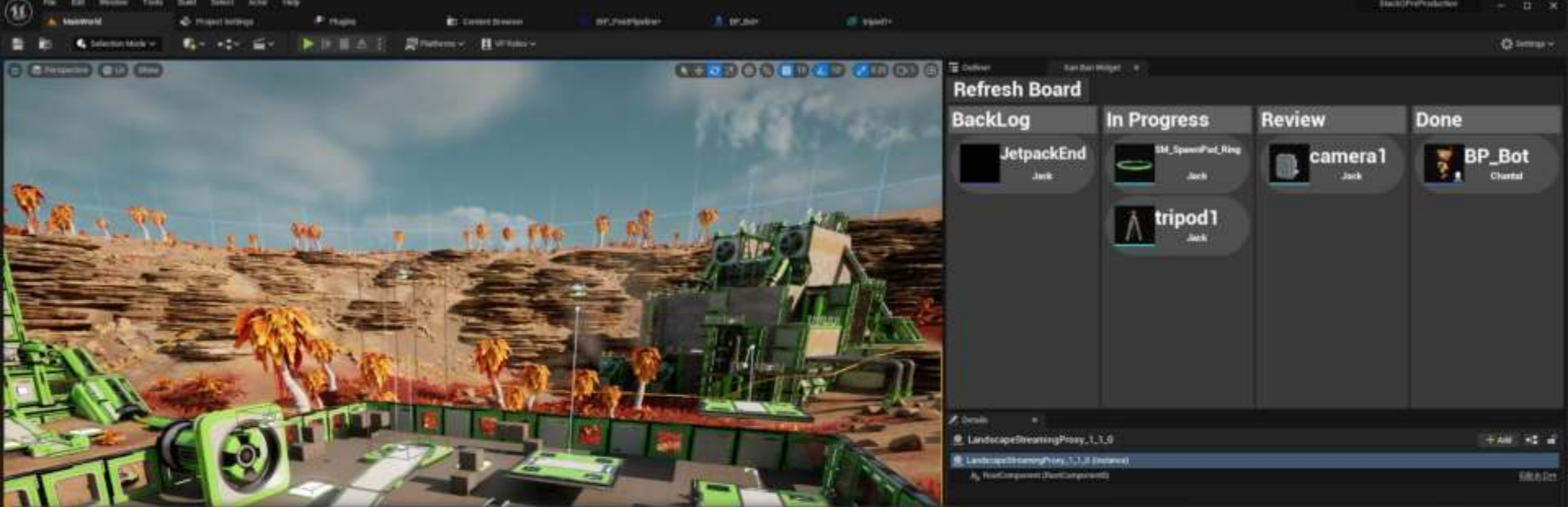
Metadata Pipelines

Example of using MetaData



KanBan Example

Case study of Asset Registry x MetaData

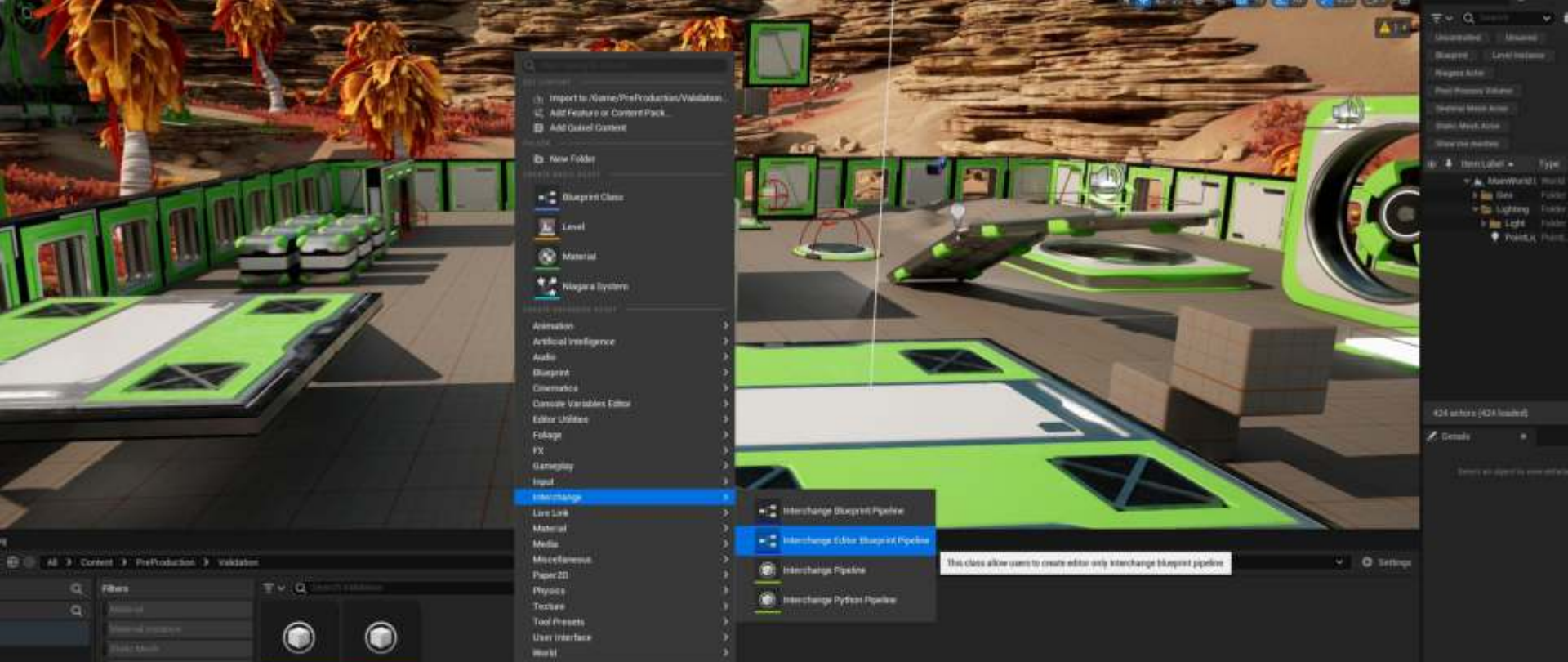


KanBan Example

Case study of Asset Registry x MetaData

Note! Interchange is
Runtime, meaning you
won't have access to BP
editor only functions

But we are working on it! (psst; its in main already)



Editor Pipelines

Available in UE 5.5

Asset Registry Data

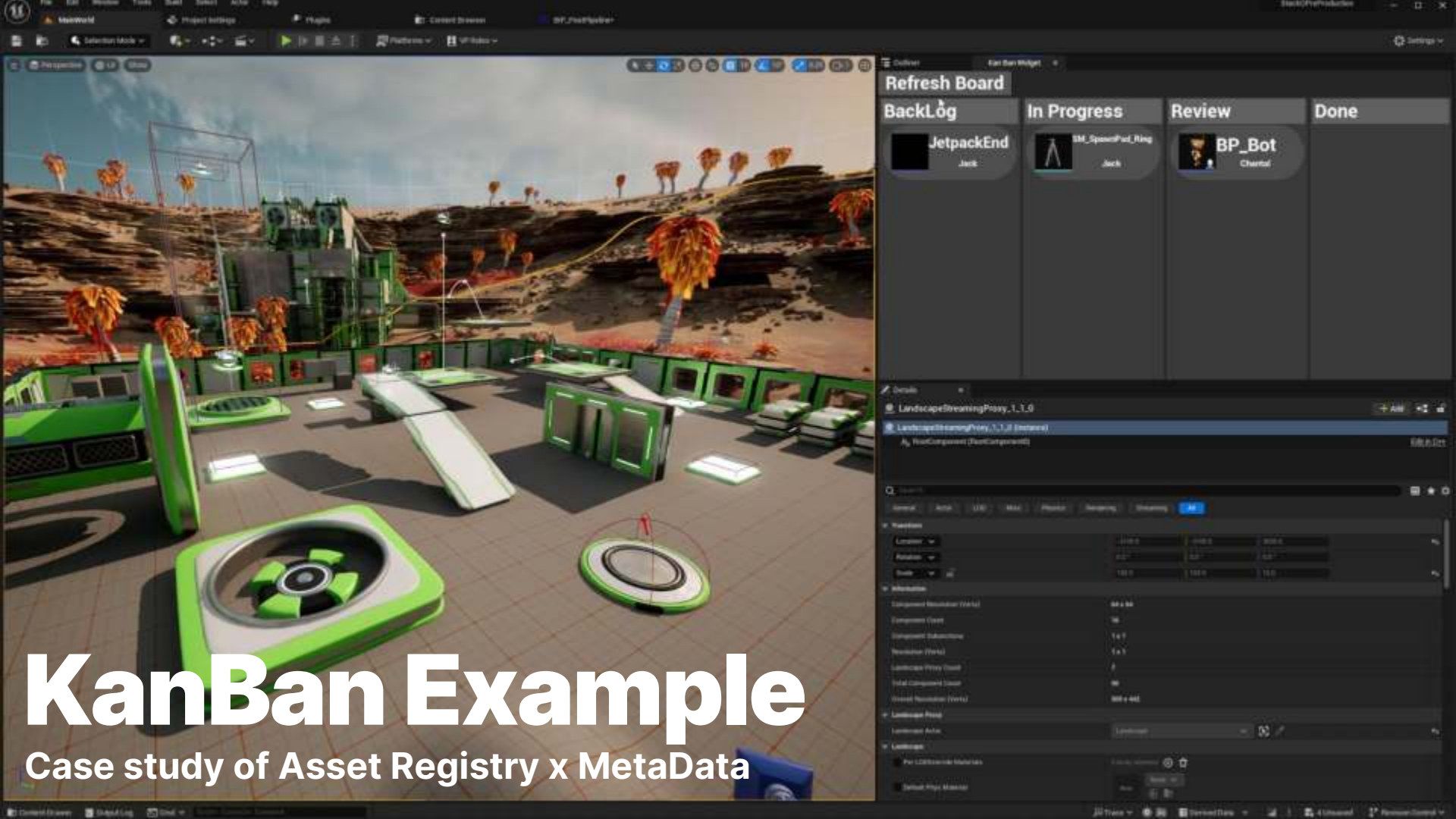
- Is not Asset MetaData (Although it is metadata)
- The [Asset Registry](#) is built side by side to our [UASSETS](#). It is generated on each machine based on rulesets. Because of this;
 - It can be [used without loading](#) the asset.
 - It is based on derived information based on rulesets-
- It can be [used at Runtime too!](#)



Asset Registry

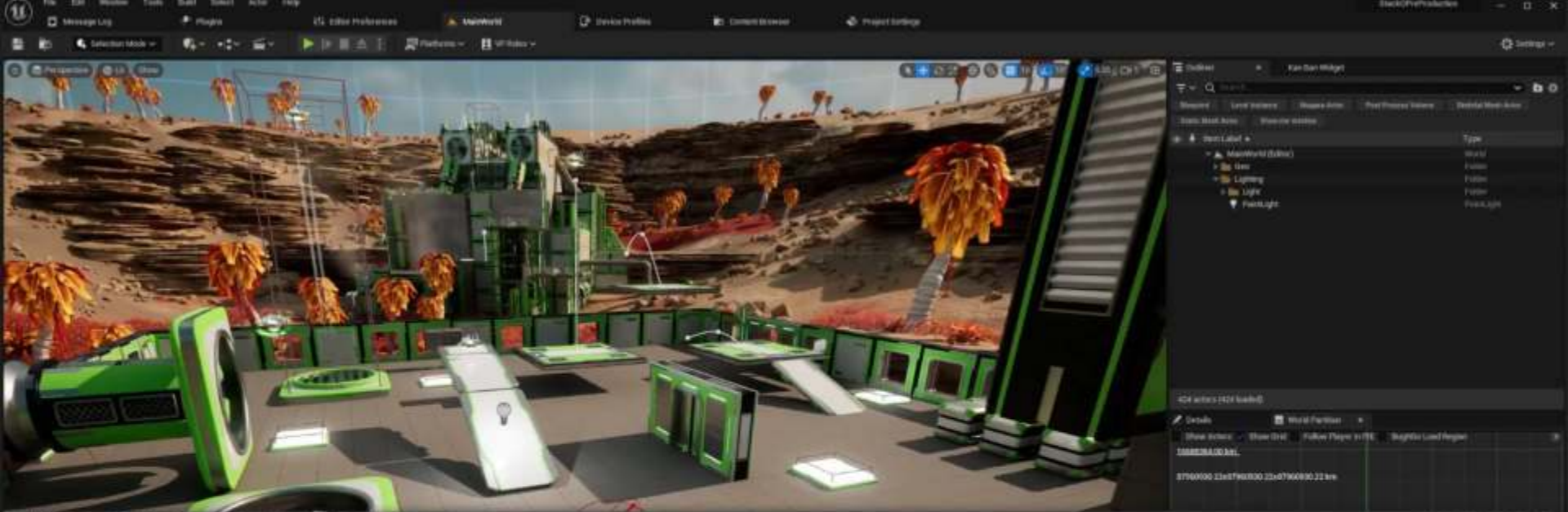
Useful for selected assets without loading them!





KanBan Example

Case study of Asset Registry x MetaData

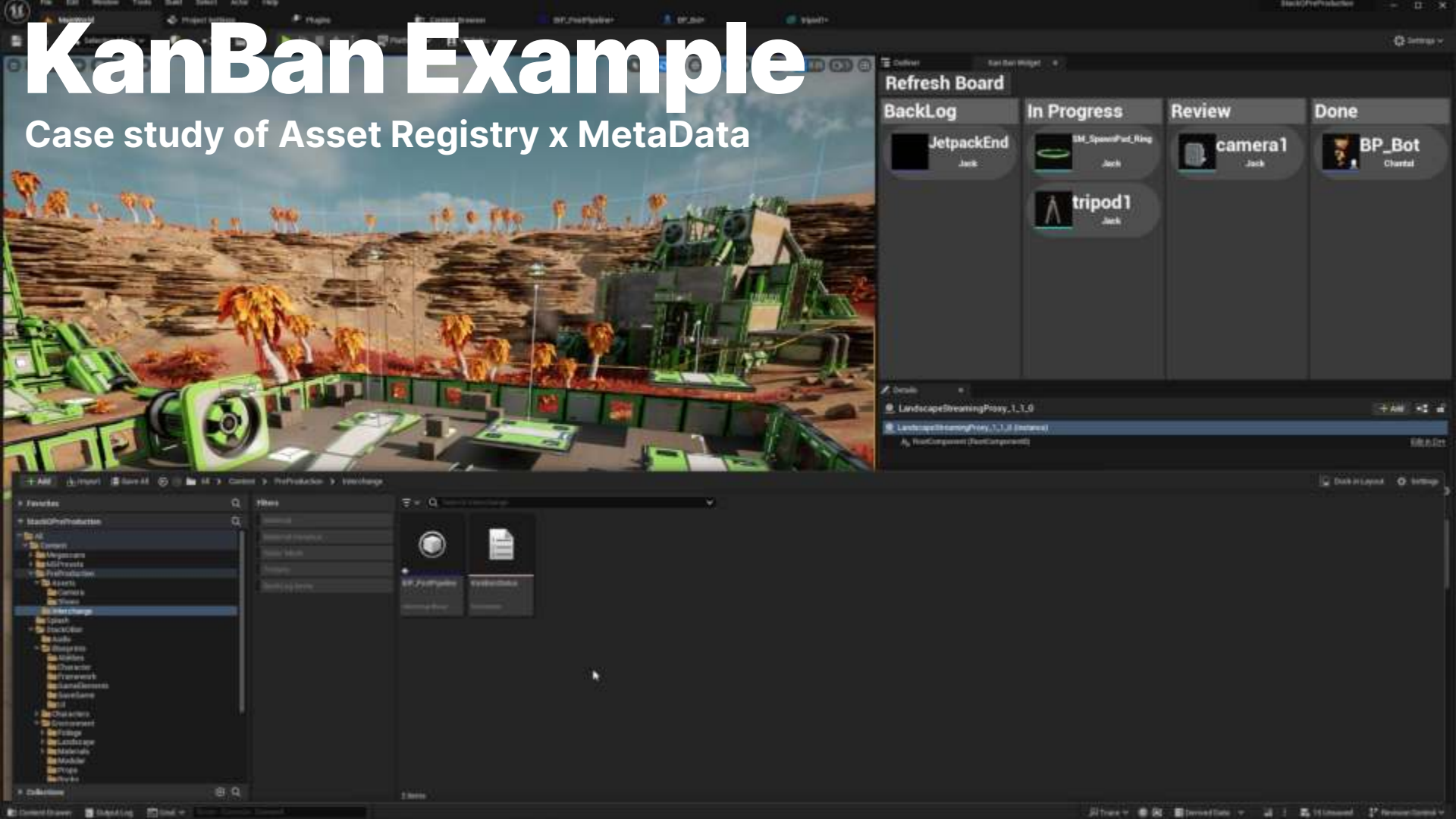


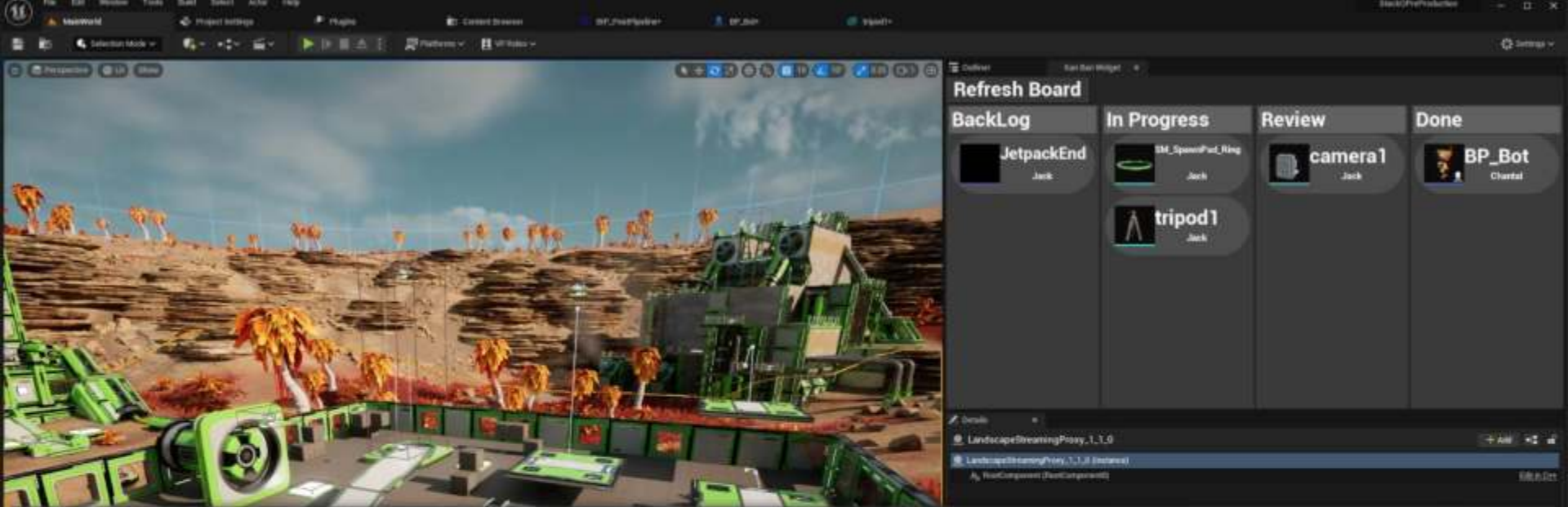
KanBan Example

Case study of Asset Registry x MetaData

KanBan Example

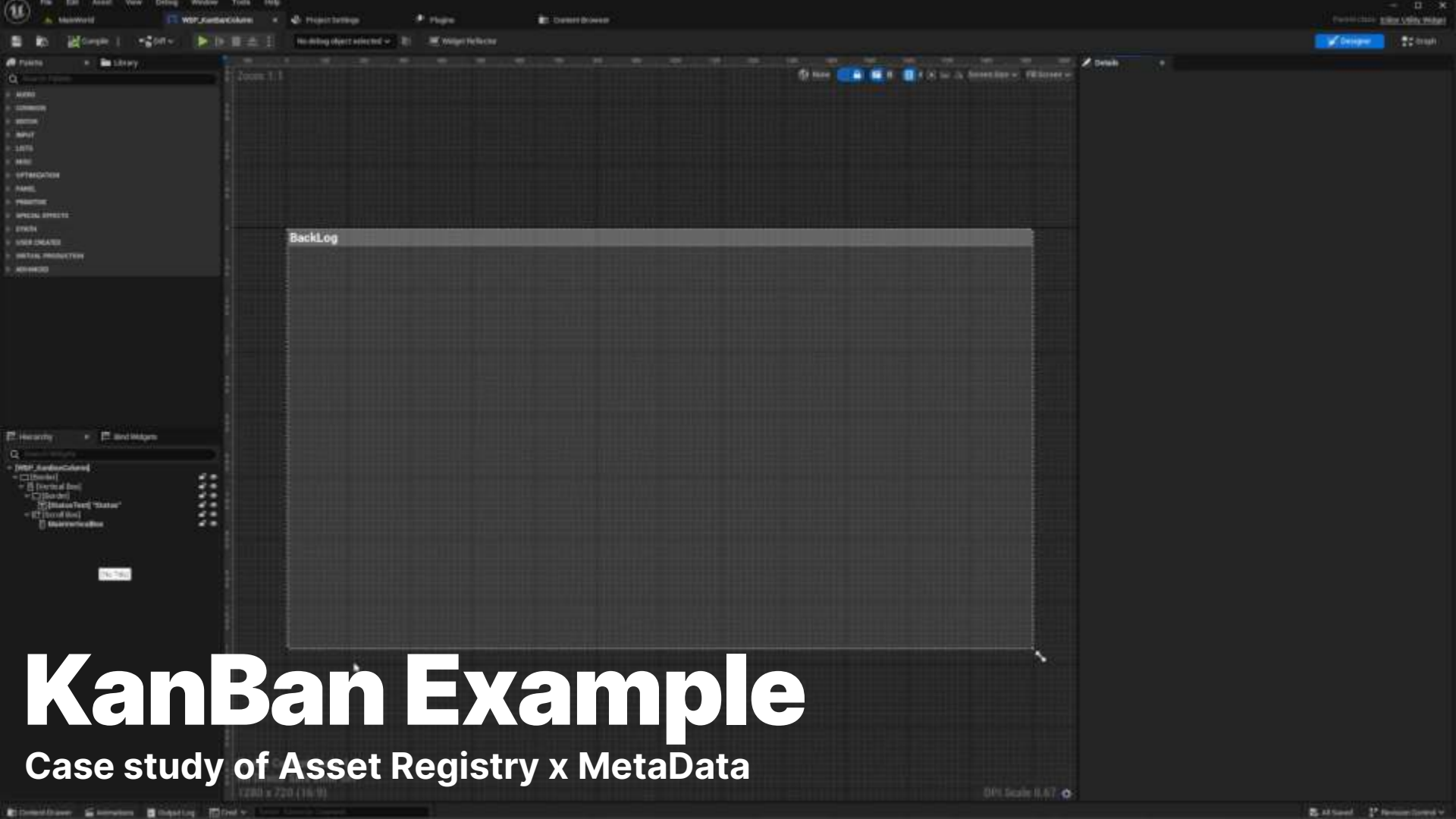
Case study of Asset Registry x MetaData





KanBan Example

Case study of Asset Registry x MetaData



KanBan Example

Case study of Asset Registry x MetaData

Other Metadata UseCases

- Set Material Instances based on MetaData
- Use MetaData in Visual Dataprep
- Execute Geometry tools.



Interchange & Validation

Just because we can, should we?

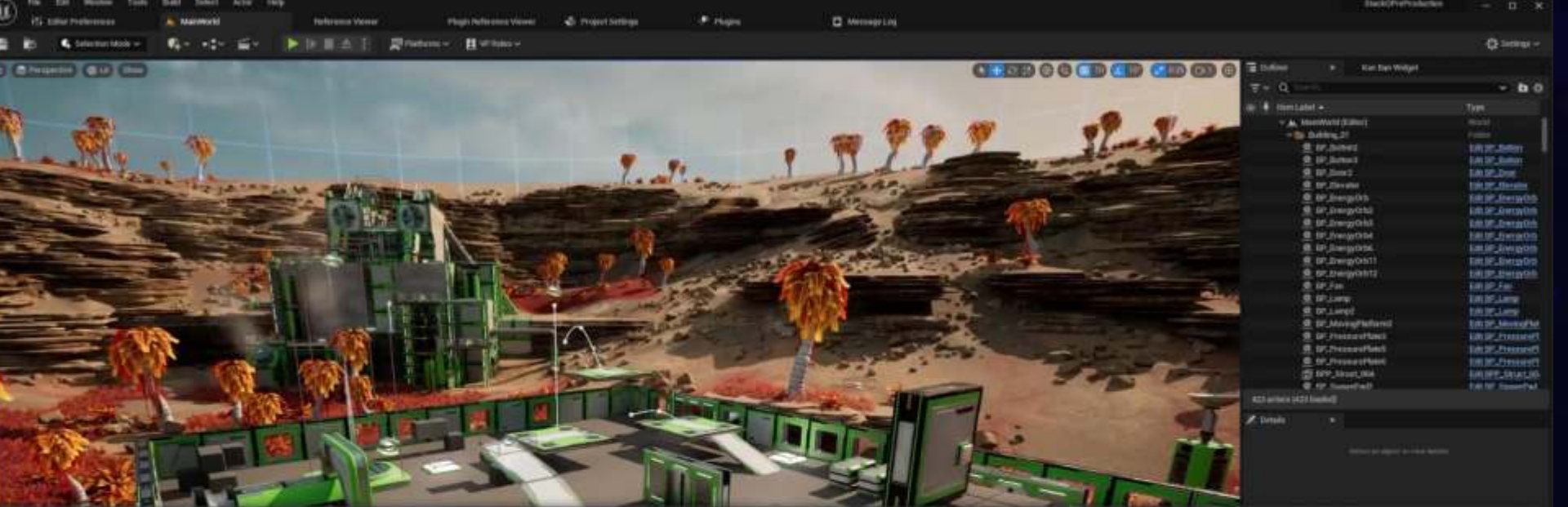
Asset Validation

The right tool for the right job

Asset Validation Plugin

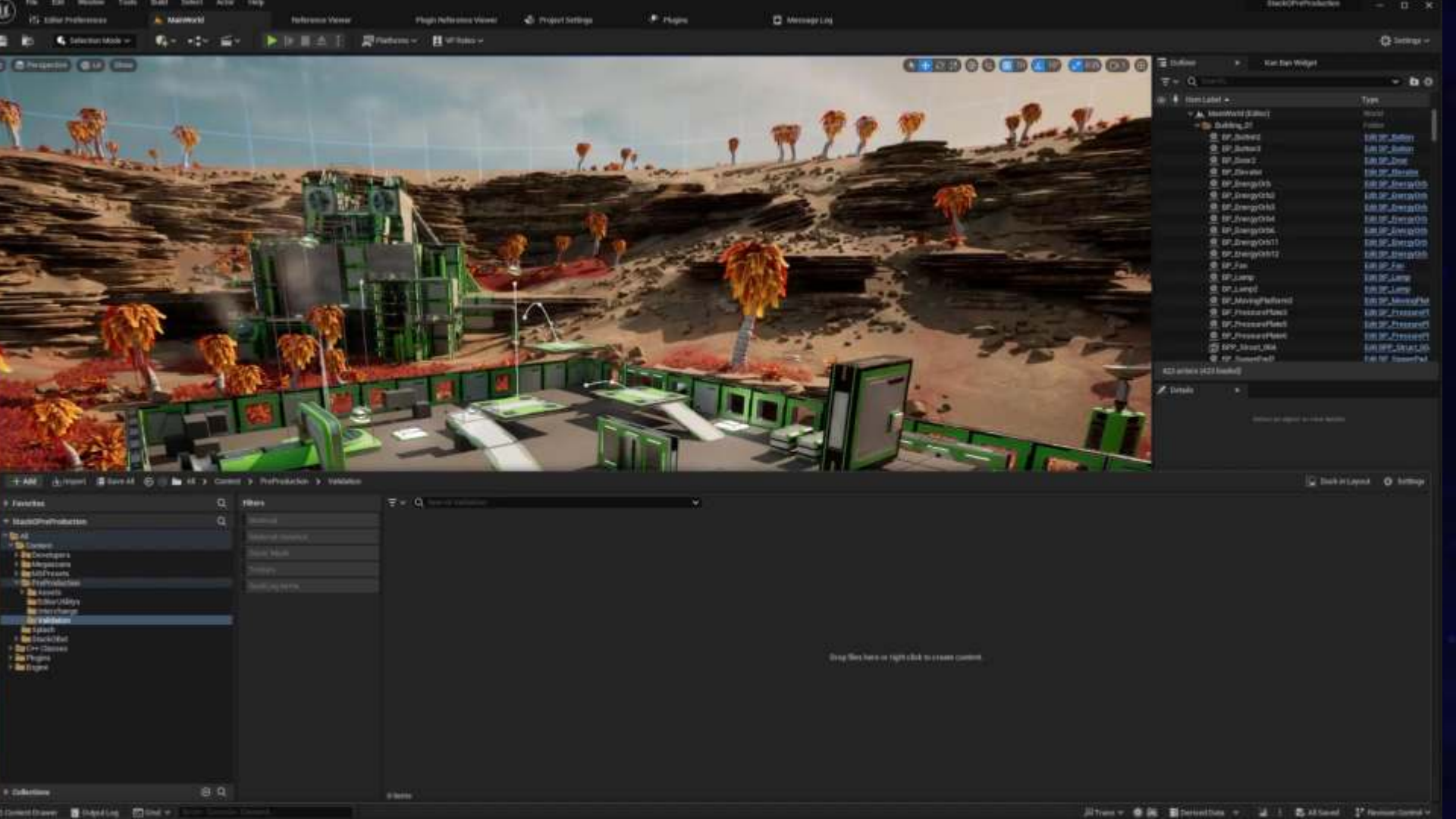
- Framework for validating assets on demand.
- Blueprint & CPP
- Very customizable, can be applied by overriding any Uobjects IsDataValid function- Or create your own rules in a UEditorValidatorBase
- Can be executed from Editor (On save, On pre-commit etc)
- Can be executed from Commandline (for automation)

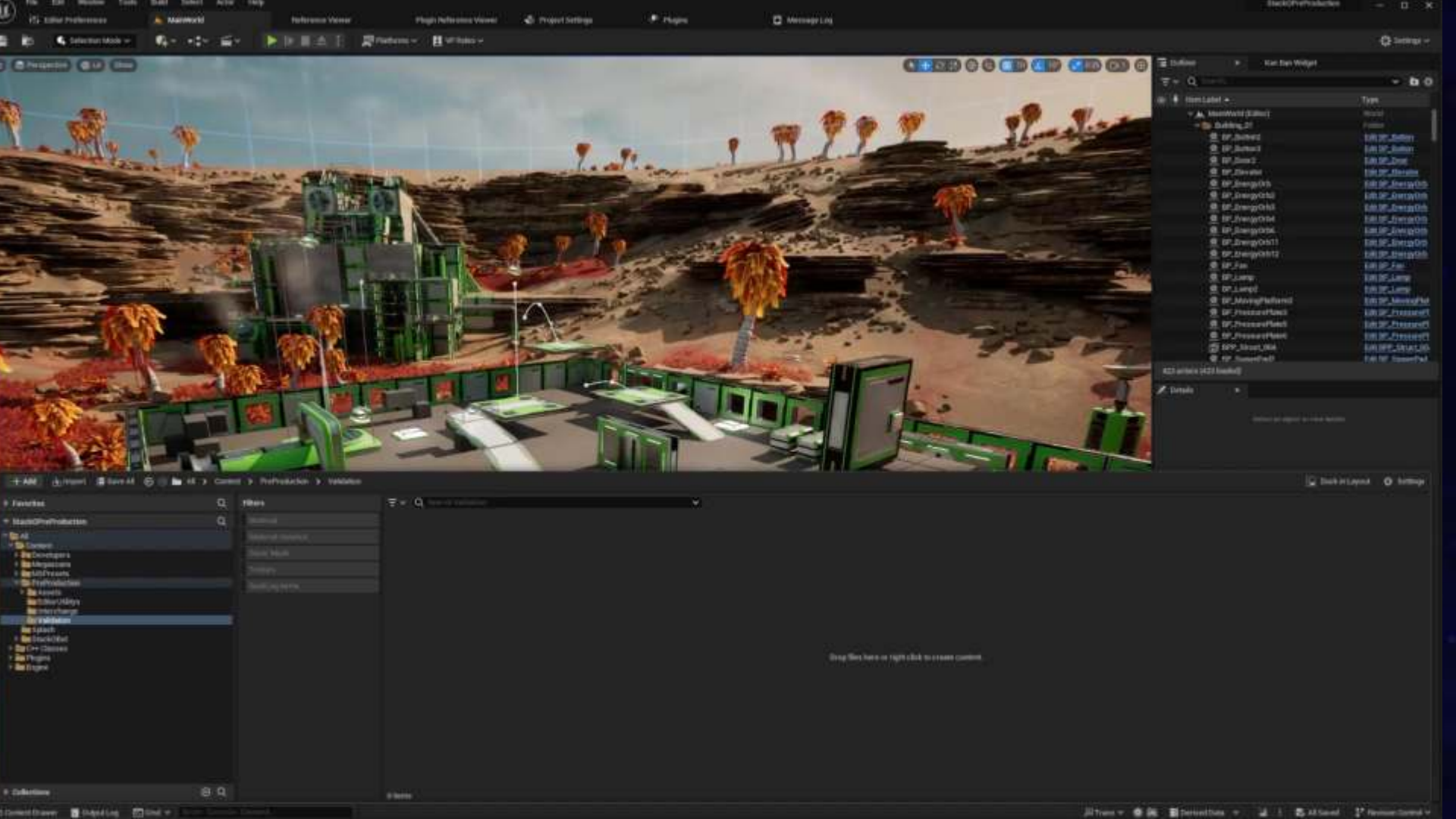


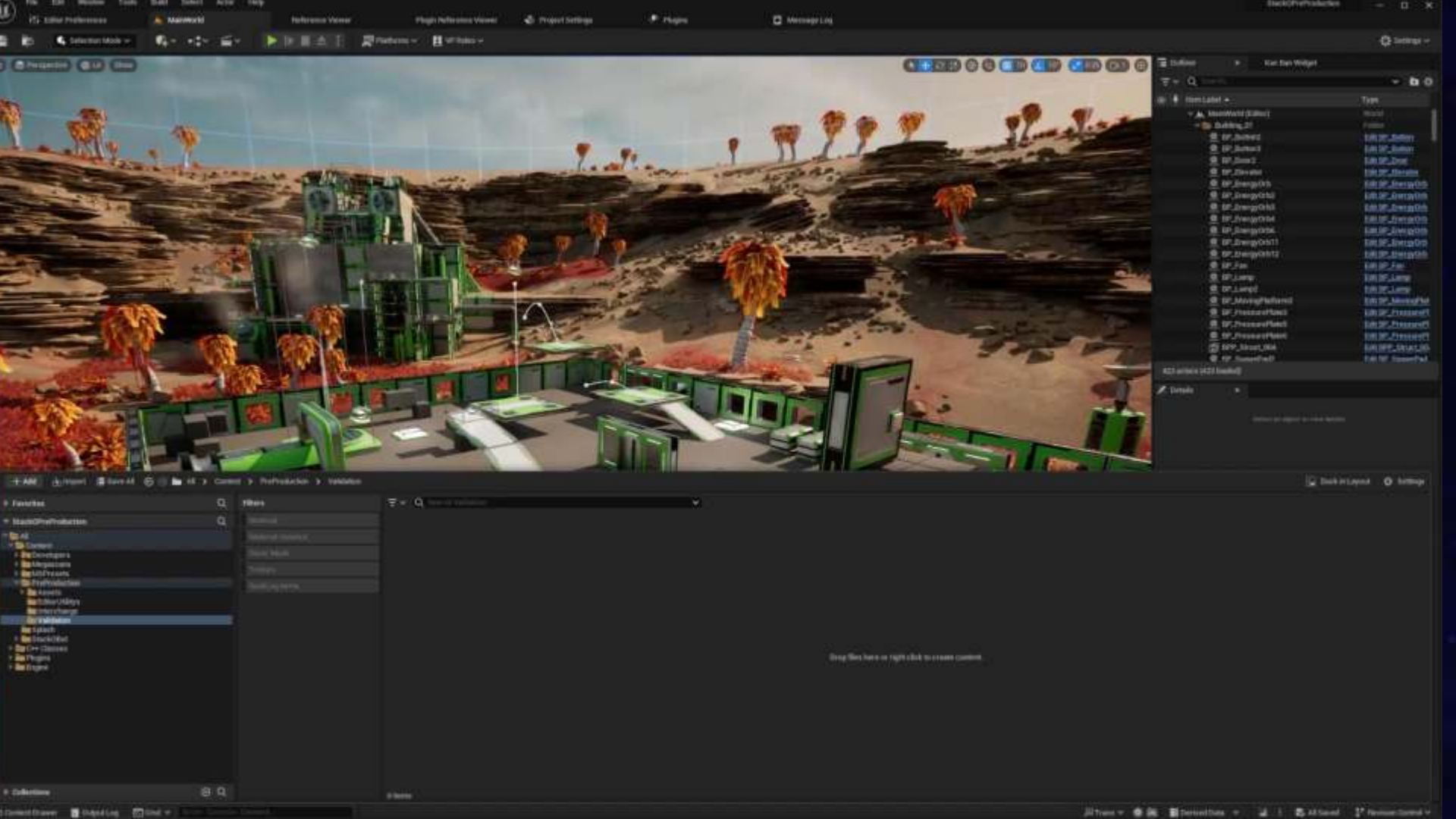


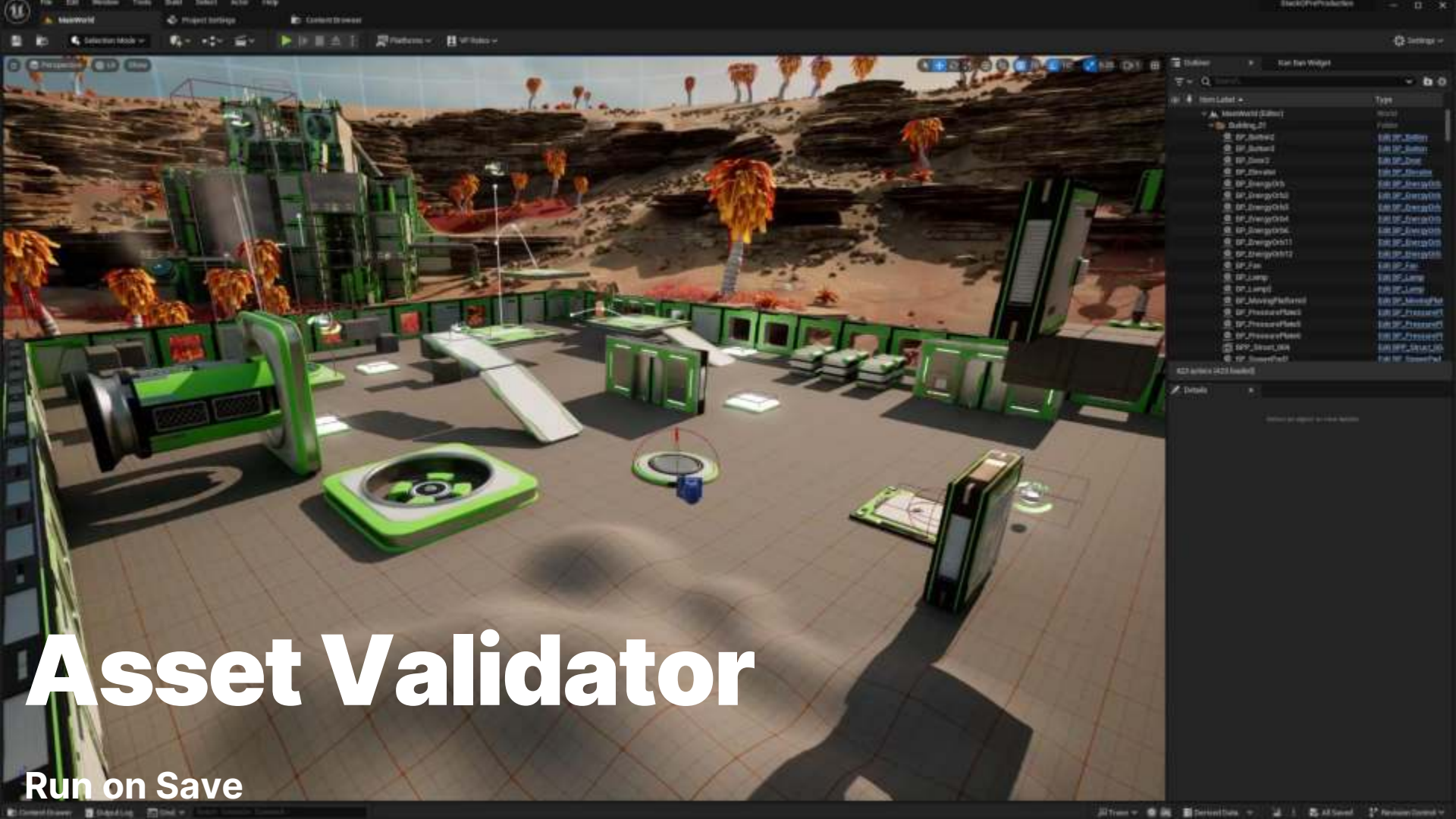
Asset Validator

Create your own









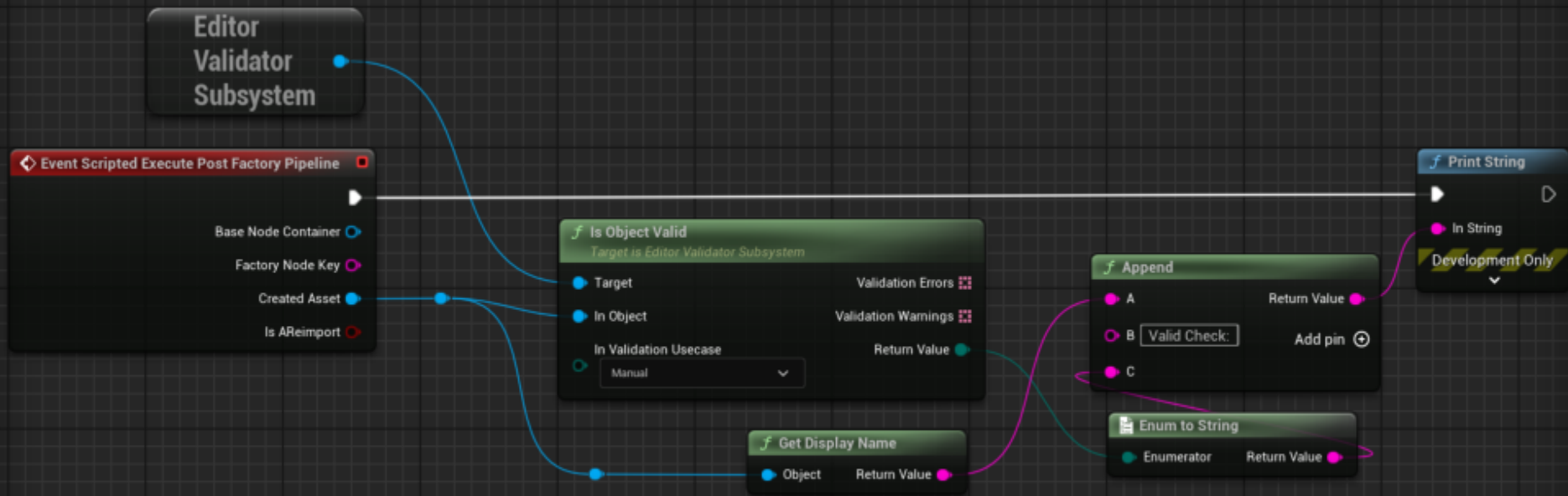
Asset Validator

Run on Save

Item Label	Type
AssetWorld (Subst)	World
BP_Building_01	Blueprint
BP_Building	Blueprint
BP_Building2	Blueprint
BP_Building3	Blueprint
BP_Building4	Blueprint
BP_Building5	Blueprint
BP_Building6	Blueprint
BP_Building7	Blueprint
BP_Building8	Blueprint
BP_Building9	Blueprint
BP_Building10	Blueprint
BP_Building11	Blueprint
BP_Building12	Blueprint
BP_Building13	Blueprint
BP_Building14	Blueprint
BP_Building15	Blueprint
BP_Building16	Blueprint
BP_Building17	Blueprint
BP_Building18	Blueprint
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BP_Building98	Blueprint
BP_Building99	Blueprint
BP_Building100	Blueprint

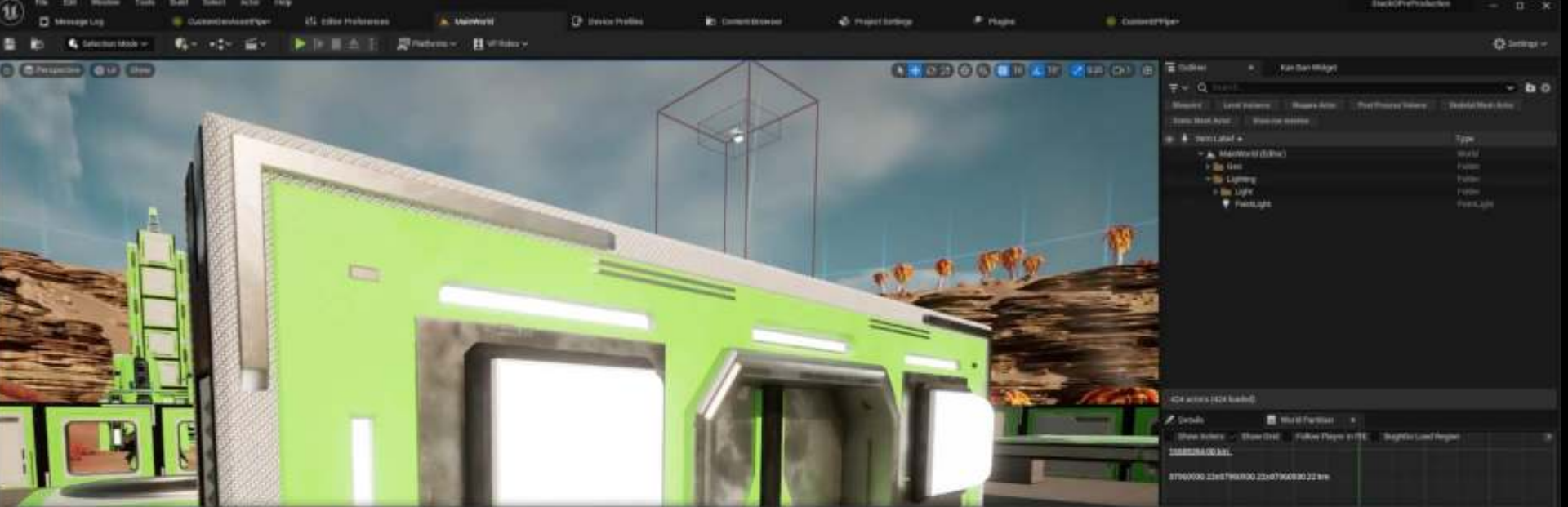
Interchange for Validation?

How would we tell a user early on there's a problem?



Asset Validator As Pipeline*

*Requires Interchange Blueprint Editor Pipeline in 5.5

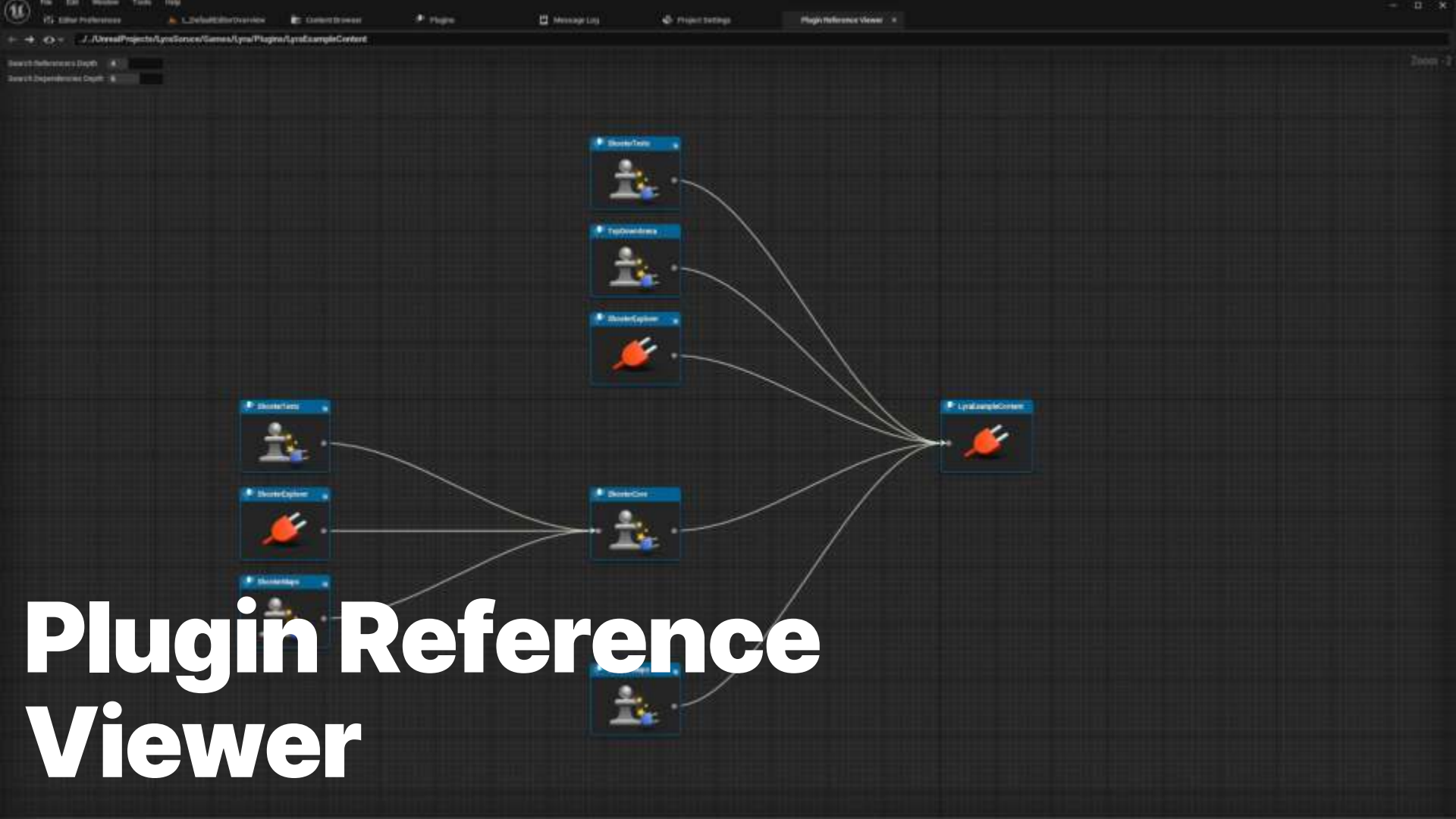


Interchange Testing

Get Reliable Results

Asset Reference Restriction Plugin

How to handle the new use of Content Plugins



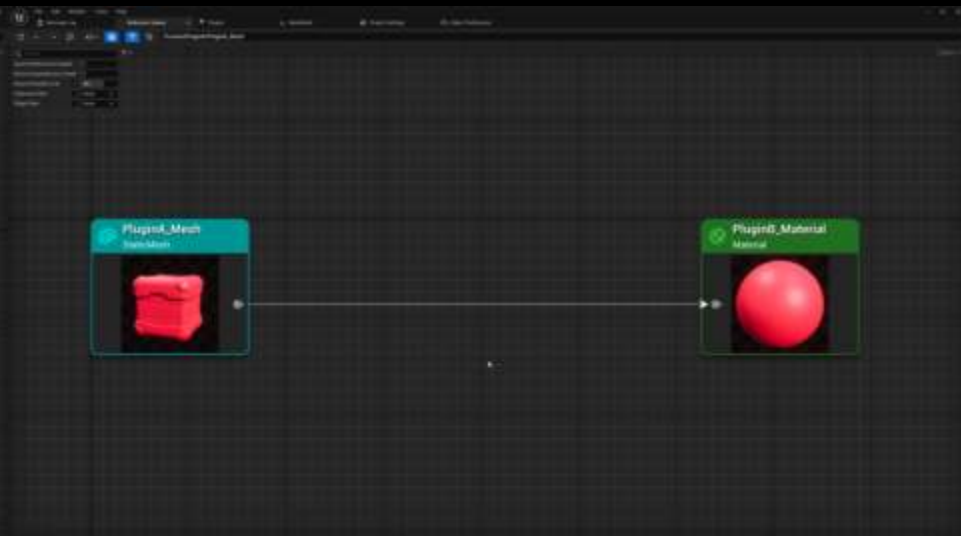
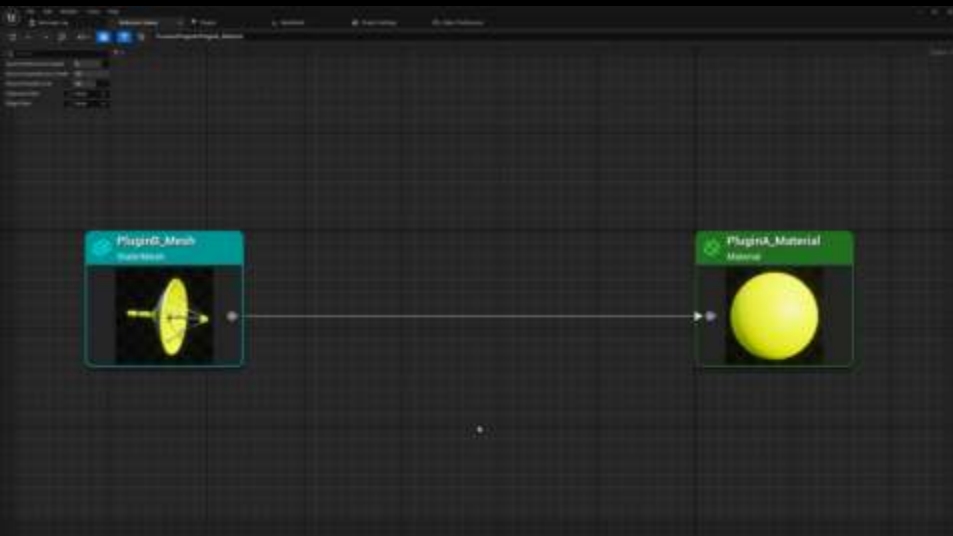
Plugin Reference Viewer

**The truth is theres many
places to make
mistakes, and nothing to
stop you!**

DLC Content

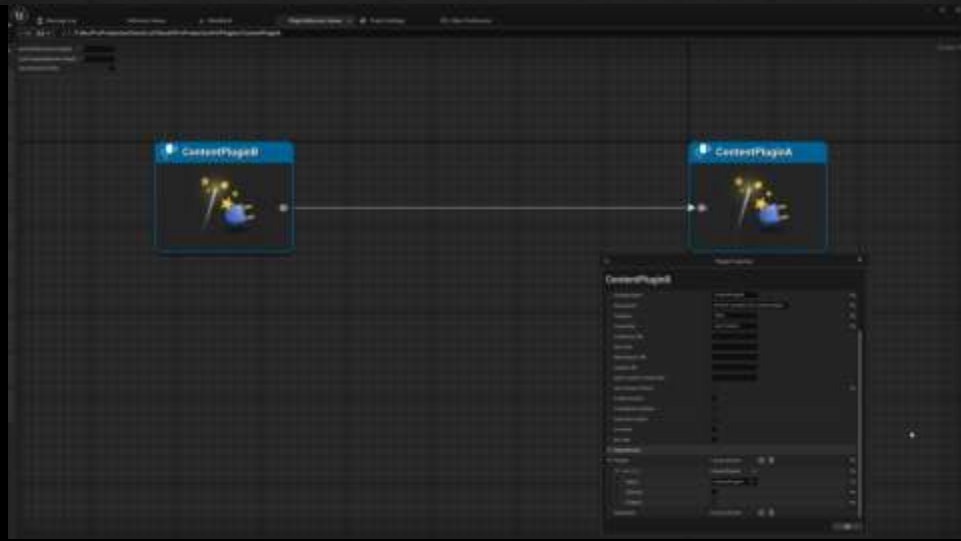
Studio Plugins

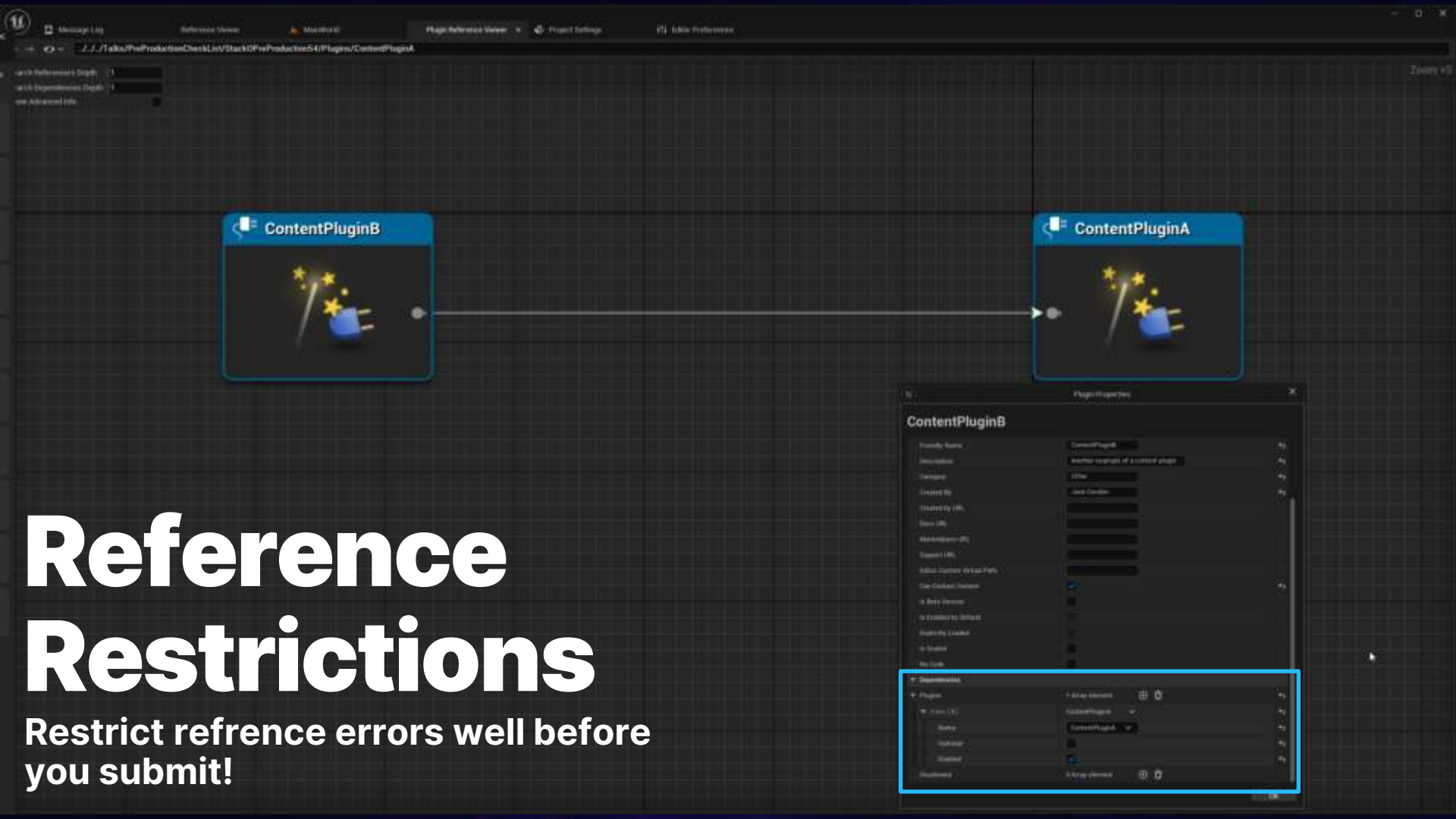
Developer Folder



Reference Restrictions

Restrict reference errors well before you submit!





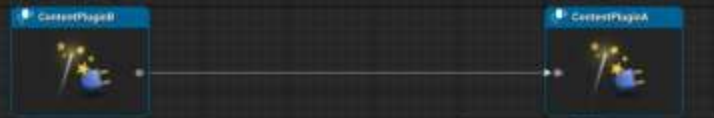
Reference Restrictions

Restrict reference errors well before you submit!



Reference Restrictions

Restrict reference errors well before you submit!





Reference Restrictions

Restrict reference errors well before you submit!

- Q /ContentPluginA/PluginA_Mesh Validating asset
- Q /ContentPluginA/PluginA_Mesh Illegal reference: Q /ContentPluginB/PluginB_Material . You may only reference assets from EngineContent, ProjectContent, and Plugin:ContentPluginA here
- Q /ContentPluginA/BP_ContentABlueprint Validating asset
- Q /ContentPluginA/BP_ContentABlueprint Illegal reference: Q /ContentPluginB/BP_ContentBContent . You may only reference assets from EngineContent, ProjectContent, and Plugin:ContentPluginA here
- Q /ContentPluginB/BP_ContentBContent Validating asset
- Q /ContentPluginB/BP_ContentBContent contains valid data.
- Q /ContentPluginB/PluginB_Material Validating asset
- Q /ContentPluginB/PluginB_Material contains valid data.
- Q /ContentPluginB/PluginB_Mesh Validating asset
- Q /ContentPluginB/PluginB_Mesh contains valid data.
- Q /ContentPluginA/PluginA_Material Validating asset
- Q /ContentPluginA/PluginA_Material contains valid data.

Reference Restrictions

Restrict reference errors well before you submit!

Shared Plugin Distribution

Access Plugins in a shared folder

```
Project.Uproject
```

```
"AdditionalPluginDirectories":[  
  "../..../..../StudioPlugins/5.3"  
]
```

Wrap up

- Interchange in 5.4
- Asset Validation
- Asset Metadata & The Asset Registry
- In Editor Geometry tools
- Utility Tooling
- Changing the Editor UI



Thank you!

Jack.Condon@EpicGames.com