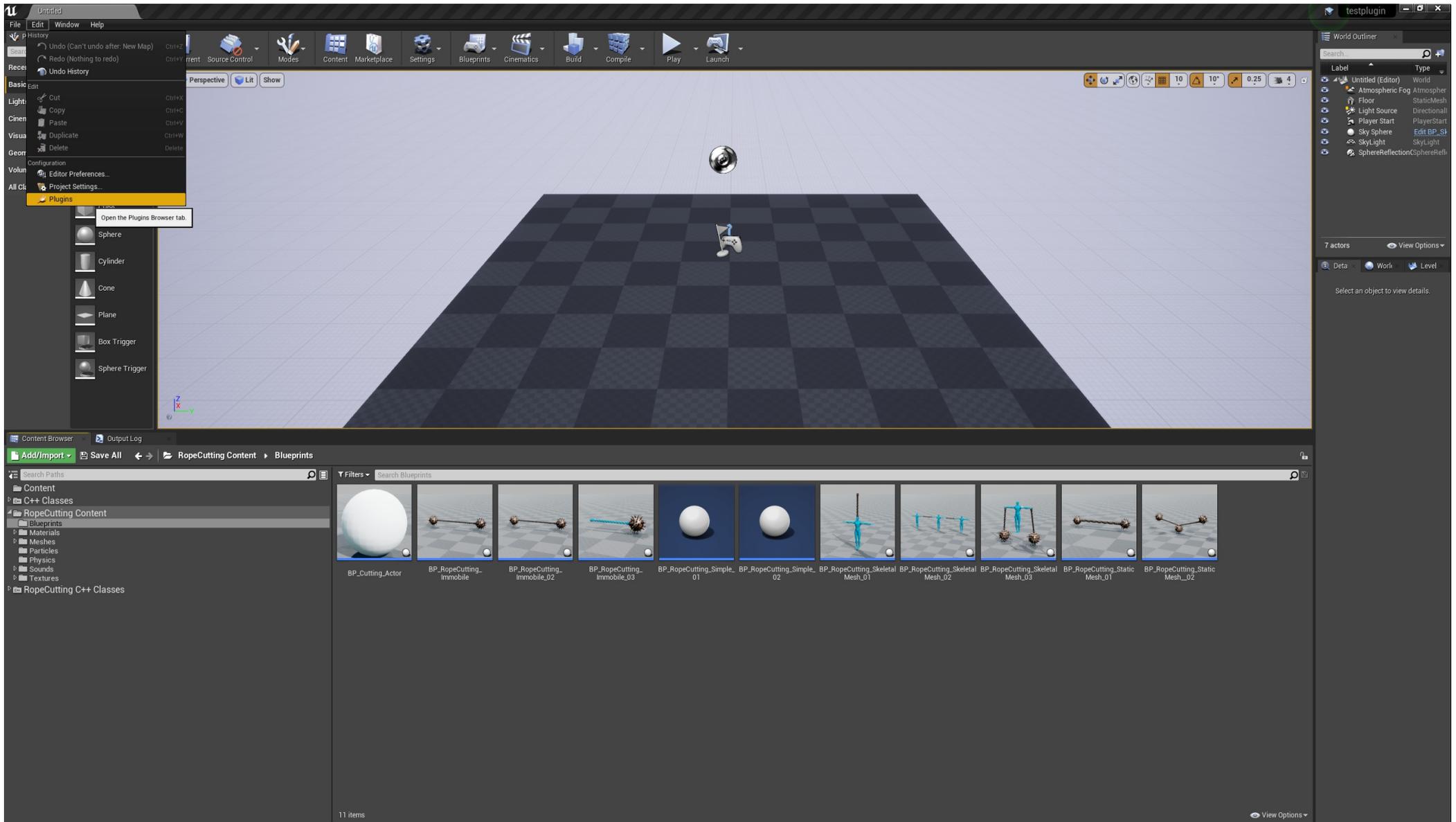


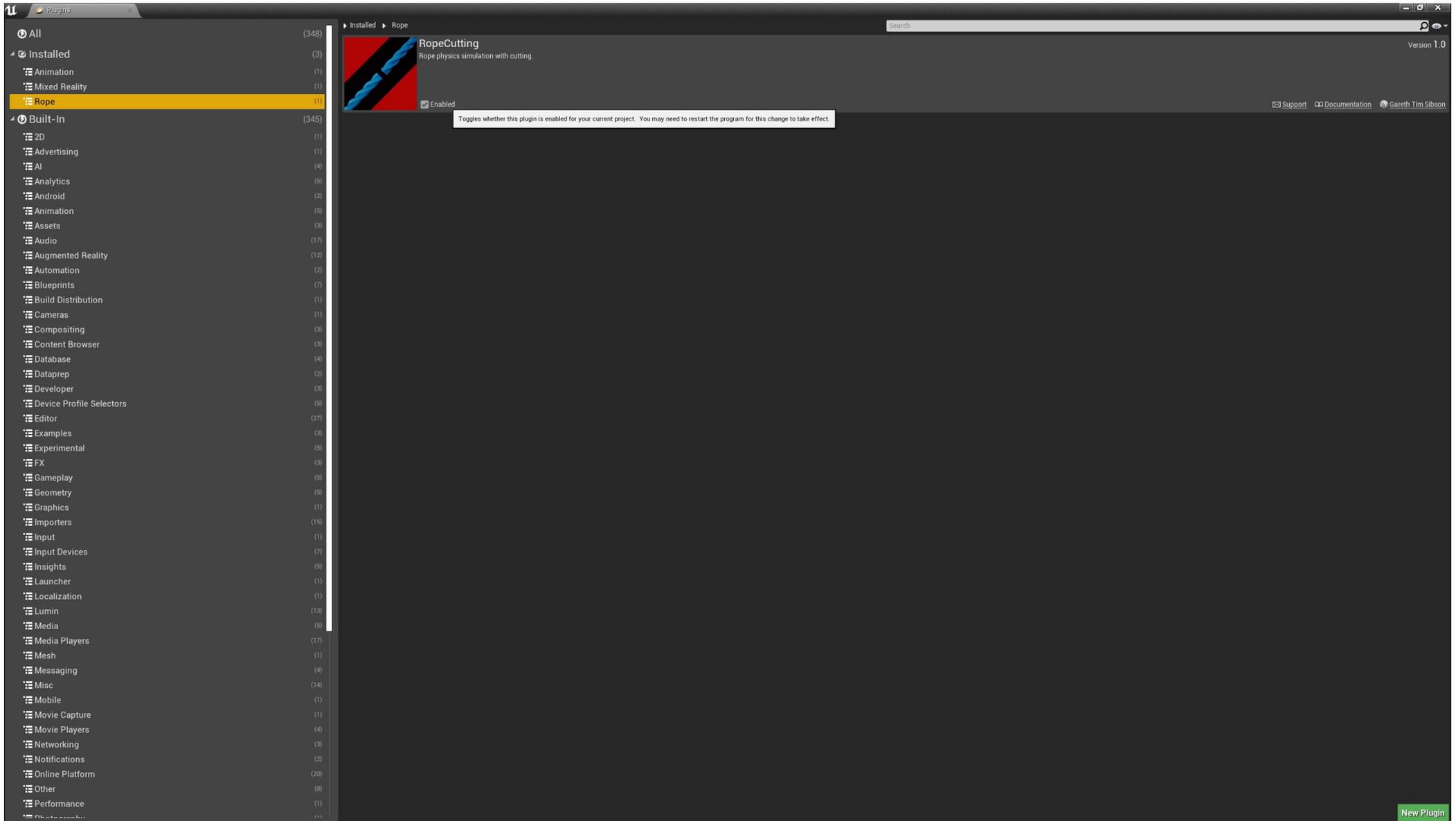
# Precision Gaming

Fun By Design

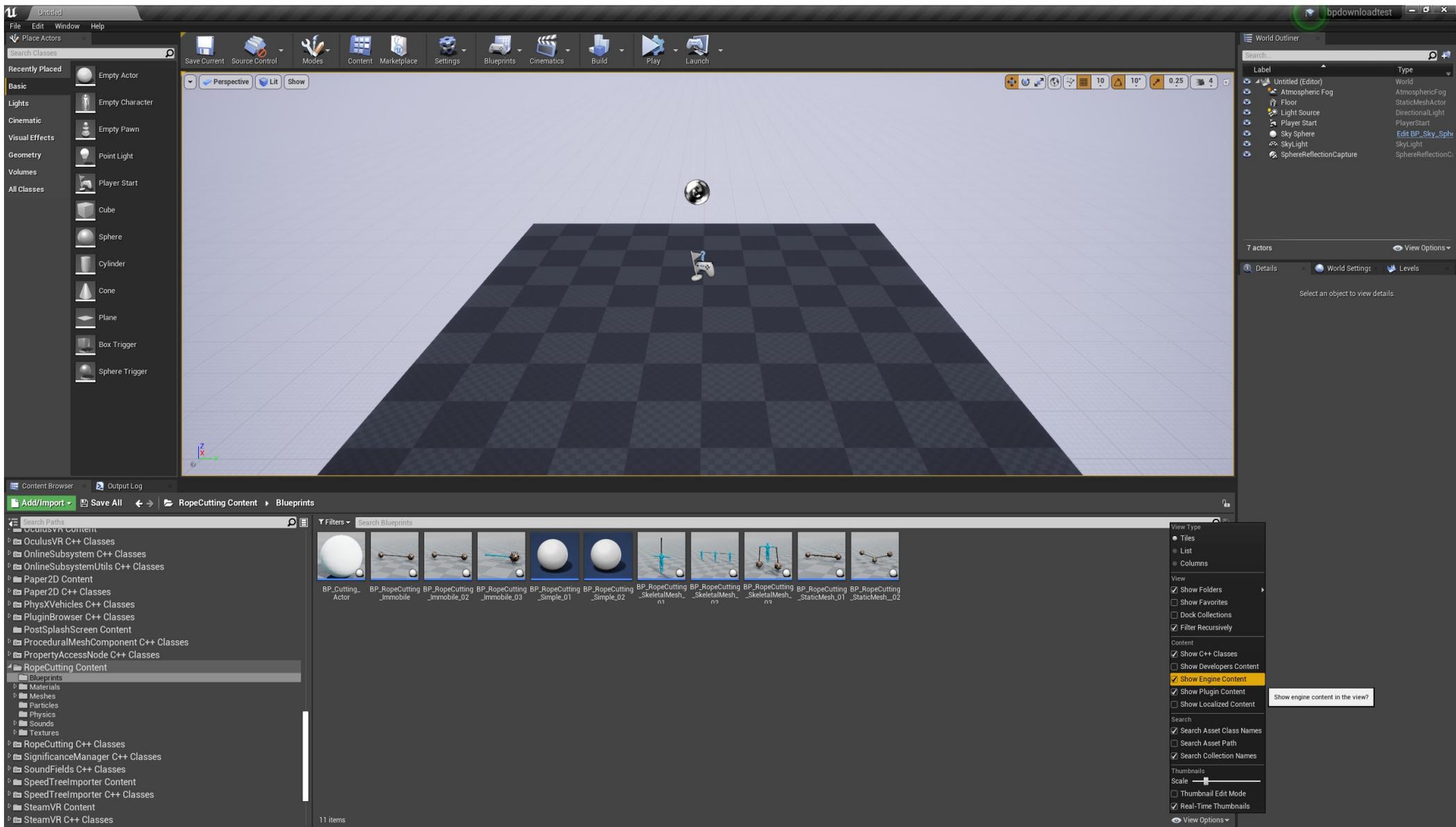
C++ Rope Plugin Tutorial



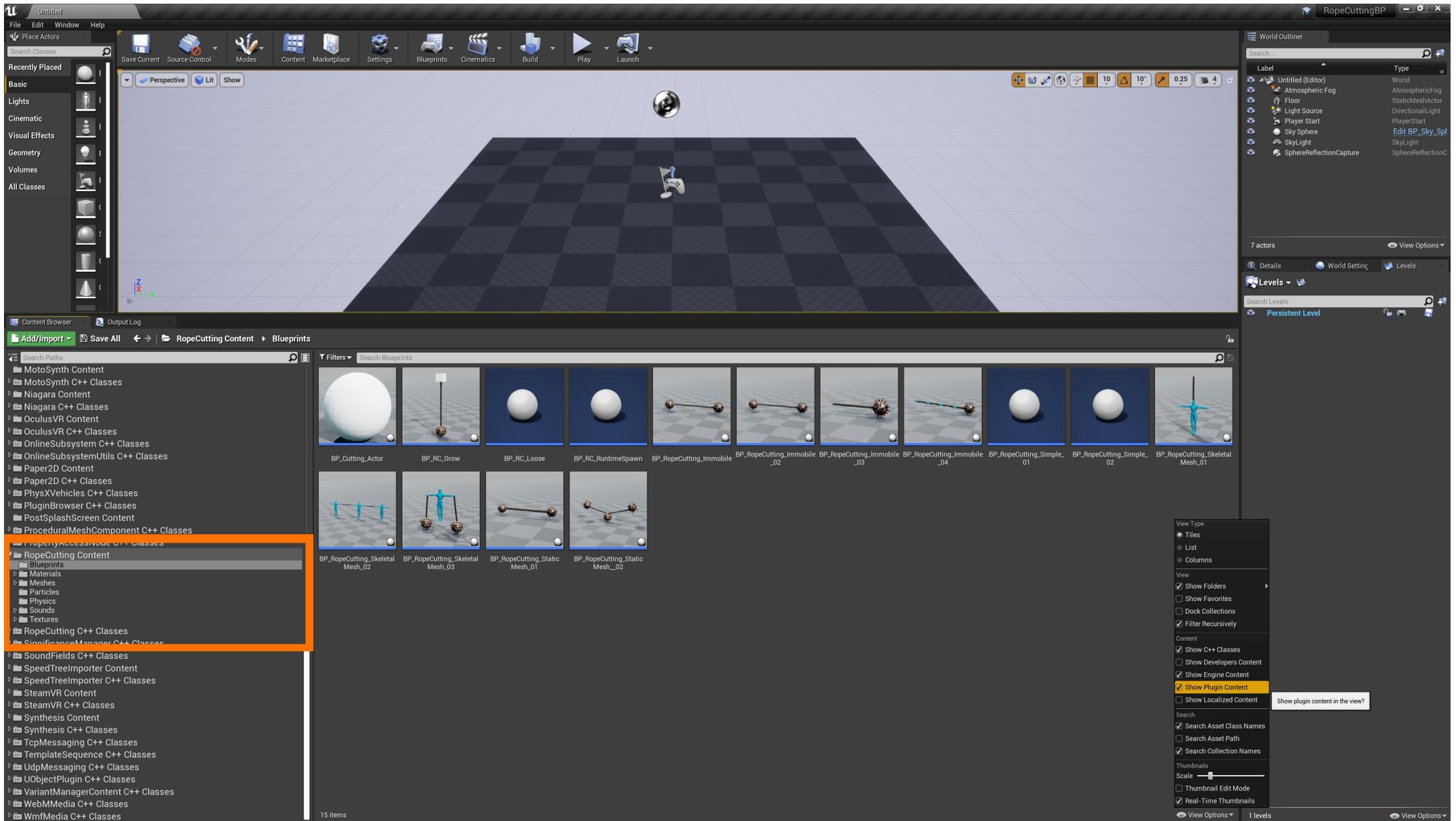
Navigate to the plugin menu.



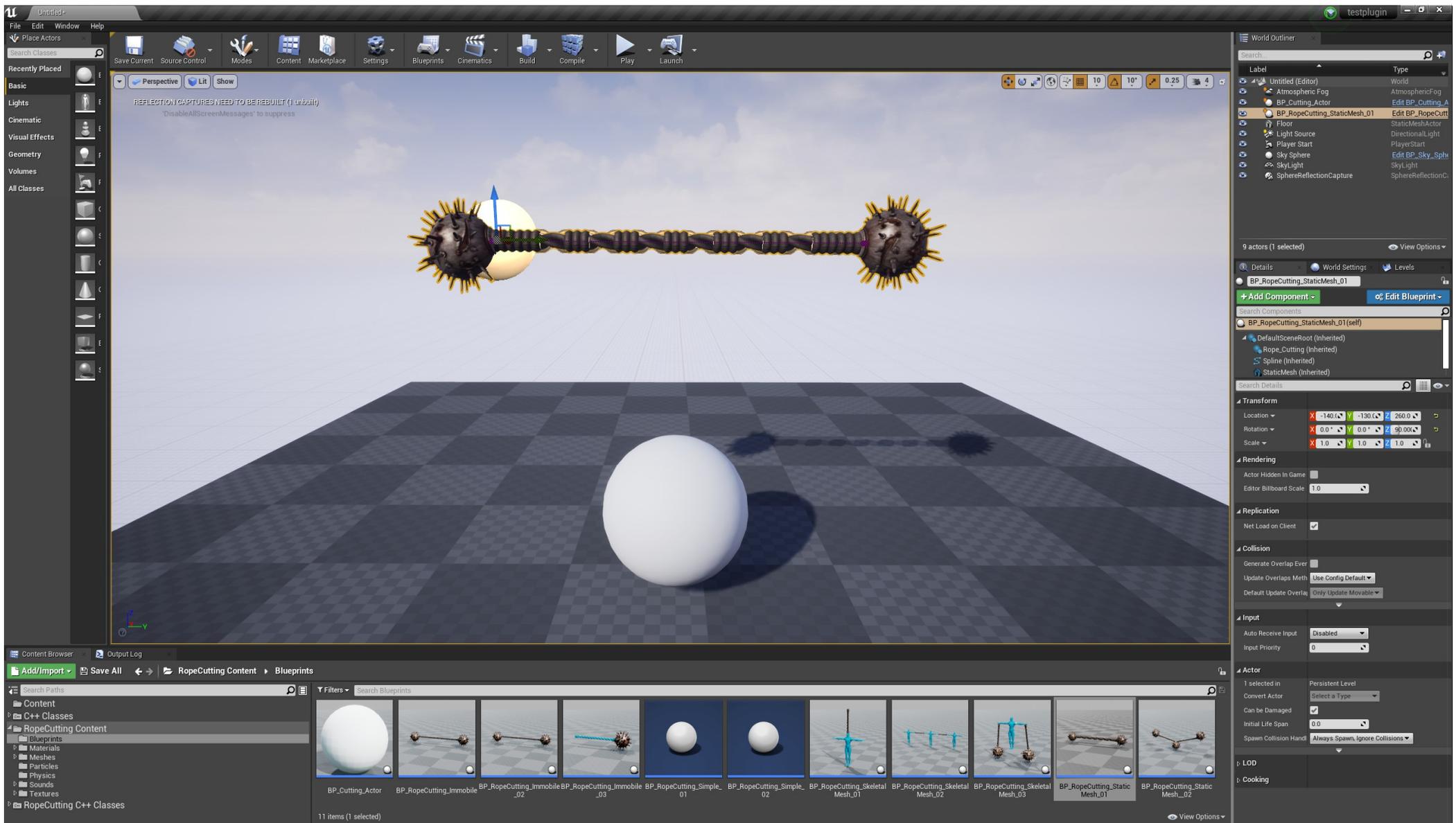
Ensure the rope plugin is downloaded and enabled.



Click on "Show Engine Content".



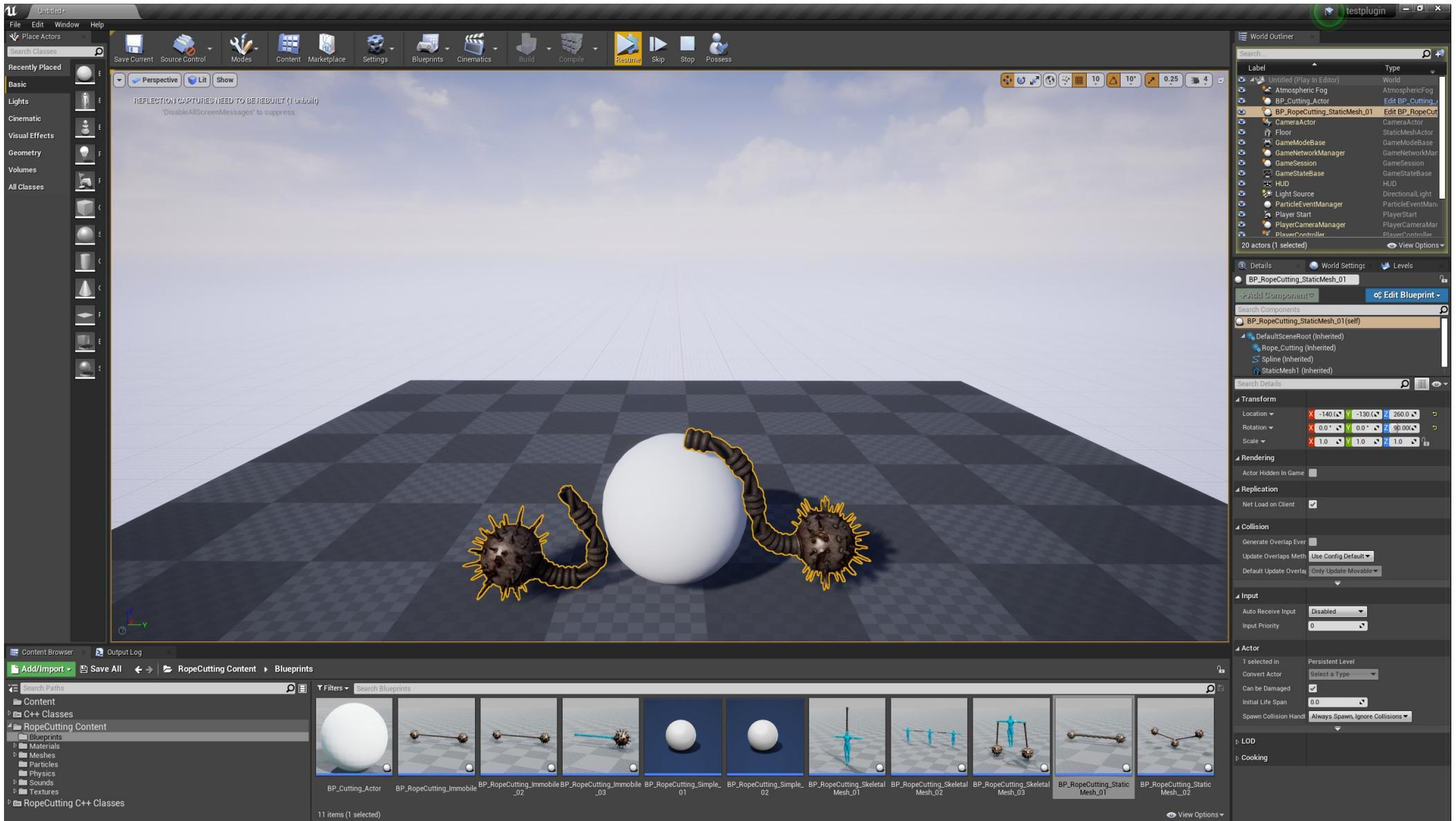
Enable Plugin Content.  
Navigate to “RopeCutting Content” folder.  
Open “Blueprints” folder.



Place "BP\_Cutting\_Actor" inside the level.  
 Add "BP\_Rope\_Cutting\_StaticMesh\_01" to the level.  
 Position the Rope actor directly above the sphere.

Other Rope actors can be used, but be aware that some of the blueprints are intentionally configured to not fall.

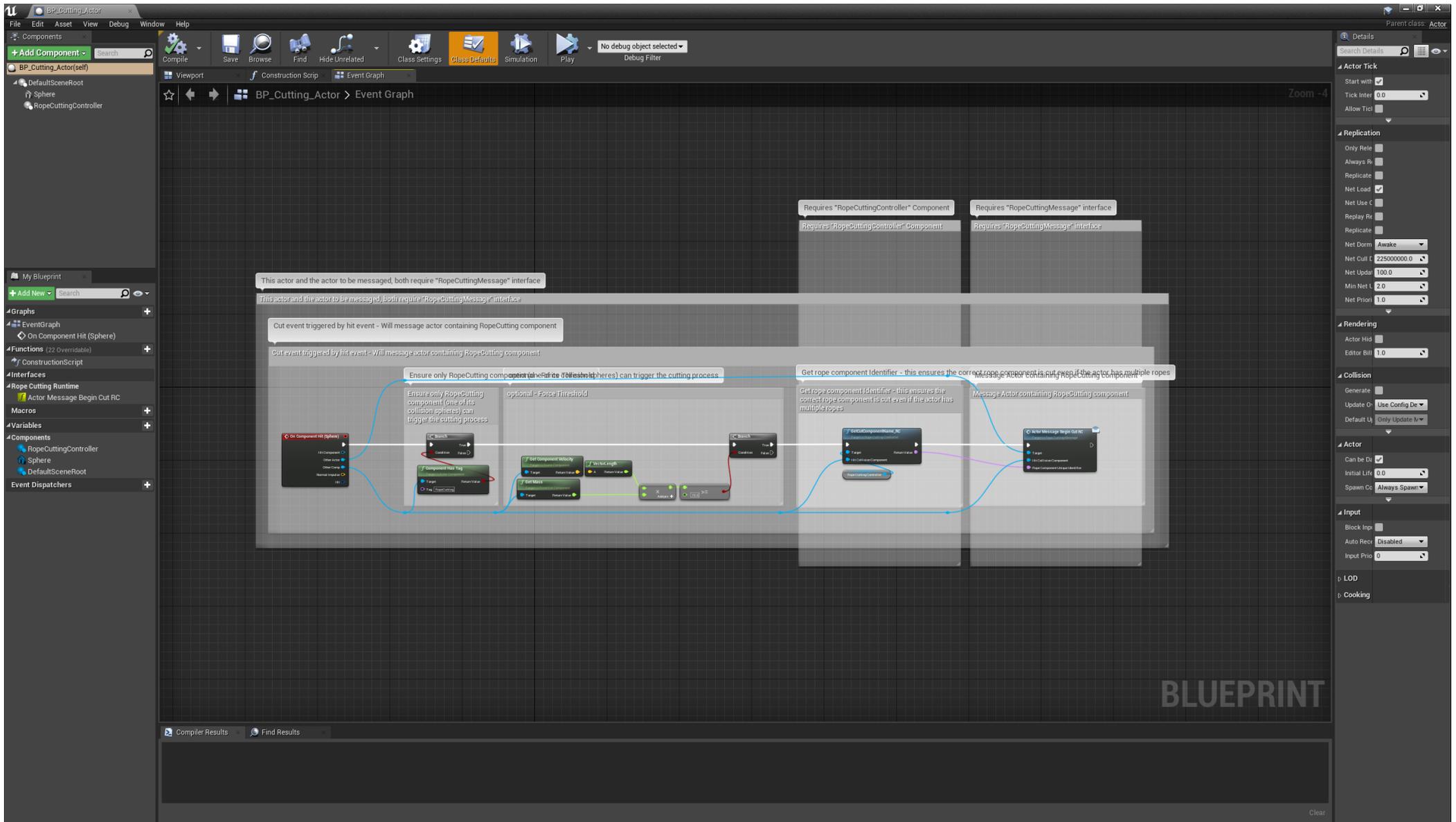
For a video demonstration, please see:  
<https://www.youtube.com/watch?v=Mlb41JGhE7Y>



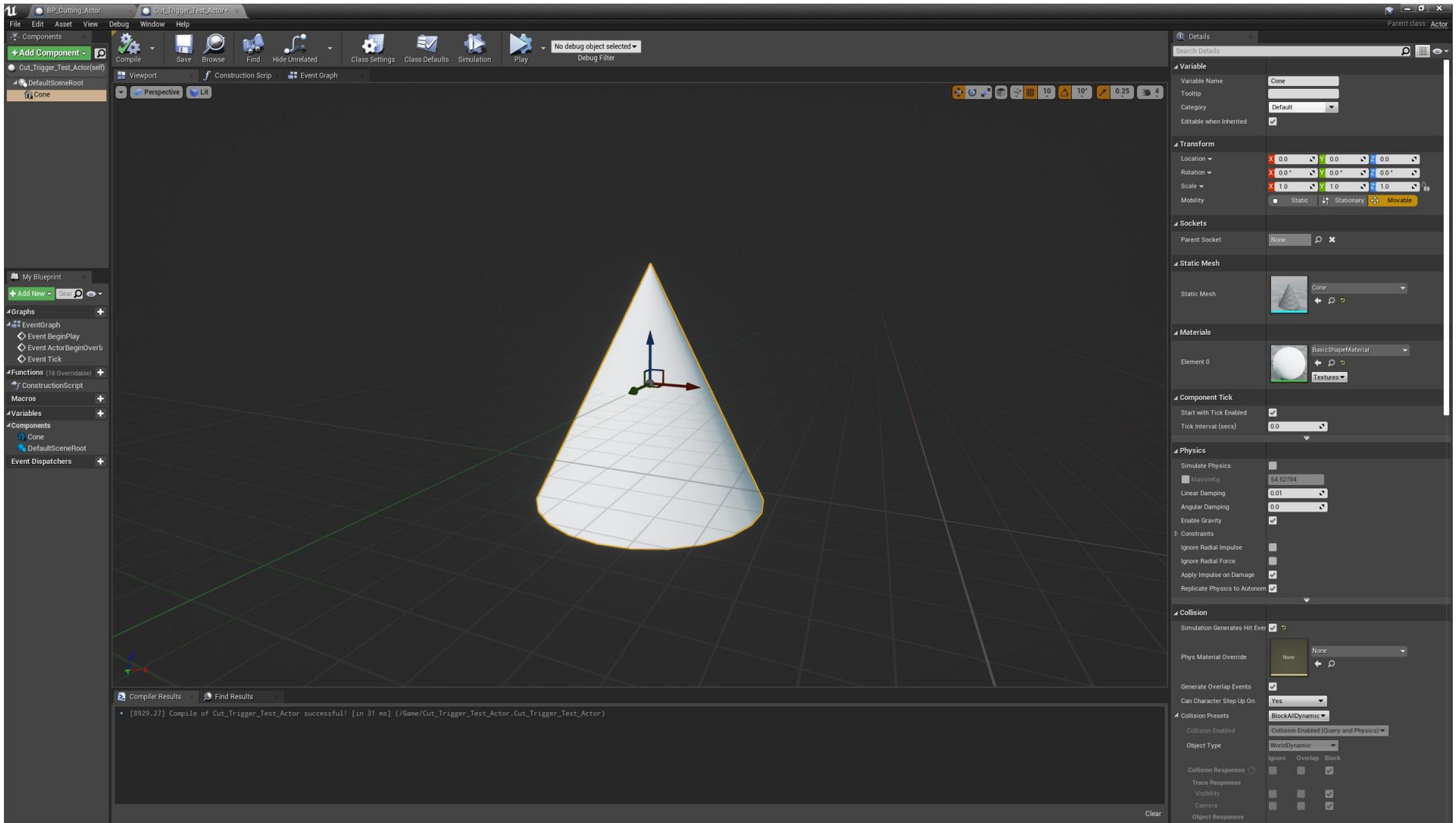
Run Simulate.

The Rope actor should fall on to the sphere and be cut.

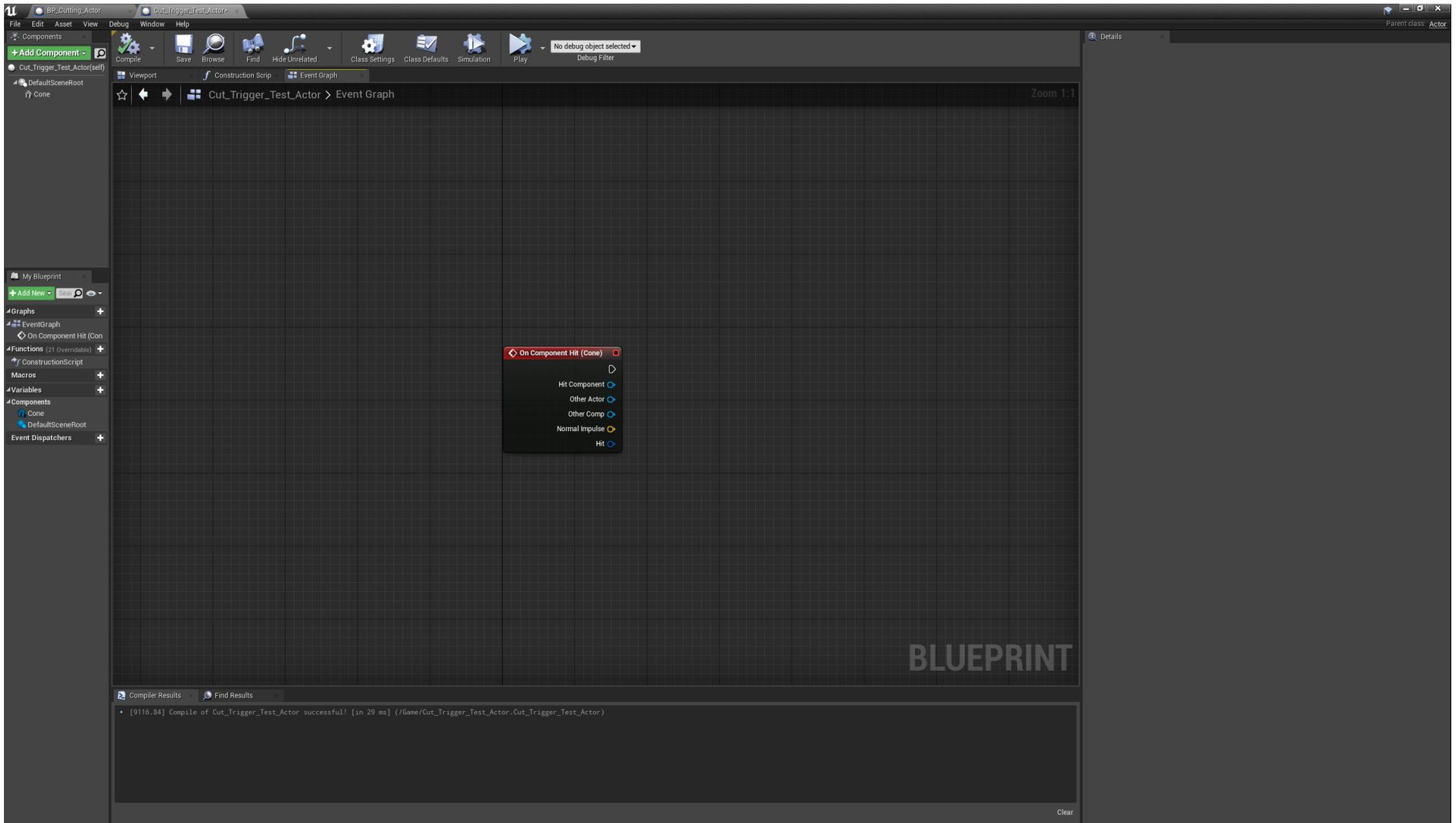
The "BP\_Cutting\_Actor" can cut any of the rope blueprints.



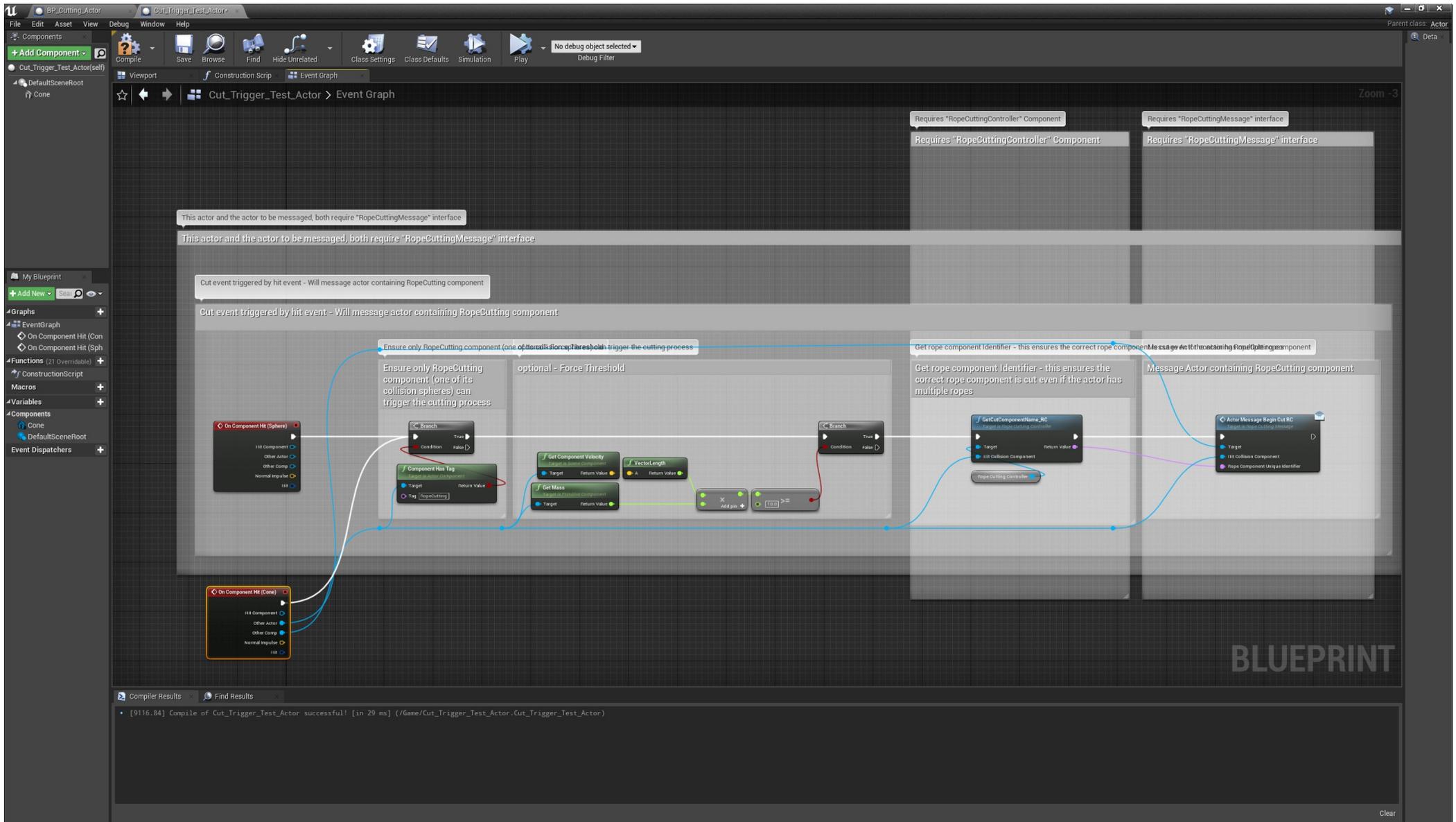
Go inside the “BP\_Cutting\_Actor” event graph.  
This actors functionality can be transferred to any other actor that is capable of triggering hit events.



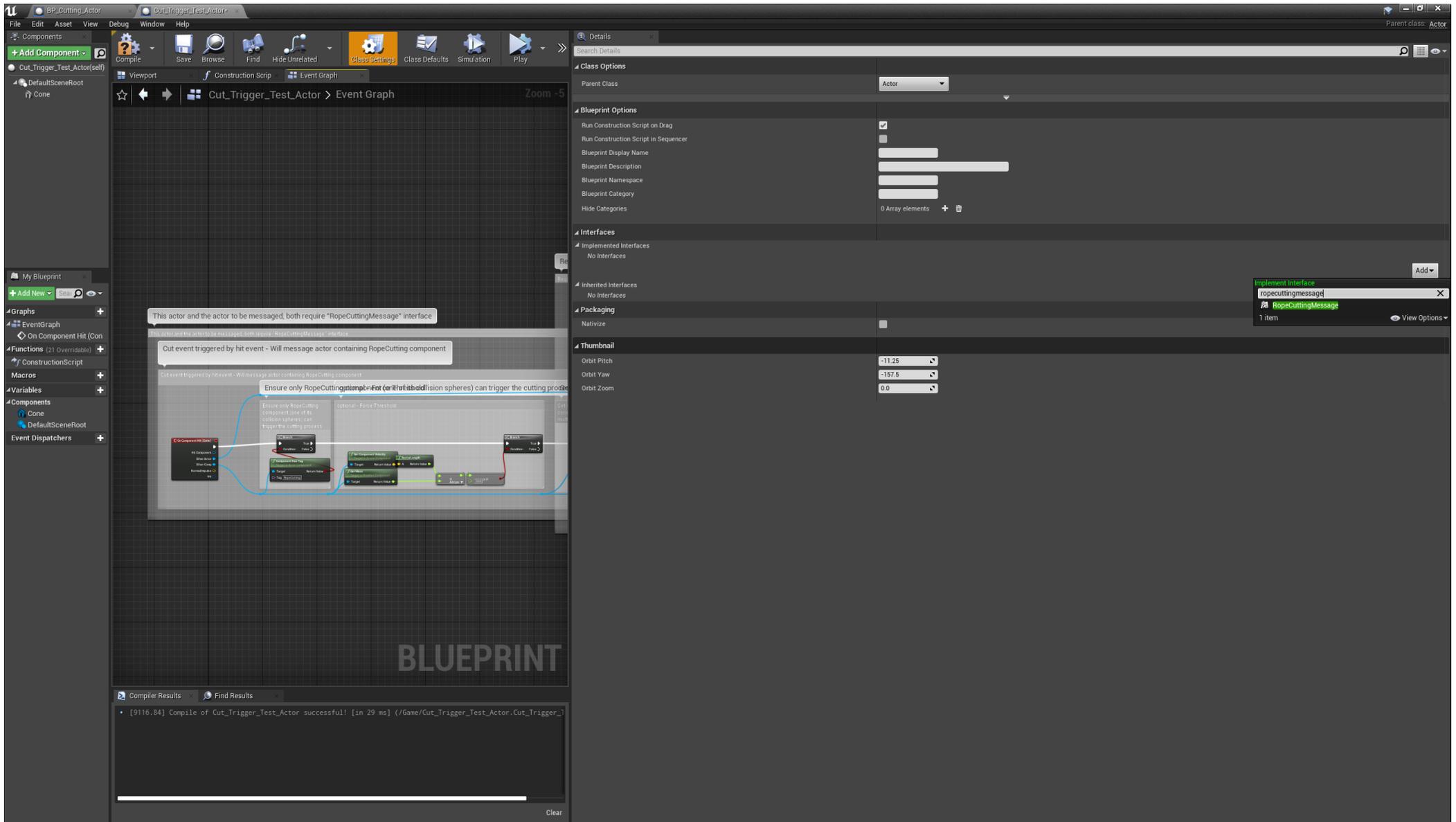
Create a new actor.  
Add a primitive component.  
Enable “Simulation Generate Hit Events”



Add "On Component Hit Event"



Copy Blueprint functionality over from "BP\_Cutting\_Actor".  
 Connect the new hit event with the branch node.  
 Connect the "Other Actor" output with the re-route node at the top.  
 Connect the "Other Comp" to the re-route node below.  
 Delete the unused event from "BP\_Cutting\_Actor".



Click on “class settings”.  
Under “interfaces”, find “Implemented Interfaces”.  
Click on add.  
Select “RopeCuttingMessage” to add the interface to the blueprint.

BP\_Cutting\_Actor

Cut\_Trigger\_Test\_Actor

File Edit Asset View Debug Window Help

Components

+ Add Component

Cut\_Trigger\_Test\_Actor(self)

DefaultSceneRoot

Cone

RopeCuttingController

RopeCuttingController (Rope Cutting Controller)

Rope Cutting Controller

Source: **This Blueprint**

Mobility: **Movable**

My Blueprint

+ Add New

Graphs

EventGraph

On Component Hit (Cone)

Functions (22 Overridable)

ConstructionScript

Interfaces

Rope Cutting Runtime

Actor: Message Begin Cut RC

Macros

Variables

Components

RopeCuttingController

Cone

DefaultSceneRoot

Event Dispatchers

Viewport

Construction Script

Event Graph

Cut\_Trigger\_Test\_Actor > Event Graph

Zoom +3

This actor and the actor to be messaged, both require "RopeCuttingMessage" interface

This actor and the actor to be messaged, both require "RopeCuttingMessage" interface

Cut event triggered by hit event - Will message actor containing RopeCutting component

Cut event triggered by hit event - Will message actor containing RopeCutting component

Ensure only RopeCutting component (one of its collision spheres) trigger the cutting process

optional - Force Threshold

Ensure only RopeCutting component (one of its collision spheres) can trigger the cutting process

On Component Hit (Cone)

Branch

Component Has Tag

Get Component Velocity

Vector Length

Get Mass

Compiler Results

Find Results

[0114.85] Compile of Cut\_Trigger\_Test\_Actor successful! [in 34 ms] (/Game/Cut\_Trigger\_Test\_Actor.Cut\_Trigger\_Test\_Actor)

Clear

Parent class: Actor

Search Details

Variable

RopeCuttingControl

Tooltip

Category: Default

Editable

Transform

Locat

Rotat

Scale

Mobility

Sockets

Parent S

None

Rope Cutting Controller

Rope Co

None

Rendering

Visible

Hidden i

Component Tick

Start wit

Tick Inte

0.0

Tags

Compon

0 Arra

Component Replication

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Cooking

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Events

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On

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Physics

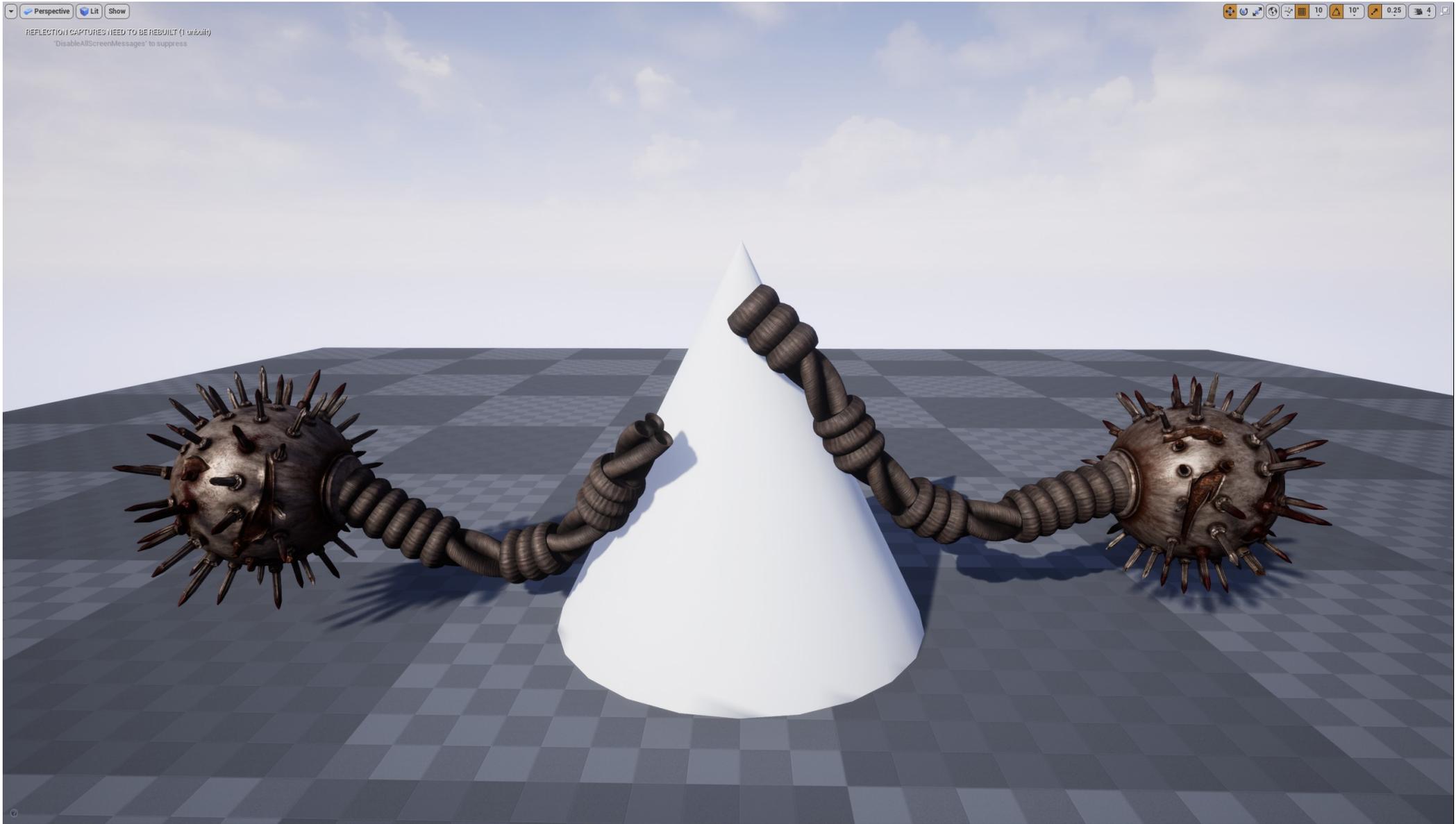
LOD

Asset User Data

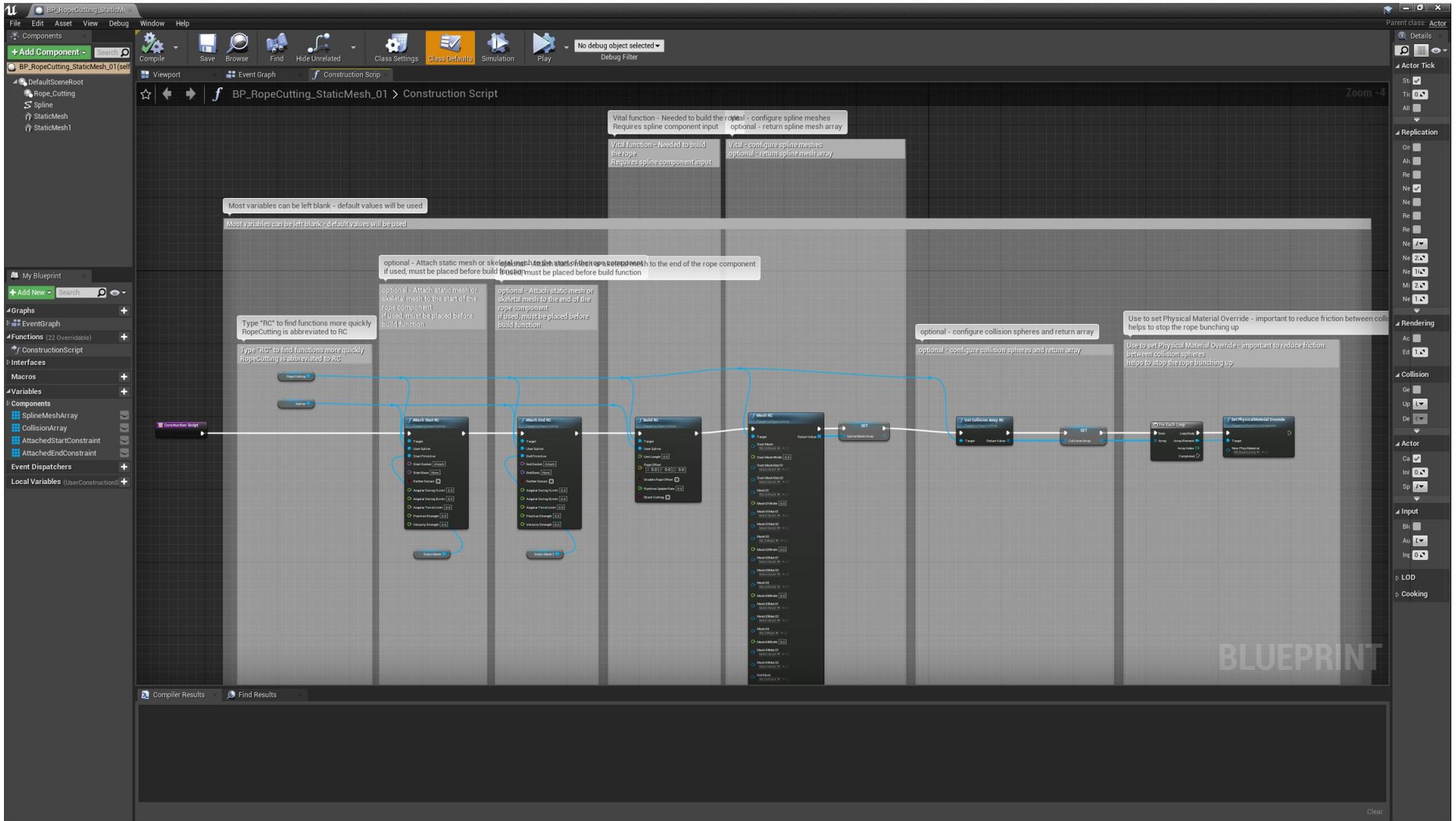
Collision

Add the "RopeCuttingController" Component to the blueprint.  
Compile the Blueprint.

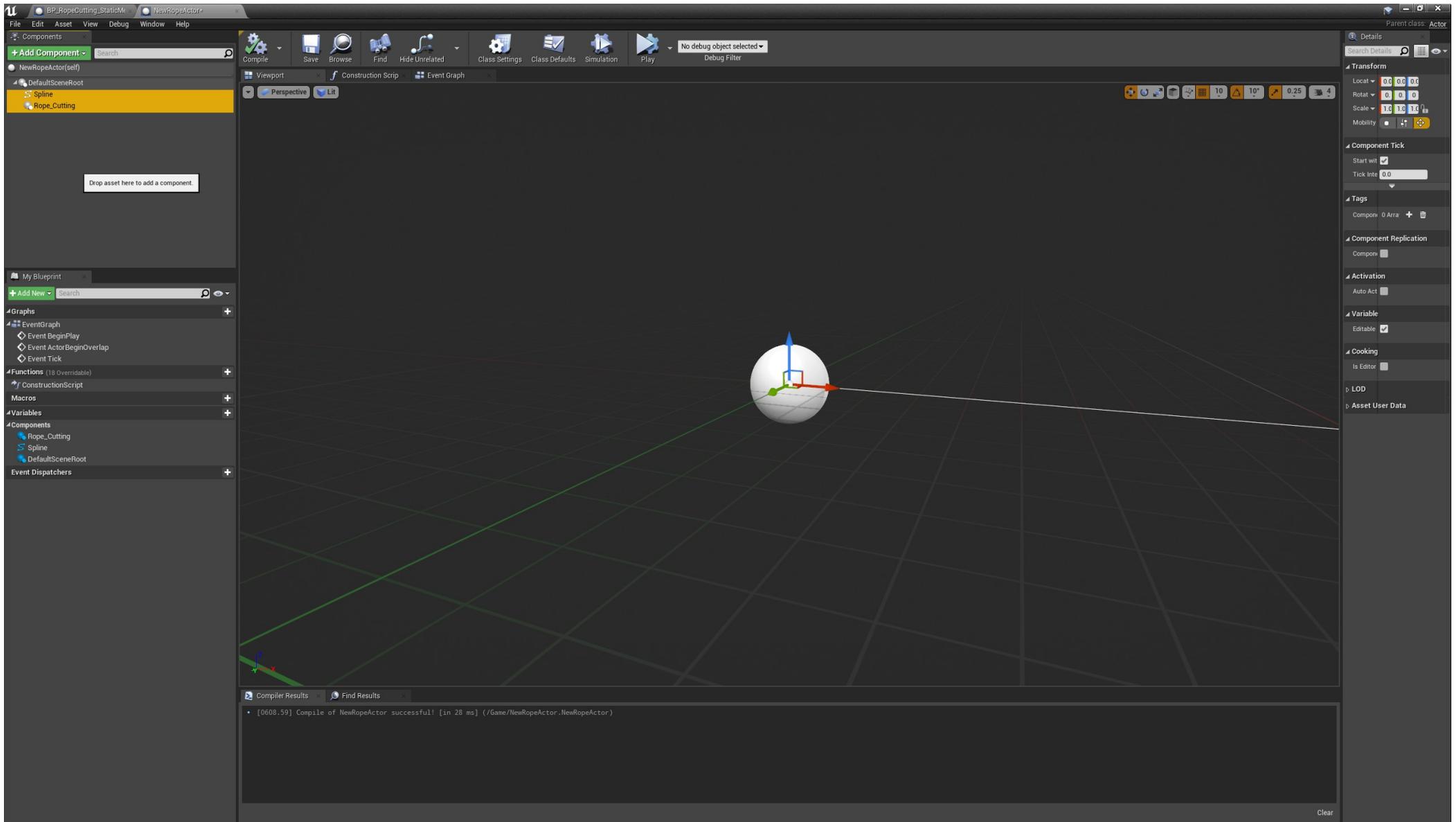
REFLECTION CAPTURES NEED TO BE REBUILT (1 rebuilt)  
'DisableAllScreenMessages' to suppress



Test the actor in the level to confirm it is working.

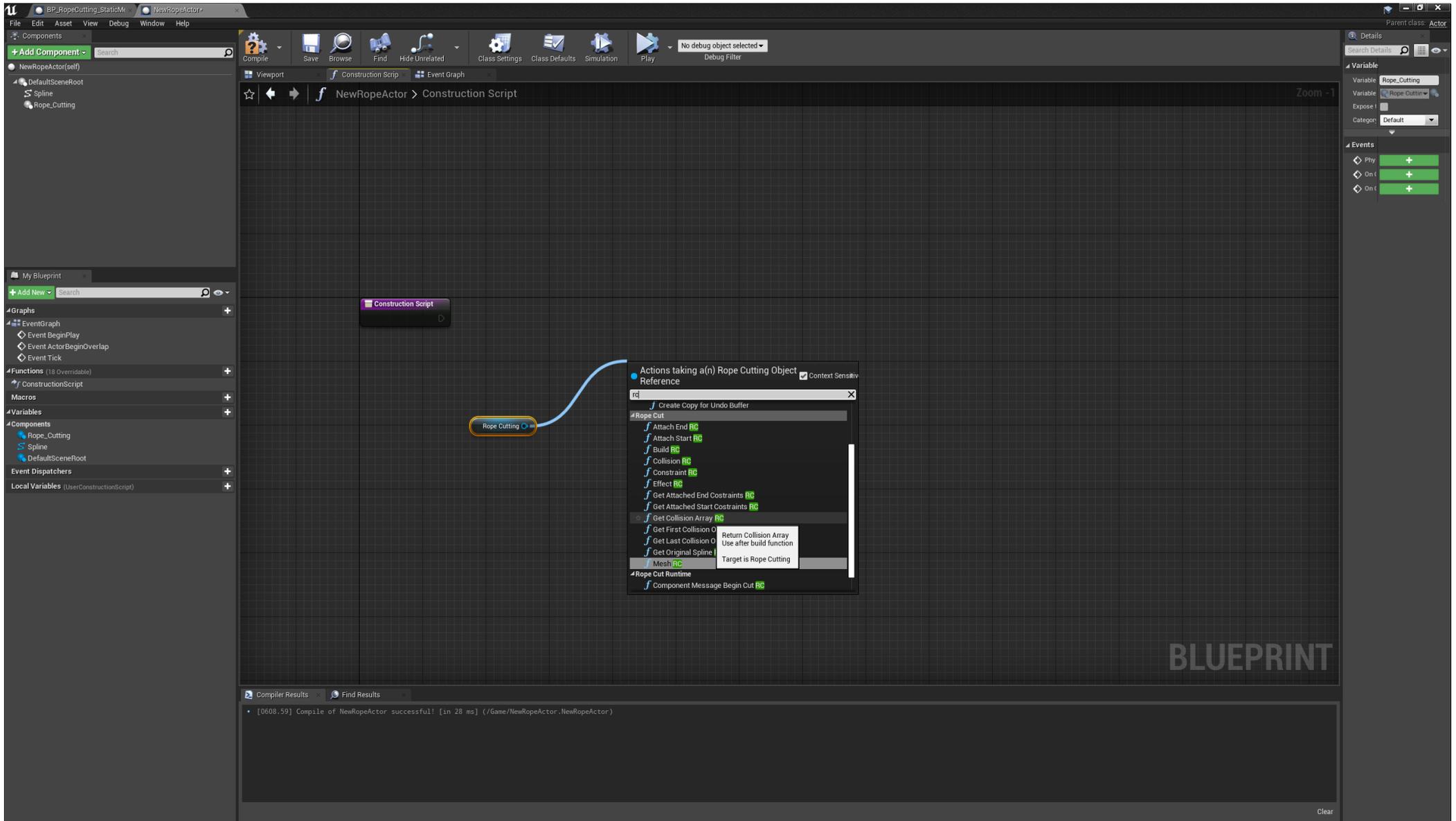


Look inside the “BP\_RopeCutting\_StaticMesh\_01” construction graph.  
 The graph contains comments to help explain the different functions  
 Hover the mouse over each function for additional notes.

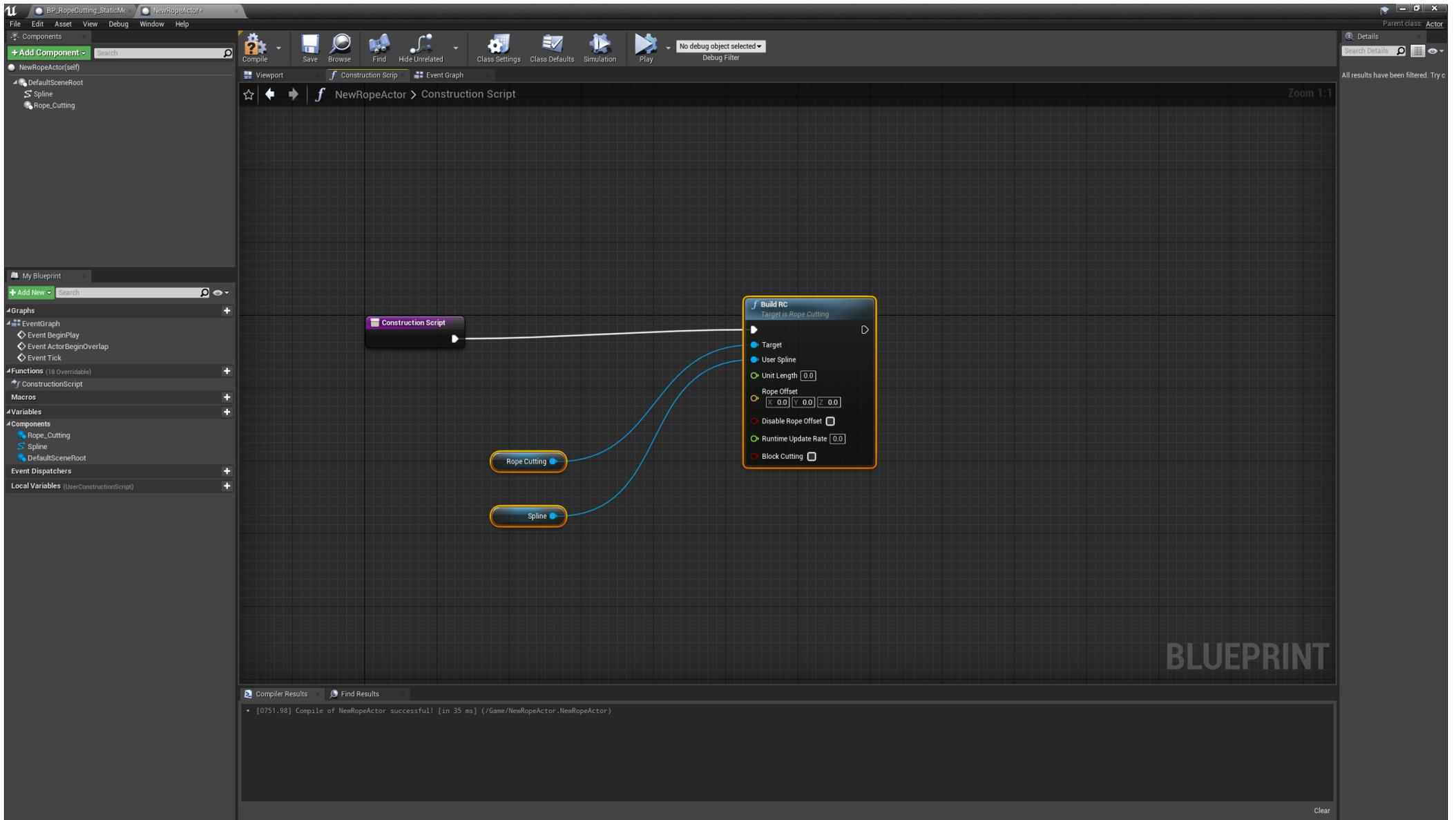


Create a new actor.

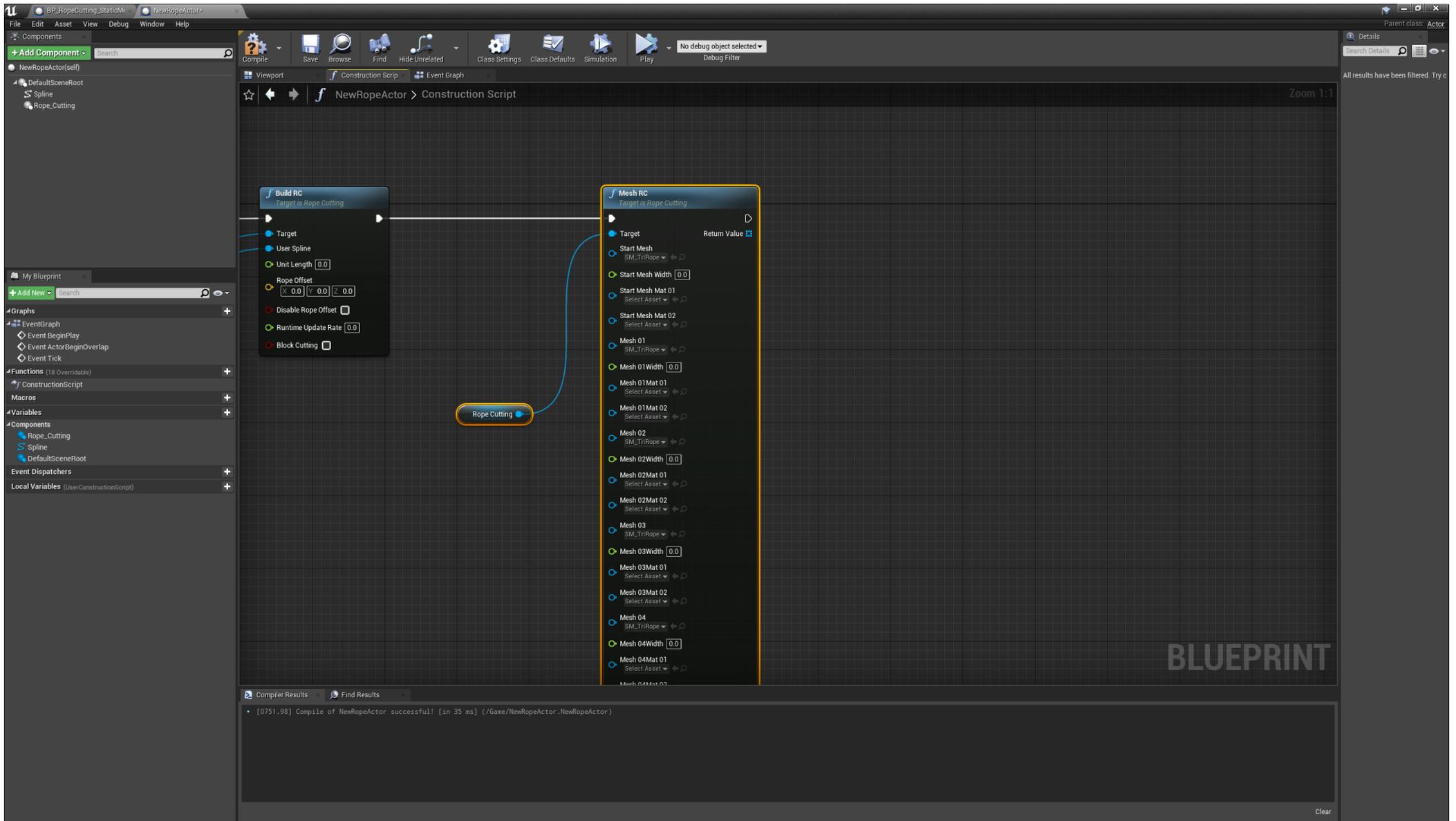
Add Spline component.  
Add "Rope\_Cutting" component.



Go to construction graph.  
Drag mouse off of rope cutting component and type "RC".  
This will bring up all the relevant functions.



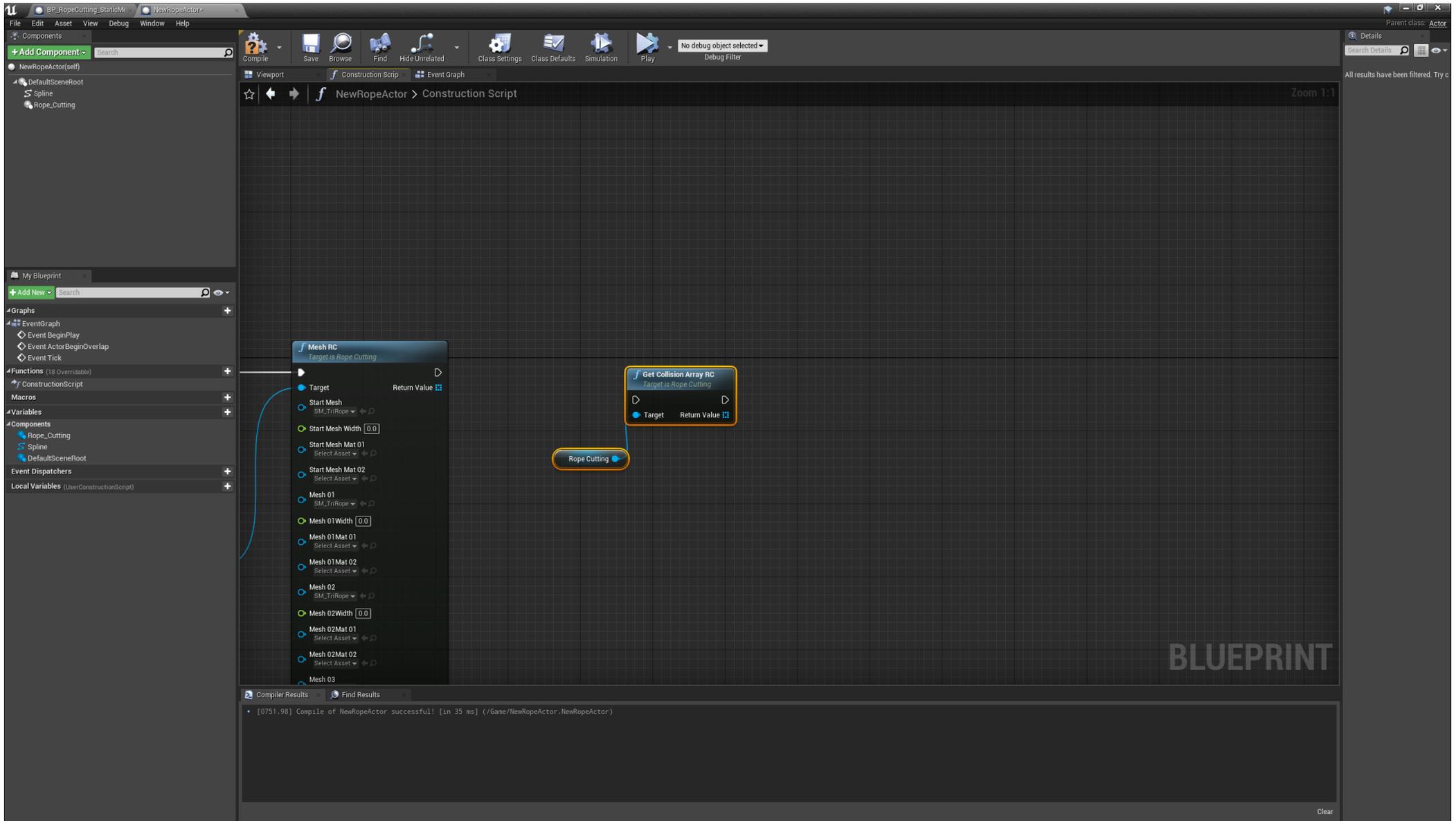
Add "Build\_RC" Function.  
Ensure "Rope\_Cutting" component feeds in to "Target" input.  
Connect spline component to "User Spline" input.



Add “Mesh\_RC” Function.

Most inputs can be left – unaltered inputs will use default values.

However the mesh type must be set. Select “SM\_TriRope” for the following:  
Start mesh, Mesh 01, Mesh 02, Mesh 03, Mesh 04 and End Mesh.



Get collision array. Returns all the collision sphere objects that make up the ropes length.

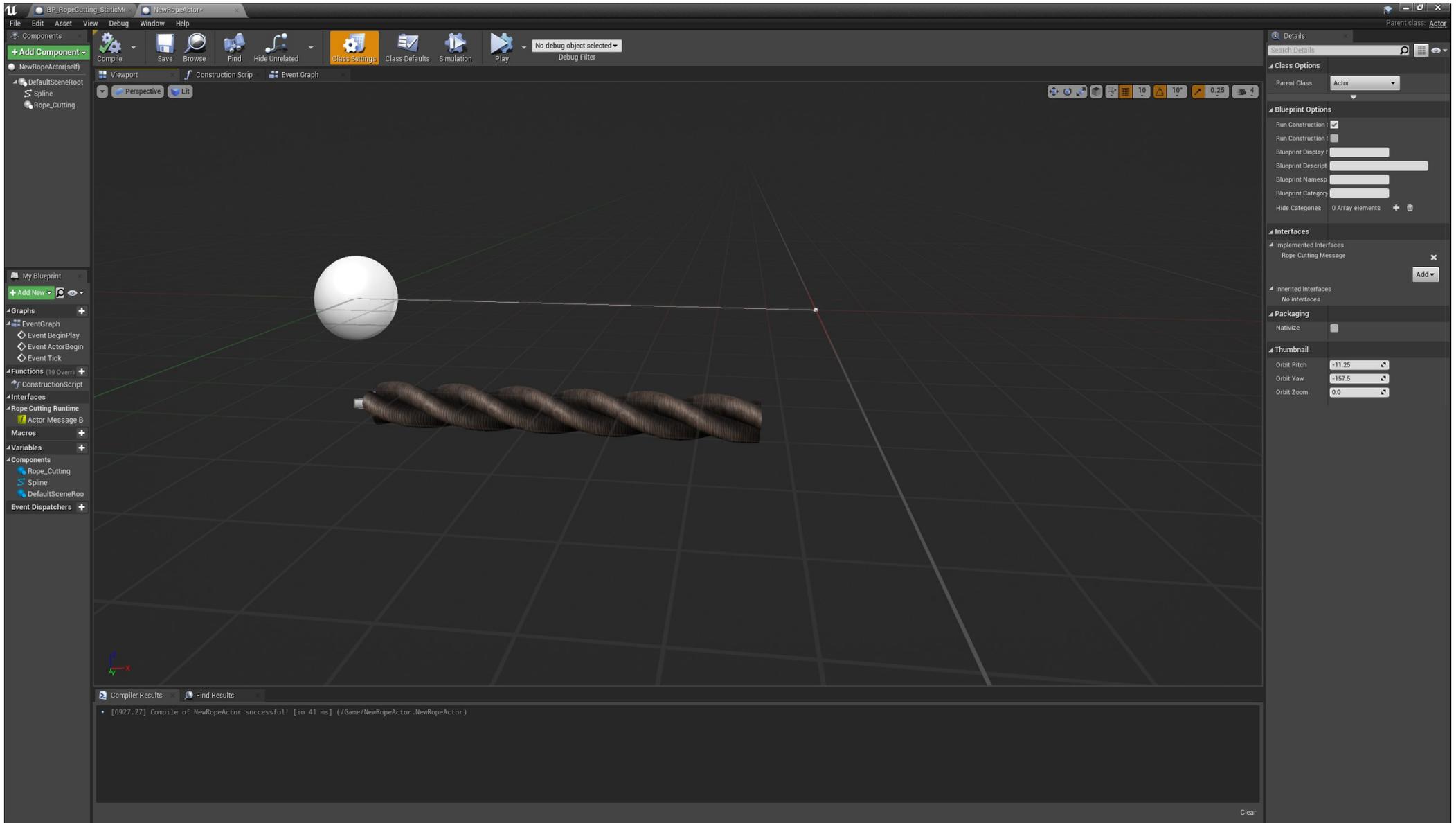
The screenshot shows the Unreal Engine 4 Blueprint Editor interface. The main workspace displays a Construction Script for the 'NewRopeActor' class. The script consists of the following nodes and connections:

- A 'Rope Cutting' component is connected to the 'Target' input of the 'Get Collision Array RC' node.
- The 'Return Value' output of the 'Get Collision Array RC' node is connected to the 'Array' input of the 'For Each Loop' node.
- The 'Loop Body' of the 'For Each Loop' node is connected to the 'Target' input of the 'Set PhysicalMaterial Override' node.
- The 'Set PhysicalMaterial Override' node is configured with 'New Phys Material' selected for the 'New Phys Material' input.

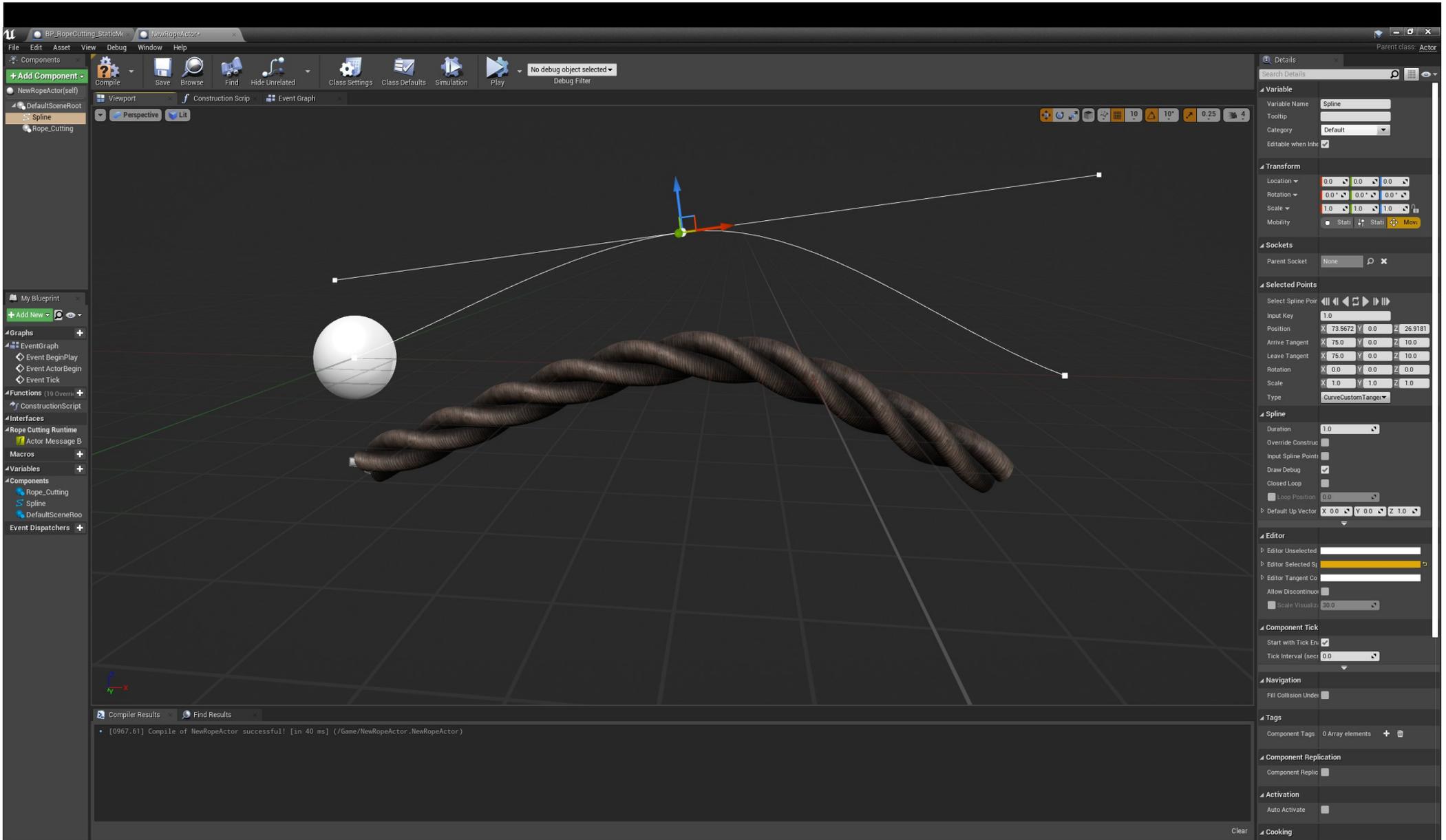
The 'Compiler Results' window at the bottom shows a successful compilation message: [0751.98] Compile of NewRopeActor successful! [in 35 ms] (C:/Game/NewRopeActor/NewRopeActor).

Use “for each loop” to set the physics material override. Pick “PM\_RopeCutting”.  
This helps to prevent the rope from sticking to itself.

Compile the blueprint.



Check the viewport. A Rope should be displayed.



Use spline component to control the shape.  
Press “alt” and drag a spline point to create another spline point.

Currently the rope will render and simulate physics, but is not capable of being cut.

BP\_RopeCutting\_StaticM NewRopeActor

File Edit Asset View Debug Window Help

Components +Add Component -

NewRopeActor(self)

DefaultSceneRoot Spline Rope\_Cutting

My Blueprint +Add New -

Graphs +

EventGraph Event BeginPlay Event ActorBegin Event Tick

Functions (18 Over) +

ConstructionScript

Macros +

Variables +

Components +

Rope\_Cutting Spline DefaultSceneRoot

Event Dispatchers +

Local Variables (Use) +

Viewports Construction Script Event Graph

NewRopeActor > Construction Script Zoom -4

Details

Search Details

Class Options

Parent Class Actor

Blueprint Options

Run Construction Script on Drag

Run Construction Script in Sequencer

Blueprint Display Name

Blueprint Description

Blueprint Namespace

Blueprint Category

Hide Categories 0 Array elements +

Interfaces

Implemented Interfaces

No Interfaces

Inherited Interfaces

No Interfaces

Packaging

Nativize

Thumbnail

Orbit Pitch -11.25

Orbit Yaw -157.5

Orbit Zoom 0.0

Implement Interface

RopeCuttingMessage

RopeCuttingMessage

1 Item

Rope Cutting Message

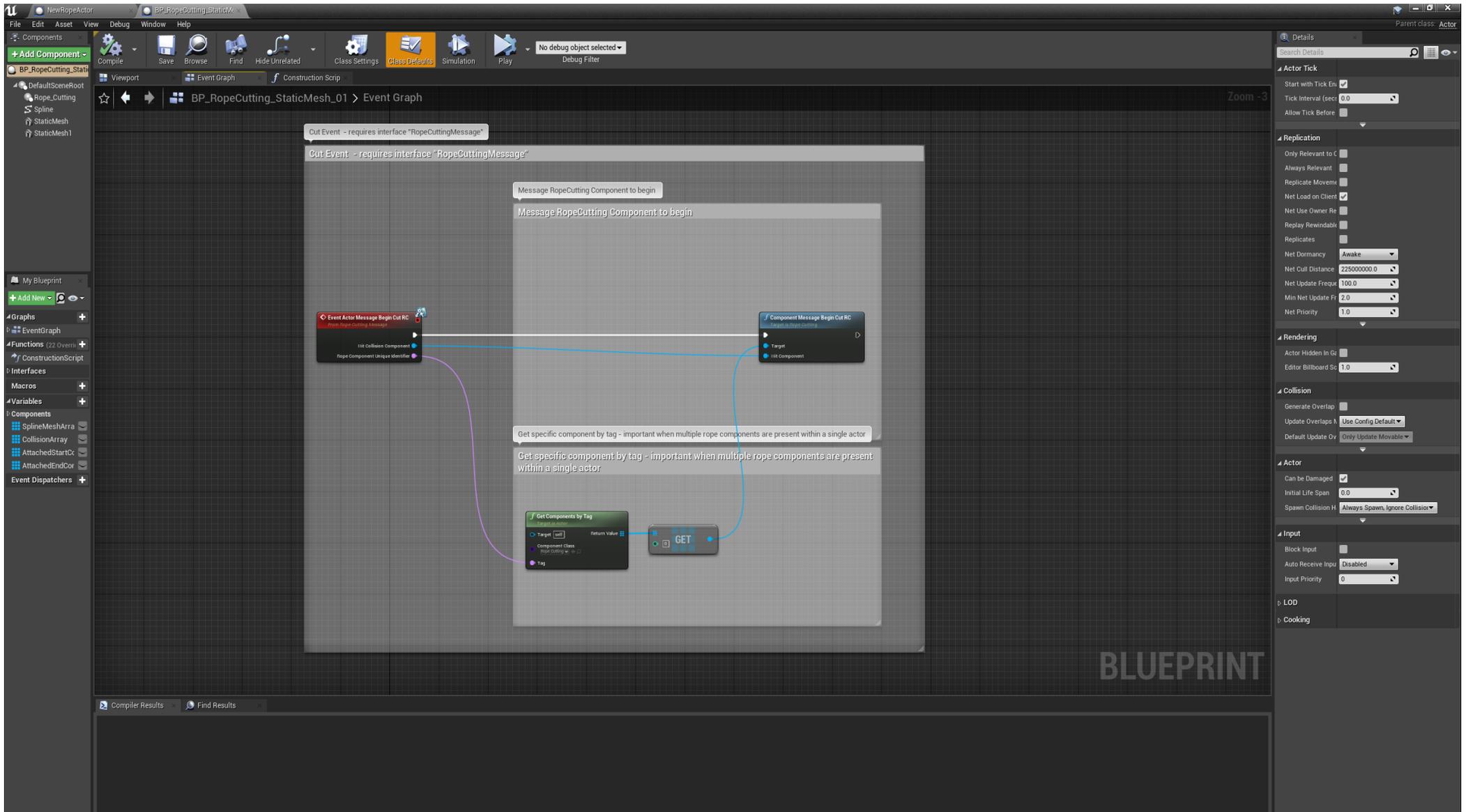
Compiler Results Find Results

[0849.59] Compile of NewRopeActor successful! [in 41 ms] (J:Game/NewRopeActor.NewRopeActor)

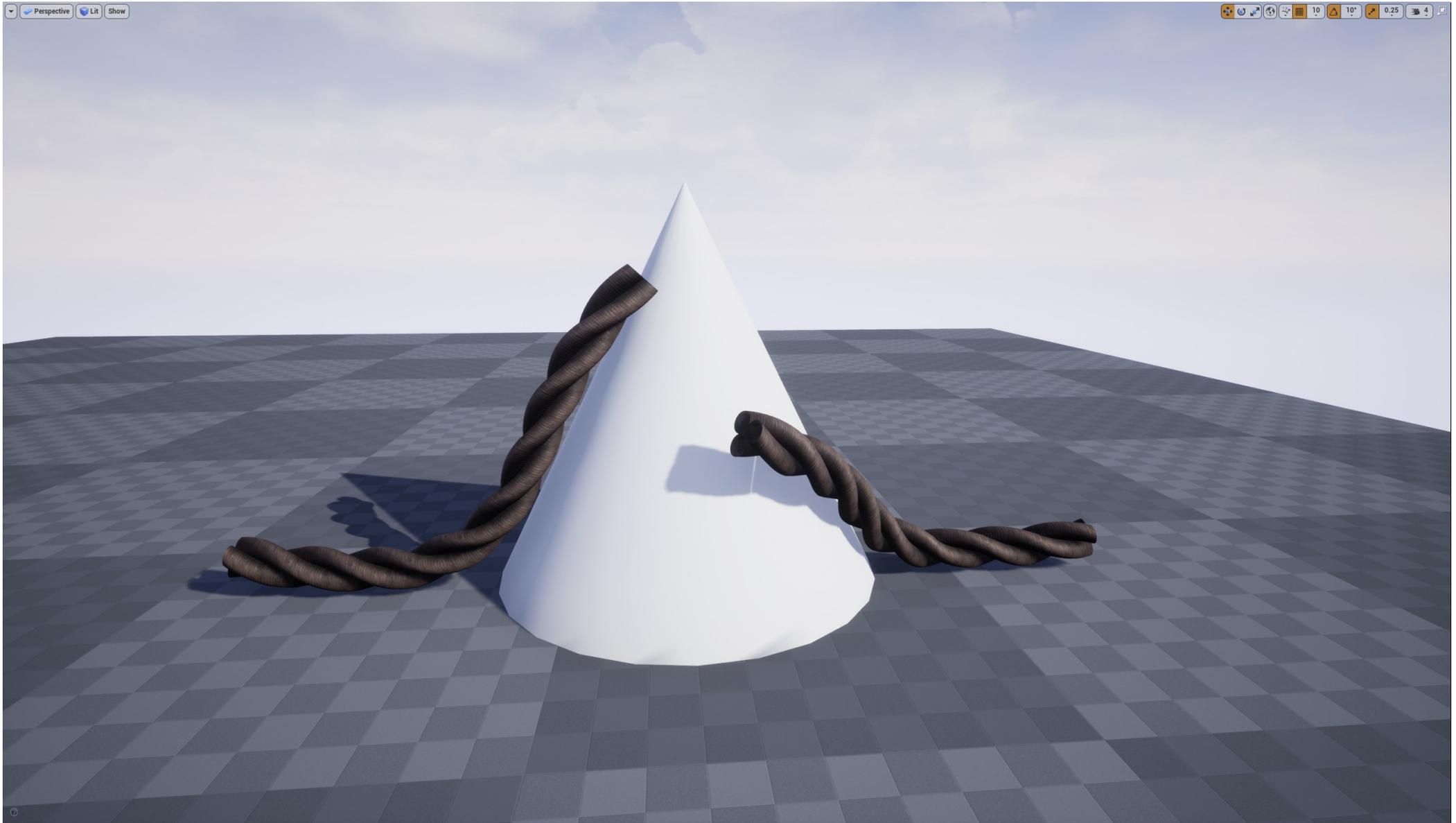
Clear

BLUEPRINT

Go to the implemented interfaces and add “RopeCuttingMessage”.



Go to the blueprint "BP\_RopeCutting\_StaticMesh\_01".  
Look in the event graph.  
Copy the contents of the graph.  
Paste the contents into the new rope actor's event graph.  
Ensure the "Get components by tag" component class is set to "Rope\_Cutting".  
Compile.



Test the new actor.