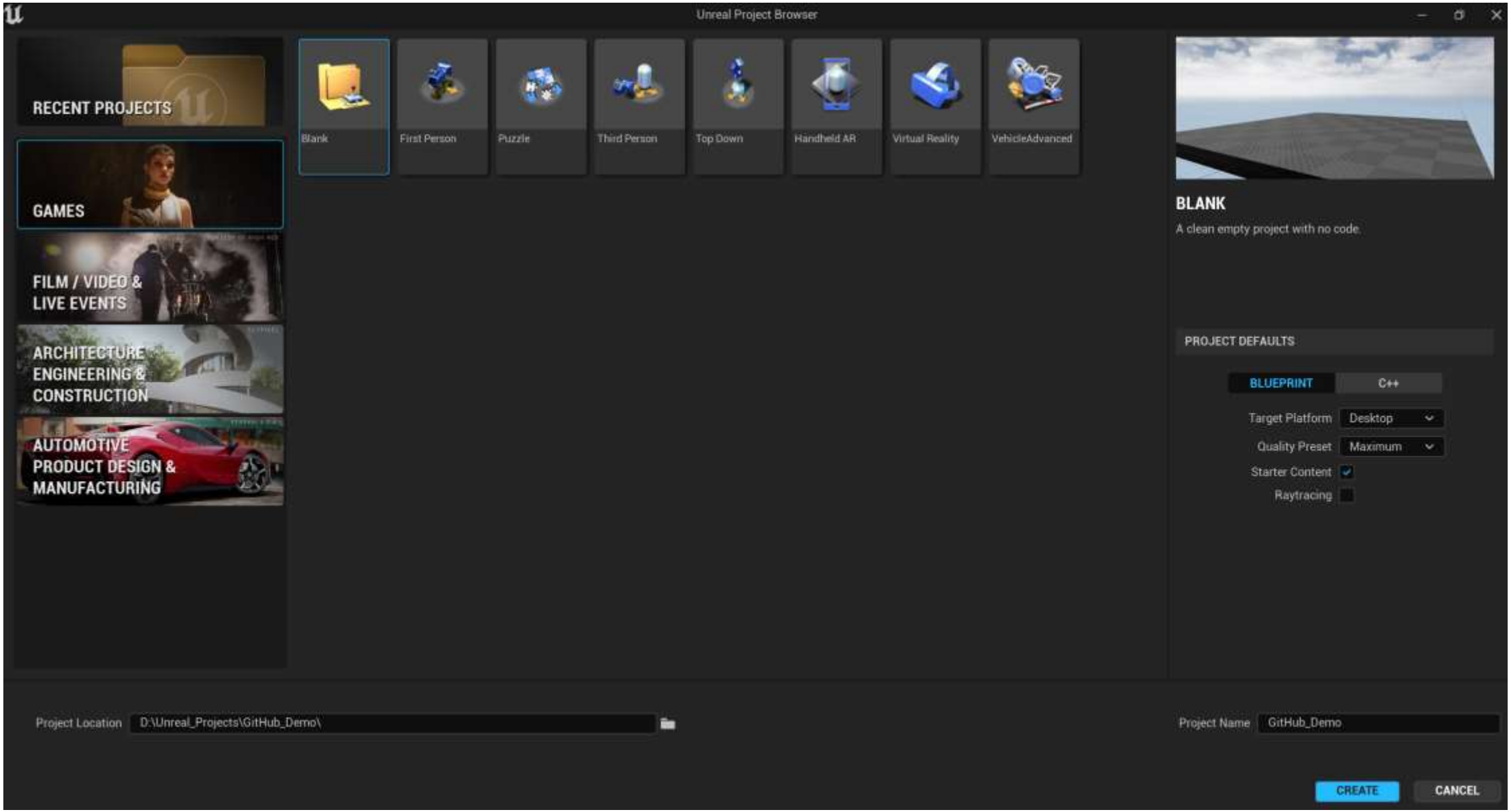
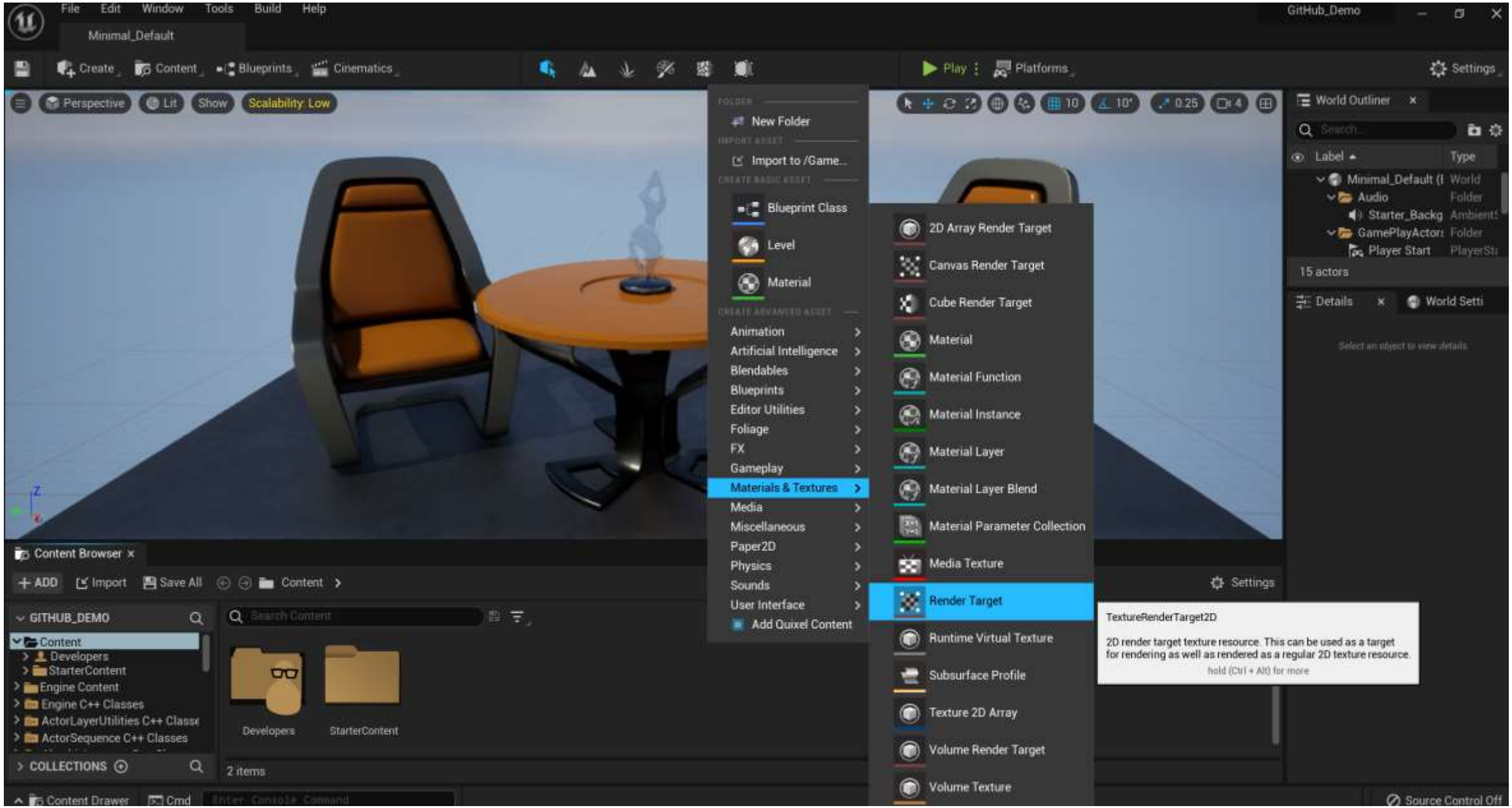
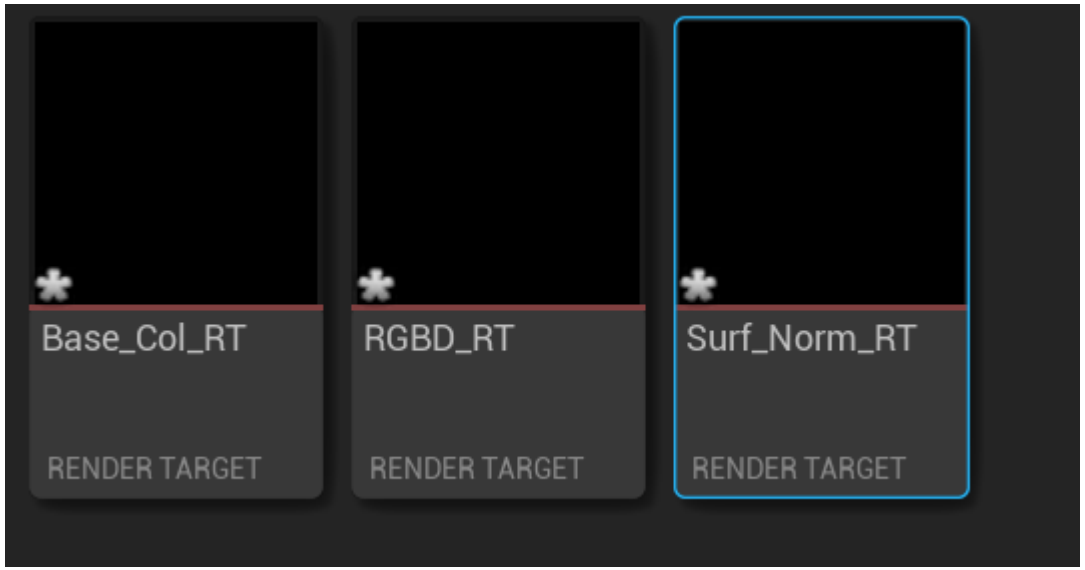
Begin by creating a new Unreal project, ray tracing is optional but can be enabled if desired



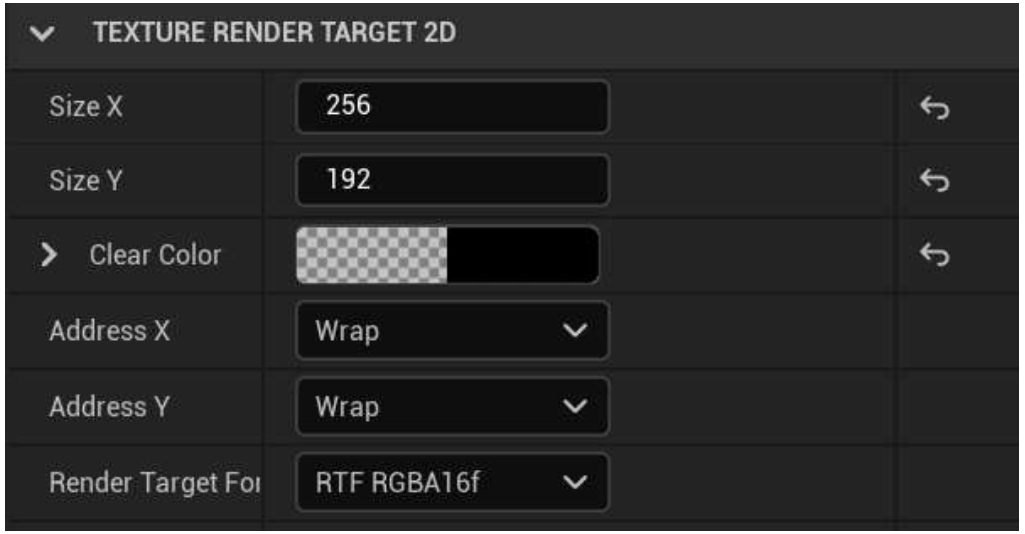
Right click within the content browser window at the bottom of the screen and create 3 render targets.



Rename the render targets too RGBD_RT, Base_Col_RT, and Surf_Norm_RT.

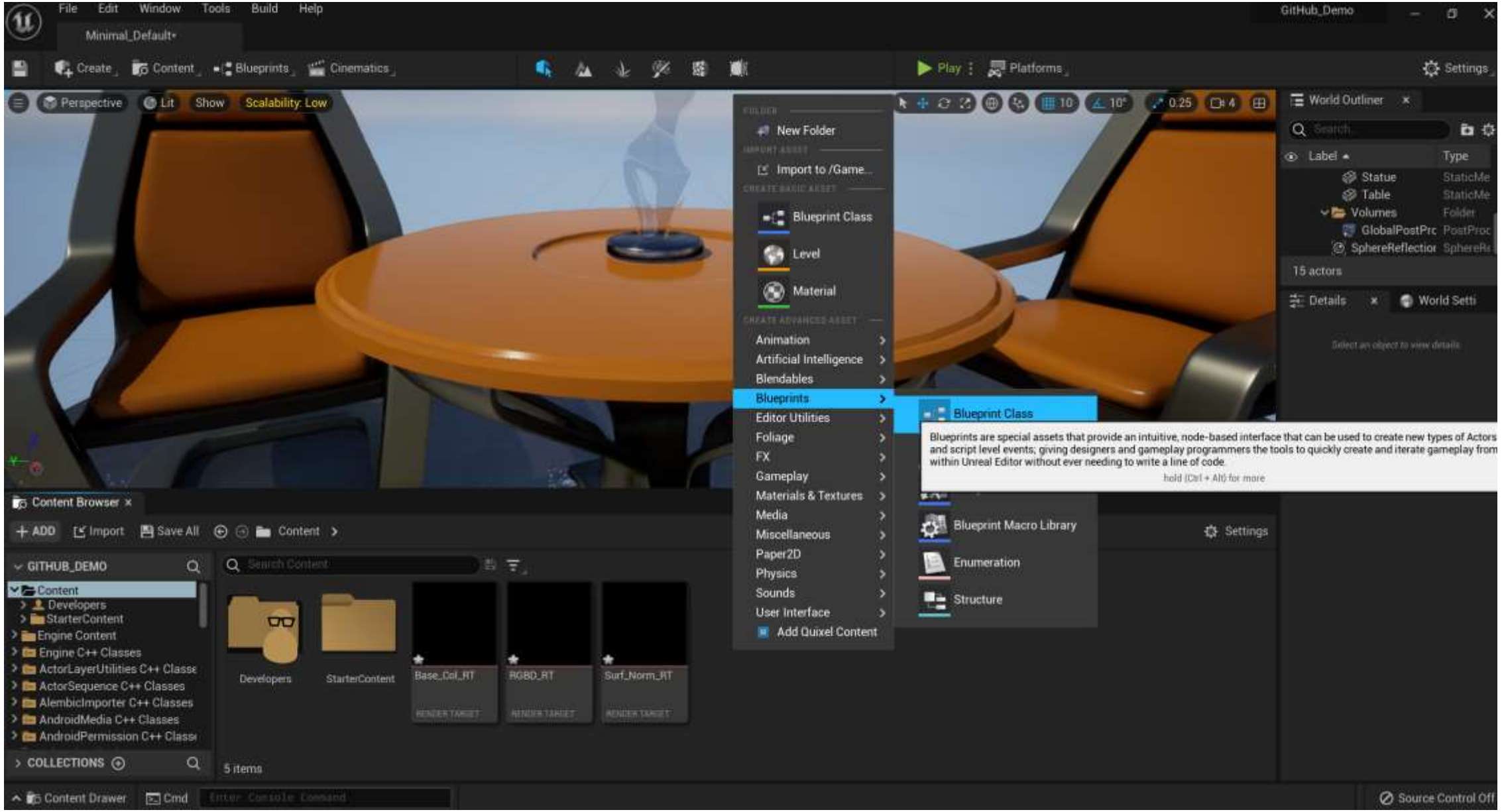


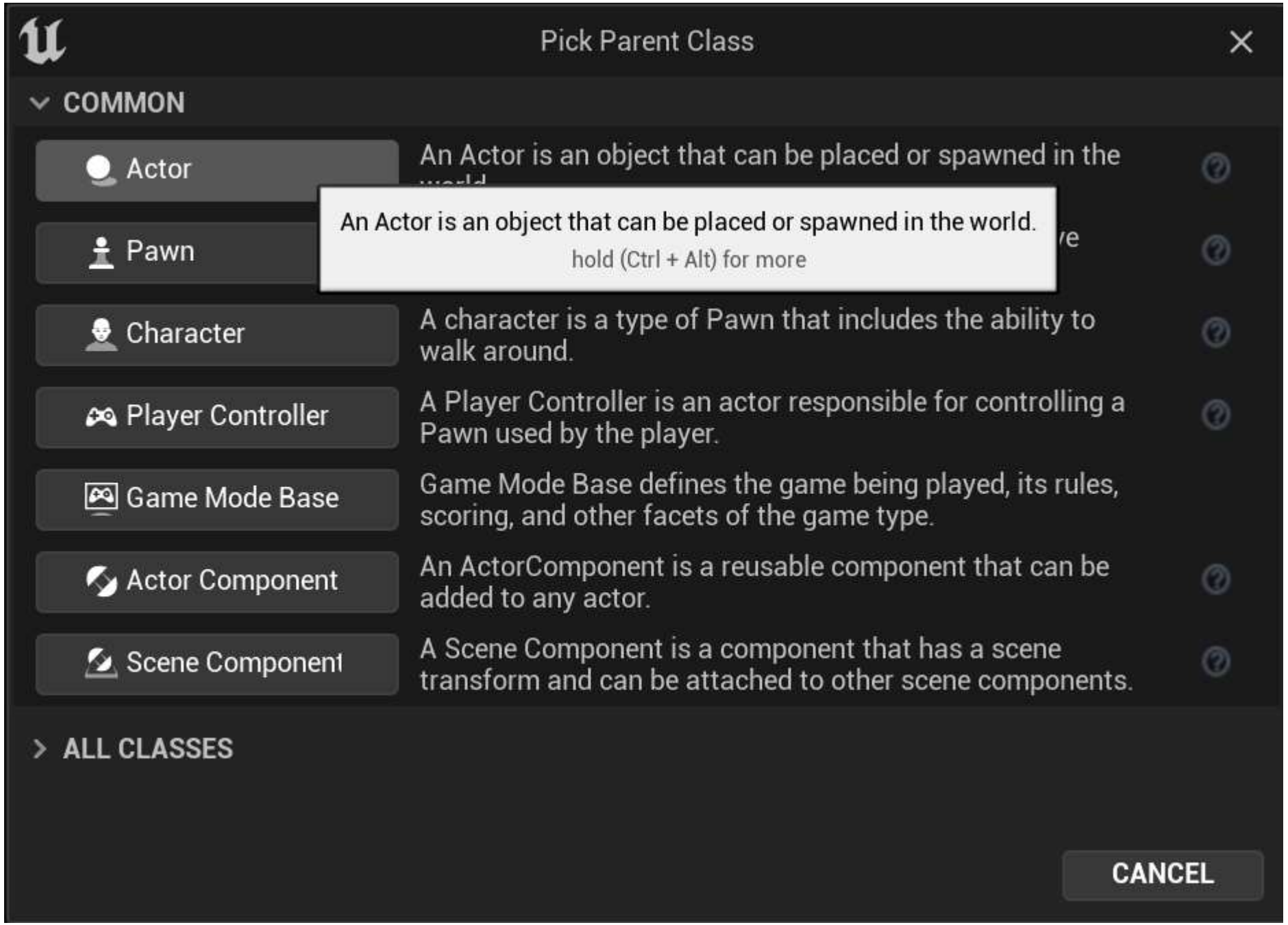
Double click on a render target to open its editing window. On the right hand side of the window ensure that the resolution is set to 256x192 and that the format is RTF RGBA16f. The reason for the doubled resolution in x is to match the 2:1 aspect ratio of the sensor. The Python code will remove half of the data columns as part of processing. This will maintain the correct resolution.



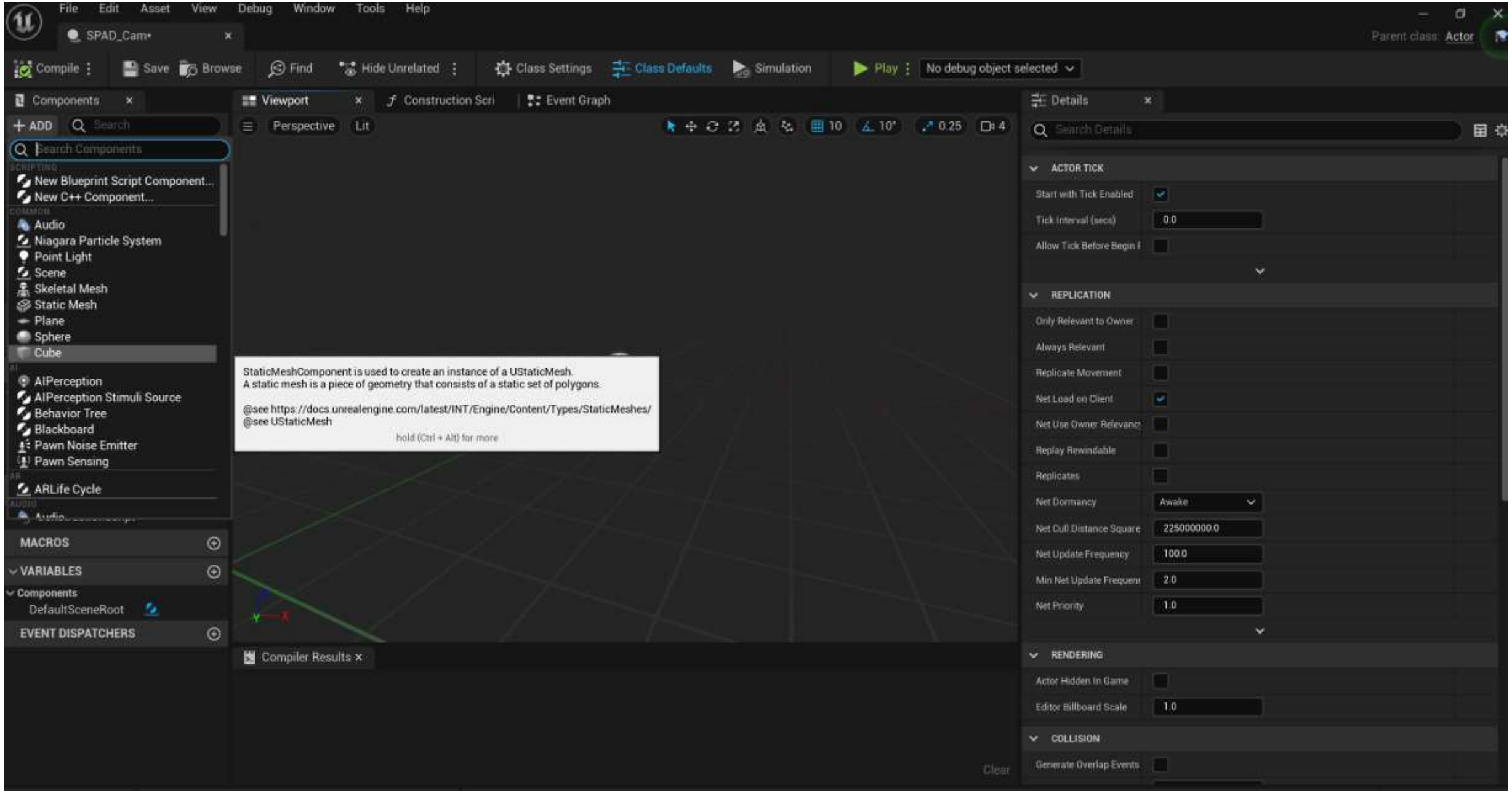
Repeat this check for all render 3 targets.

Right click within the content browser window at the bottom of the screen and create a new blueprint class of the actor type. Rename it to SPAD_Cam

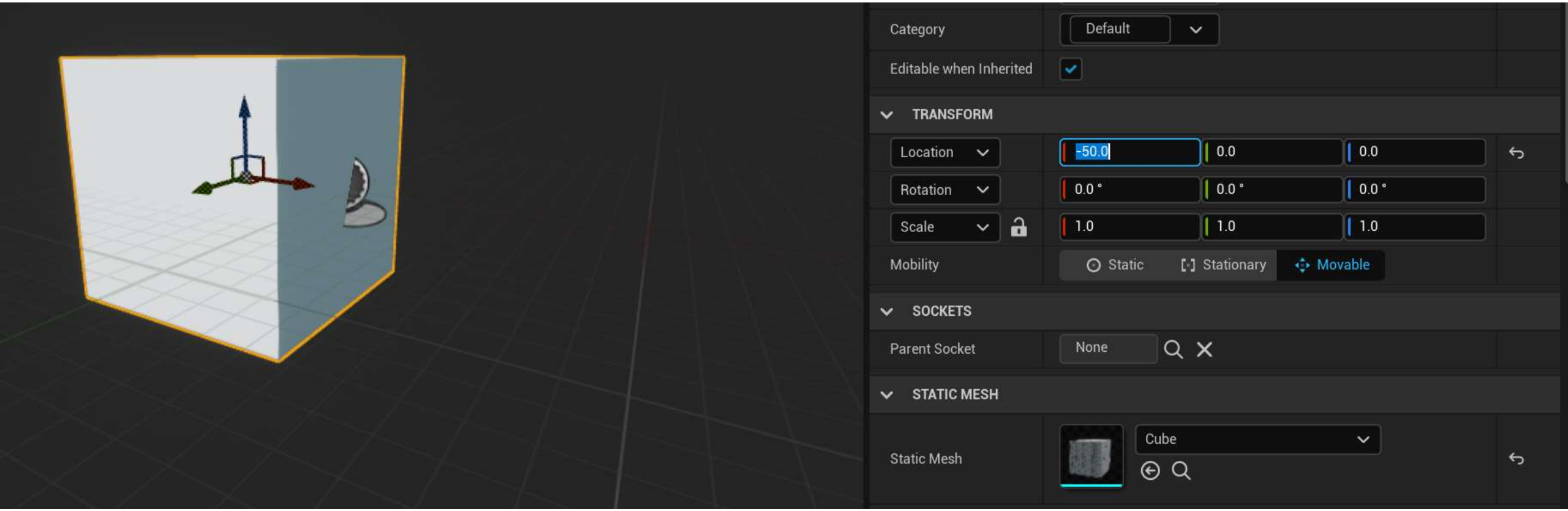



Pick Parent Class
COMMON
Actor
An Actor is an object that can be placed or spawned in the
An Actor is an object that can be placed or spawned in the world.
hold (Ctrl + Alt) for more
Pawn
Character
A character is a type of Pawn that includes the ability to walk around.
Player Controller
A Player Controller is an actor responsible for controlling a Pawn used by the player.
Game Mode Base
Game Mode Base defines the game being played, its rules, scoring, and other facets of the game type.
Actor Component
An ActorComponent is a reusable component that can be added to any actor.
Scene Component
A Scene Component is a component that has a scene transform and can be attached to other scene components.
ALL CLASSES
CANCEL

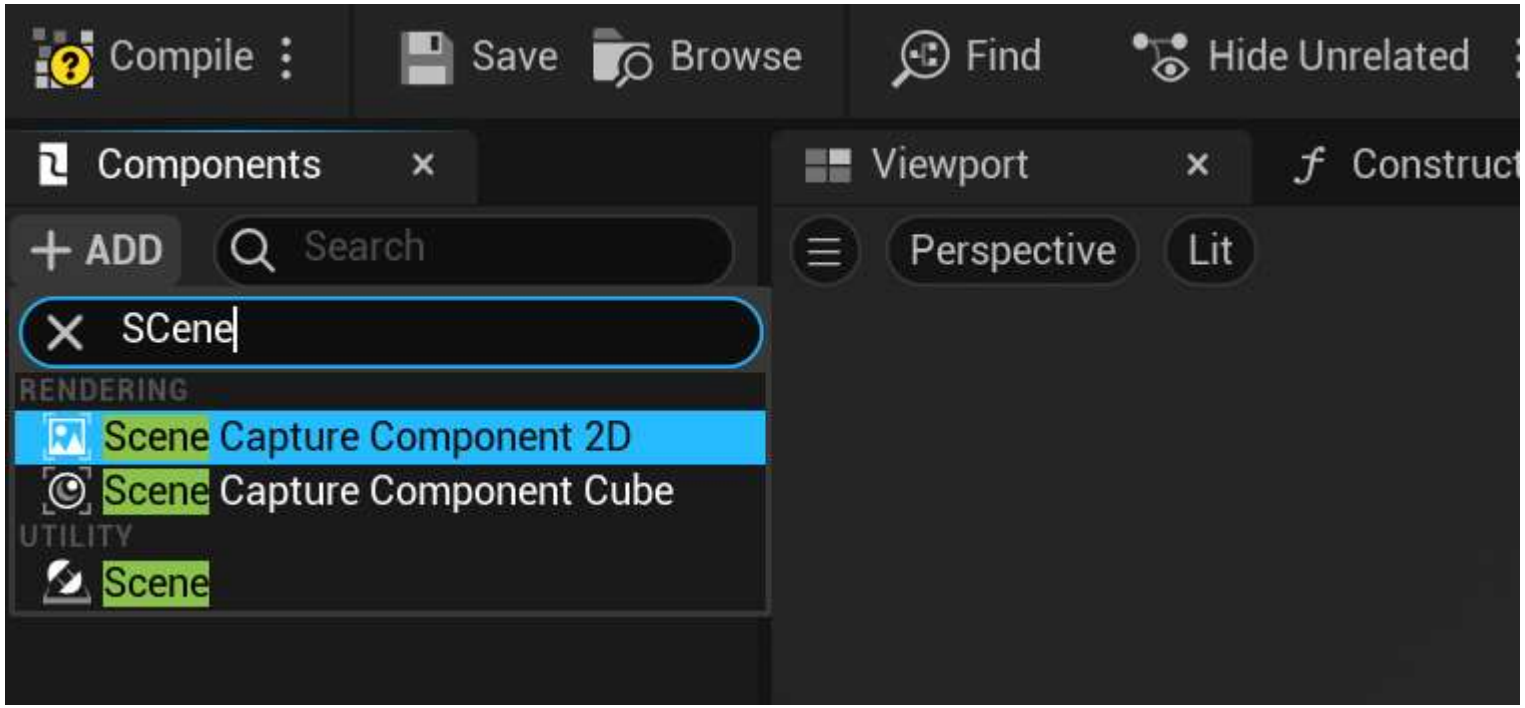
In the viewport add a cube. Adjust the position of the cube such that its face is at the origin. This is purely for visualizing where the SPAD camera is placed. Ensure SPAD_Cam(self) is selected before adding each component.



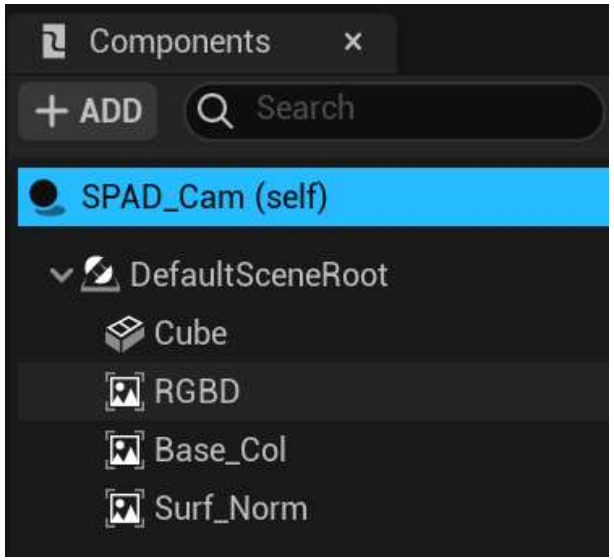
Be aware that Unreal uses centimeters as its units.



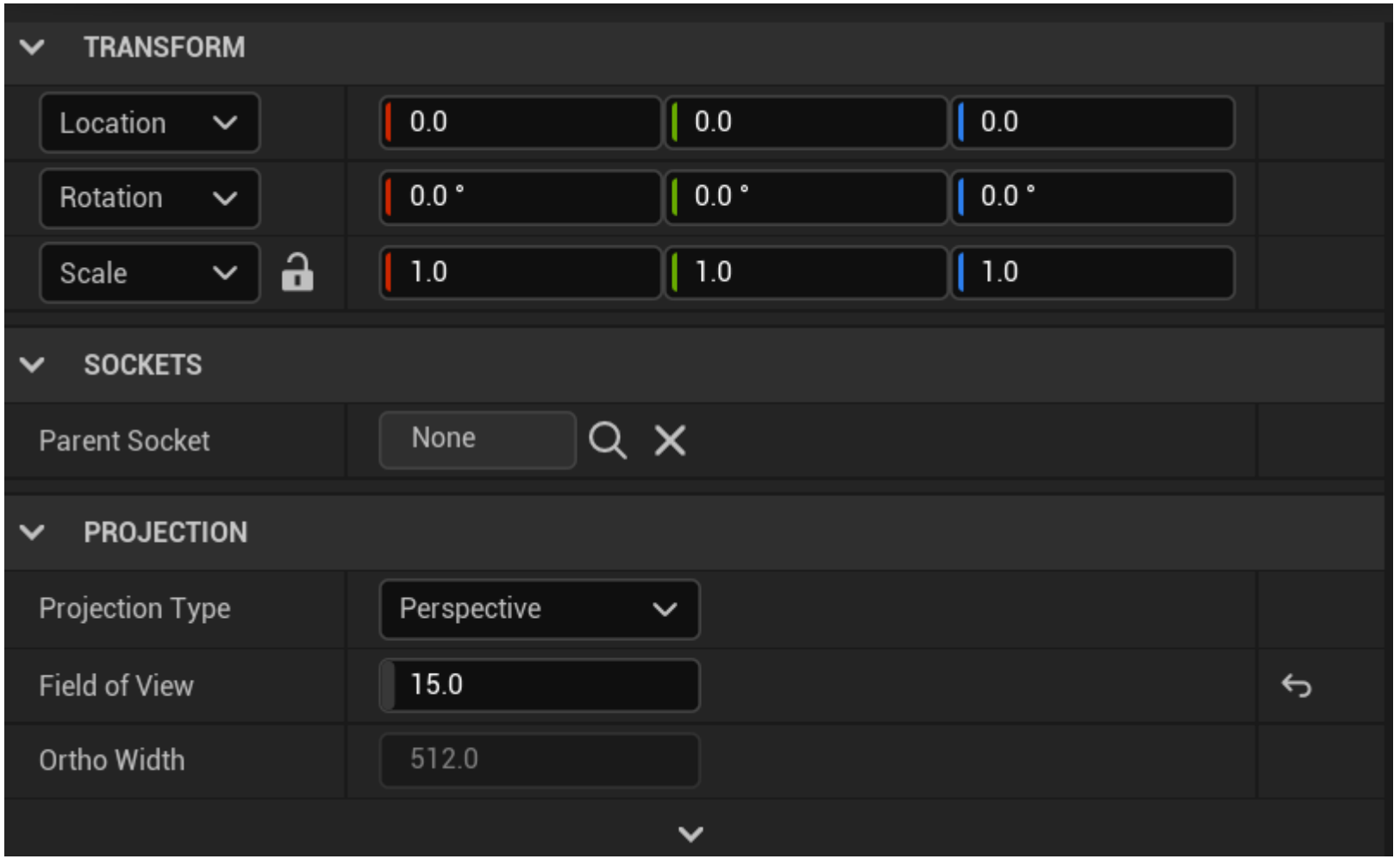
Add three scene capture component 2D to the actor and rename them RGBD, Base_Col, and Surf_Norm.



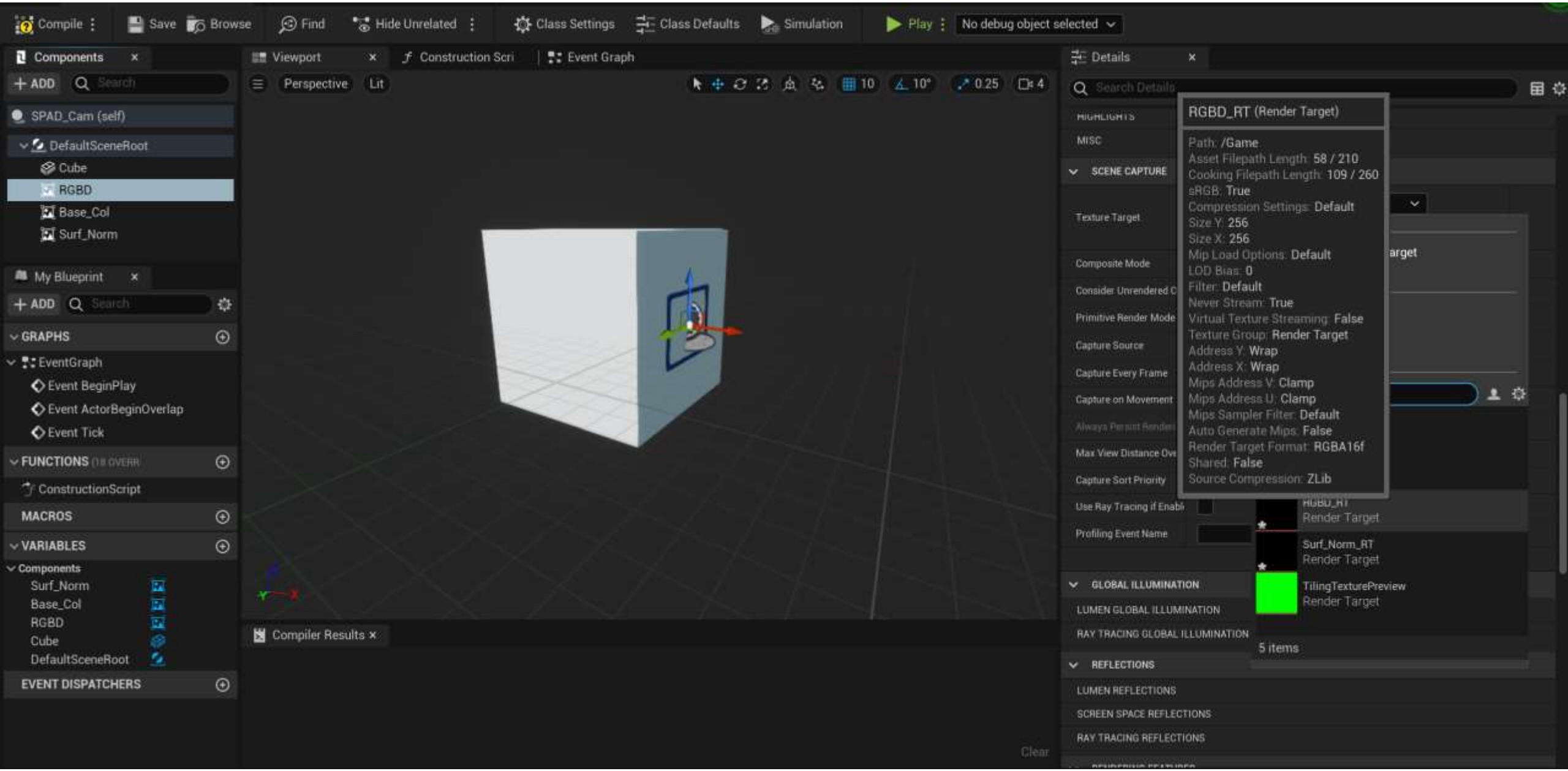
When complete the components should be.



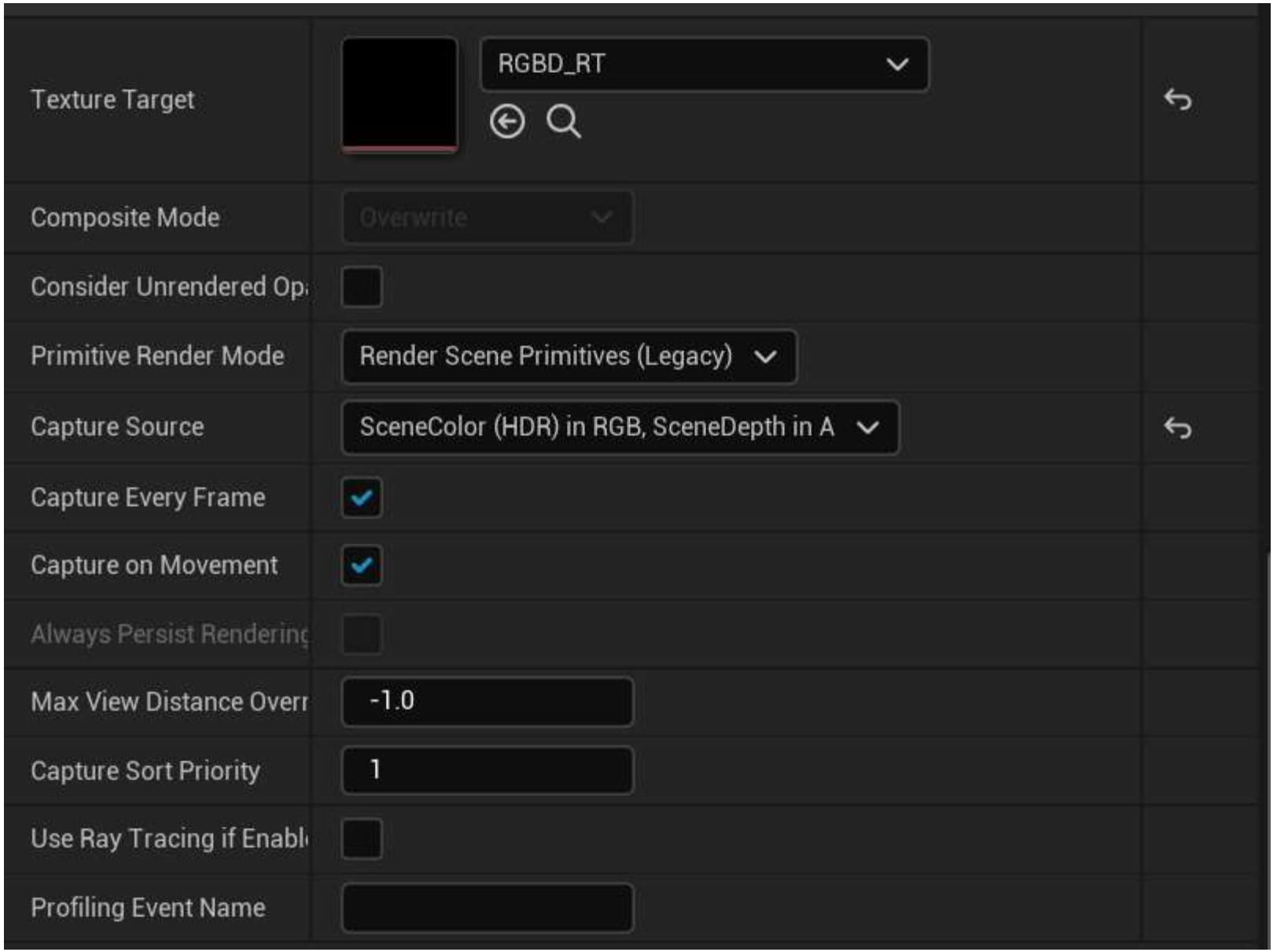
Select the RGBD scene capture 2D component. On the right hand side of the screen set the desired field of view (The default is 90)



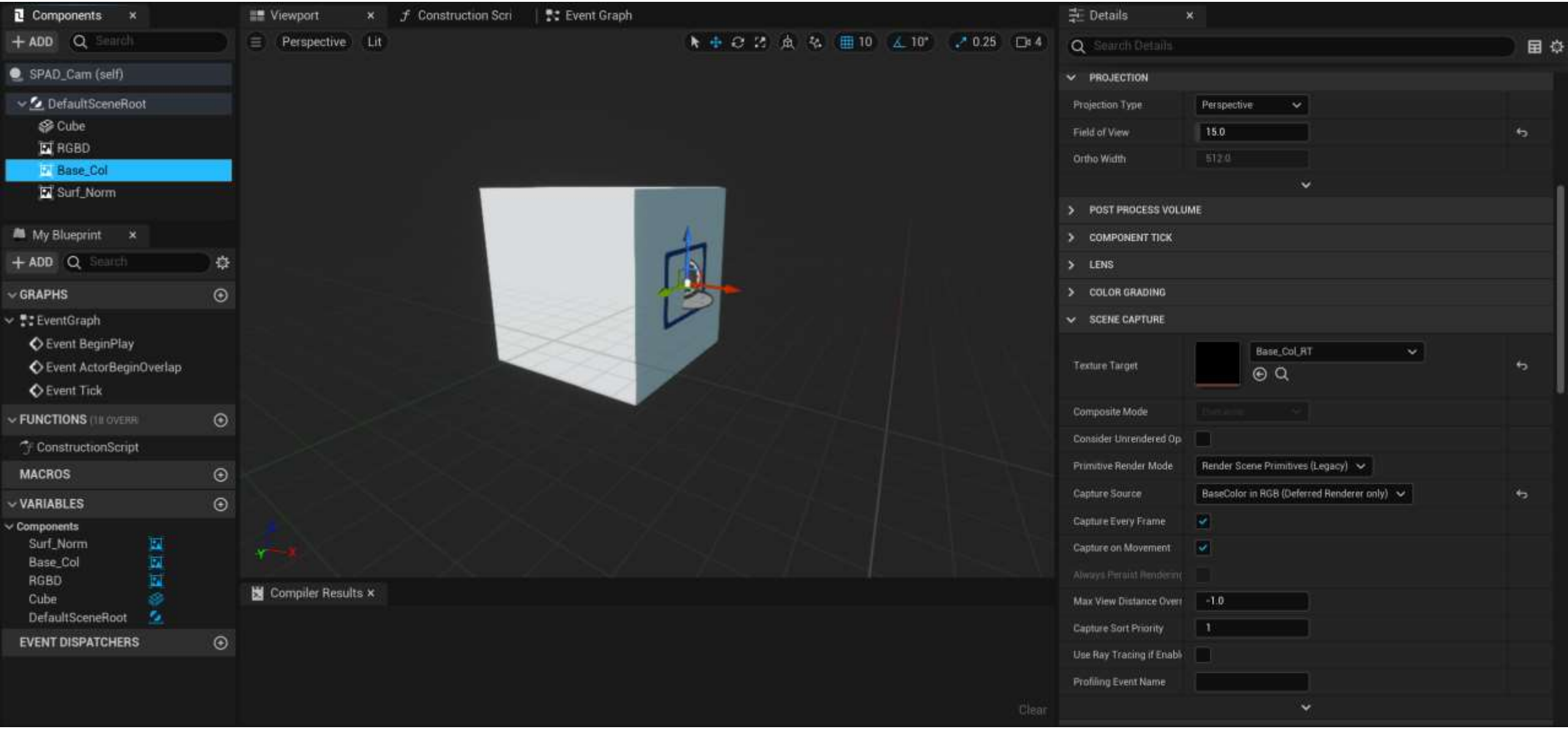
Set the texture target to RGBD_RT

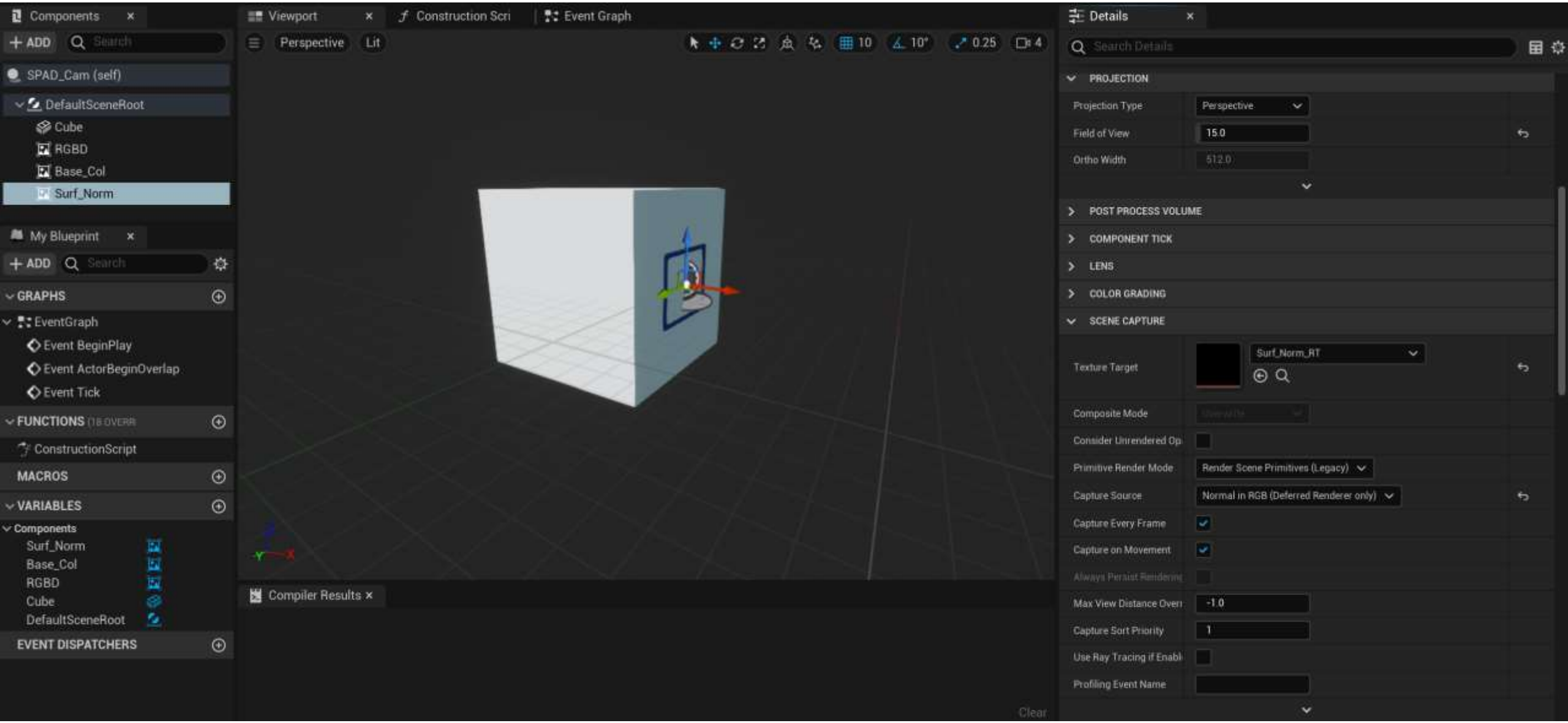


Set the capture source to SceneColor (HDR) in RGB, SceneDepth in A

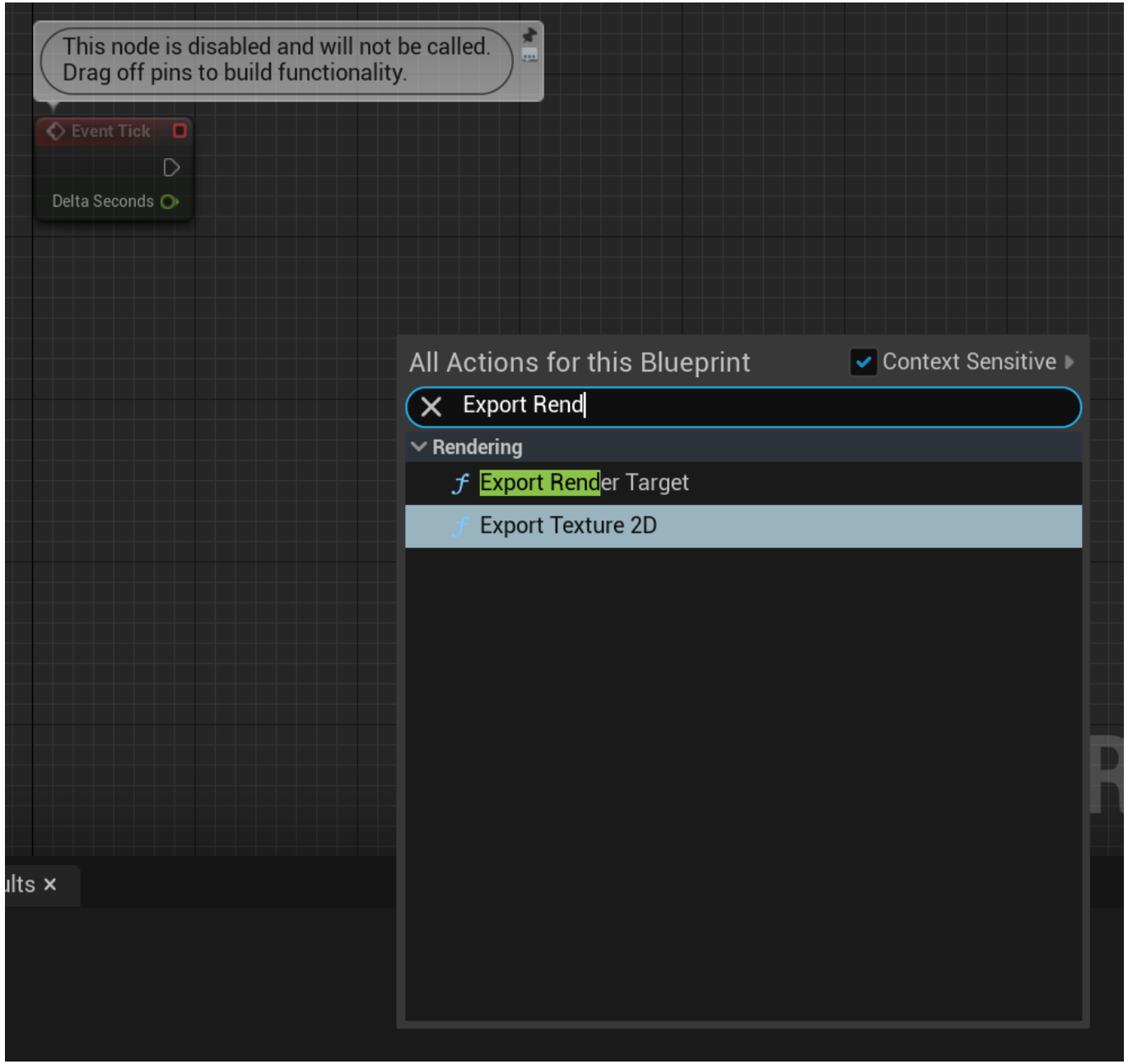


Repeat this process for the remaining scene capture components. Ensure that the field of view is the same for all components and that each component is targeted to the correct render target with the correct capture source.

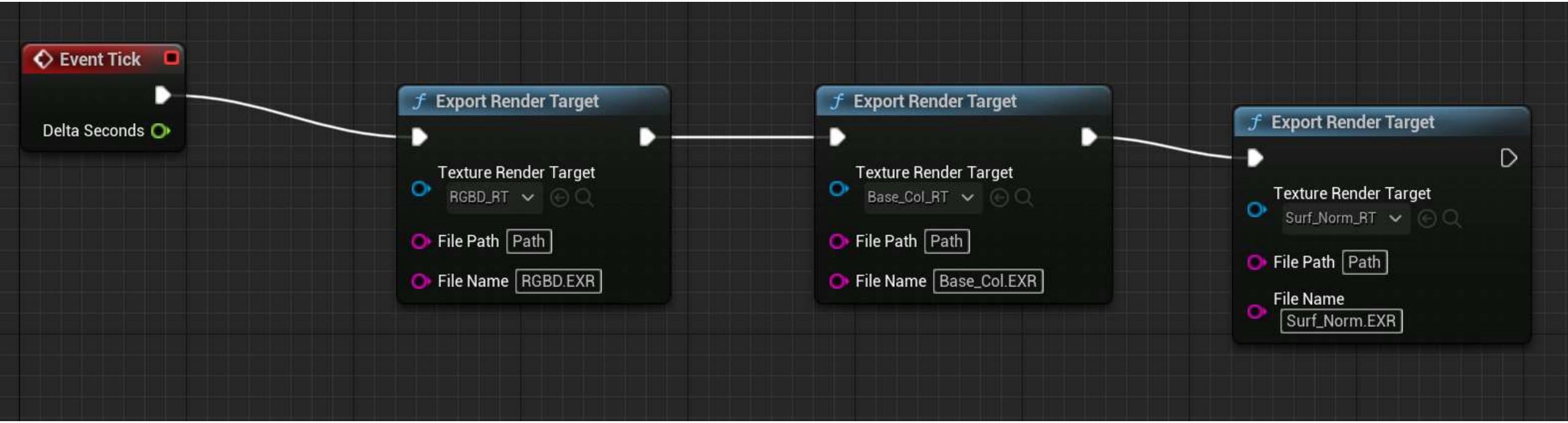



Components
ADD
Search
SPAD_Cam (self)
DefaultSceneRoot
Cube
RGBD
Base_Col
Surf_Norm
My Blueprint
ADD
Search
GRAPHS
EventGraph
Event BeginPlay
Event ActorBeginOverlap
Event Tick
FUNCTIONS
ConstructionScript
MACROS
VARIABLES
Components
Surf_Norm
Base_Col
RGBD
Cube
DefaultSceneRoot
EVENT DISPATCHERS
Viewport
Construction Scri
Event Graph
Perspective
Lit
10
10°
0.25
4
Compiler Results
Clear
Details
Search Details
PROJECTION
Projection Type
Perspective
Field of View
15.0
Ortho Width
512.0
POST PROCESS VOLUME
COMPONENT TICK
LENS
COLOR GRADING
SCENE CAPTURE
Texture Target
Surf_Norm_RT
Composite Mode
Consider Unrendered Op
Primitive Render Mode
Render Scene Primitives (Legacy)
Capture Source
Normal in RGB (Deferred Renderer only)
Capture Every Frame
Capture on Movement
Always Persist Rendering
Max View Distance Overr
-1.0
Capture Sort Priority
1
Use Ray Tracing if Enabl
Profiling Event Name

Select the event graph tab. Once in the event graph, near the event tick node, right click and search for the Export Render Target node.



Add three of these nodes and wire them as shown below.



Ensure that the file format is .EXR

Click the compile button at the top of the screen and return to the main Unreal screen.

Click and drag the SPAD_Cam blueprint into the viewport to add it to the environment.