Lighting Control

UE4 Character Cel Shading Pack

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Default: The Custom Lighting Parameter Collection

Character Cel Shading Material performs an independent lighting pass that does not use scene lights by default. Basically, the light direction and color are controlled by a parameter collection named **CharCelShadingParameterCollection** at **\Content\CharCelShadingPack\CharCelShadingParameterCollection**. Users can manually input light direction and color in the collection to change the cel shading light condition.

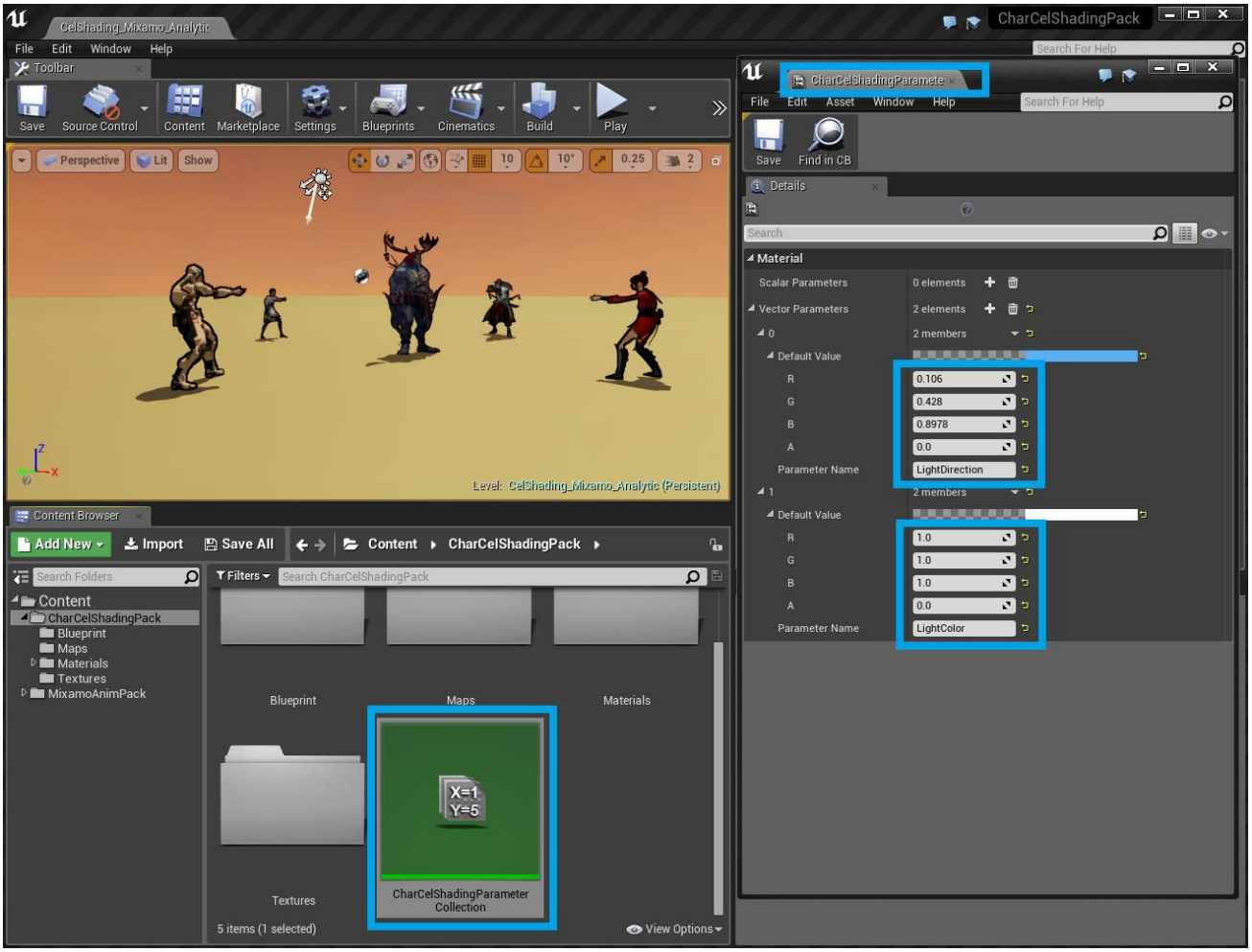

Figure 1. The values in the CharCelShadingParameterCollection controls the cel shading light condition

Scene Light Integration in the Design Stage

An easier and more intuitive way to control the cel shading light condition is to use an integrated light actor which connects its values with the parameter collection. Our pack contains a blueprint class and a level blueprint to do such a thing. Users can add our custom light actor CharCelShadingDirectionalLight to the scene. Then, the light condition, i.e., the values in the CharCelShadingParameterCollection are changed by the orientation, light color, and intensity of CharCelShadingDirectionalLight.

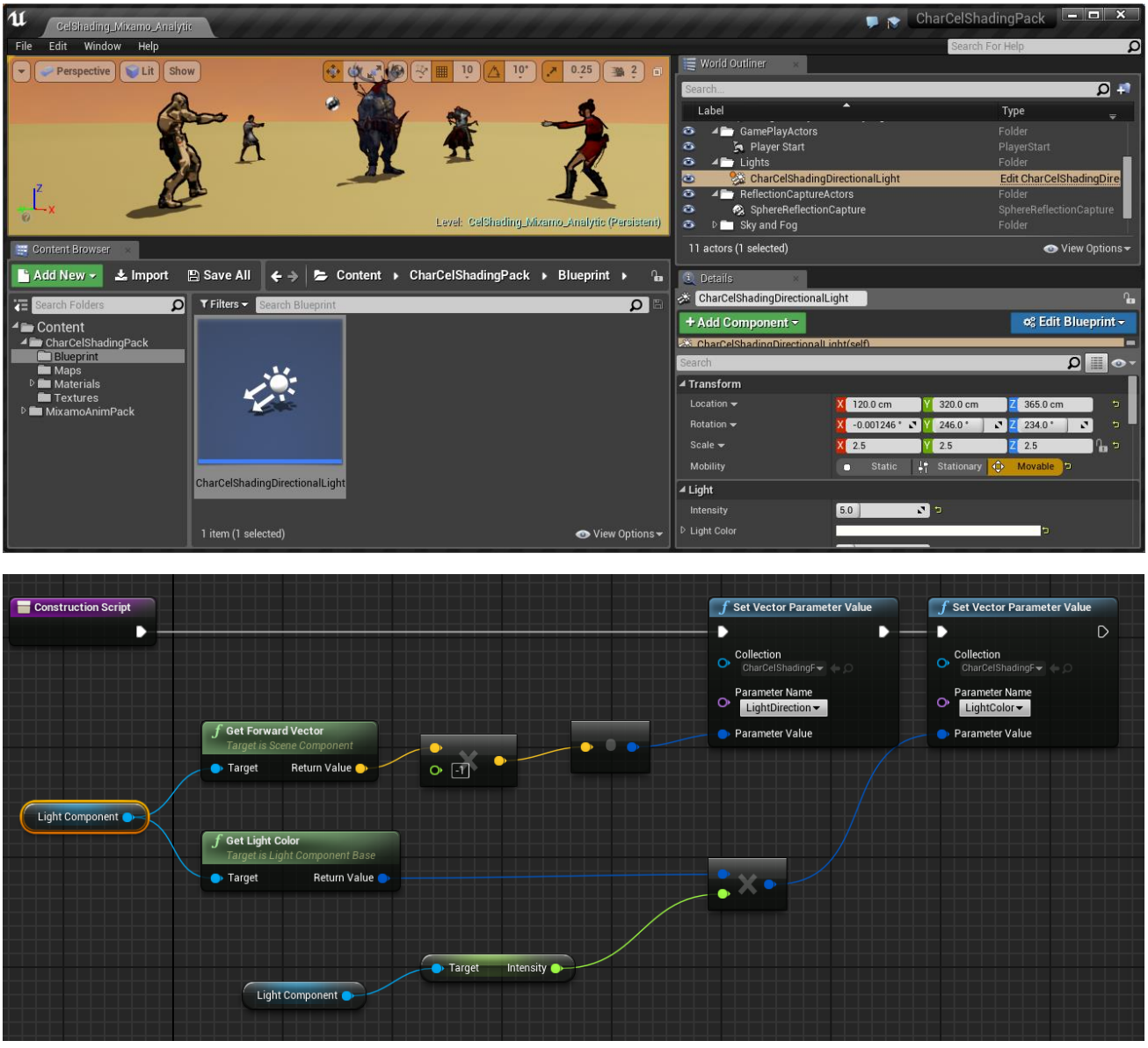

Figure 2. The CharCelShadingDirectionalLight Custom Light Actor connects its values with the parameter collection values.

Scene Light Integration in the Game (or Game Mode)

However, notice that by adding the actor, the integration only performs at design stage, but not in the game mode. To enable the same sort of integration in the game mode, Users need to add the same logic in the level blueprint, which is written in our sample stages both CelShading_Mixamo_1DTex and CelShading_Mixamo_Analytic.

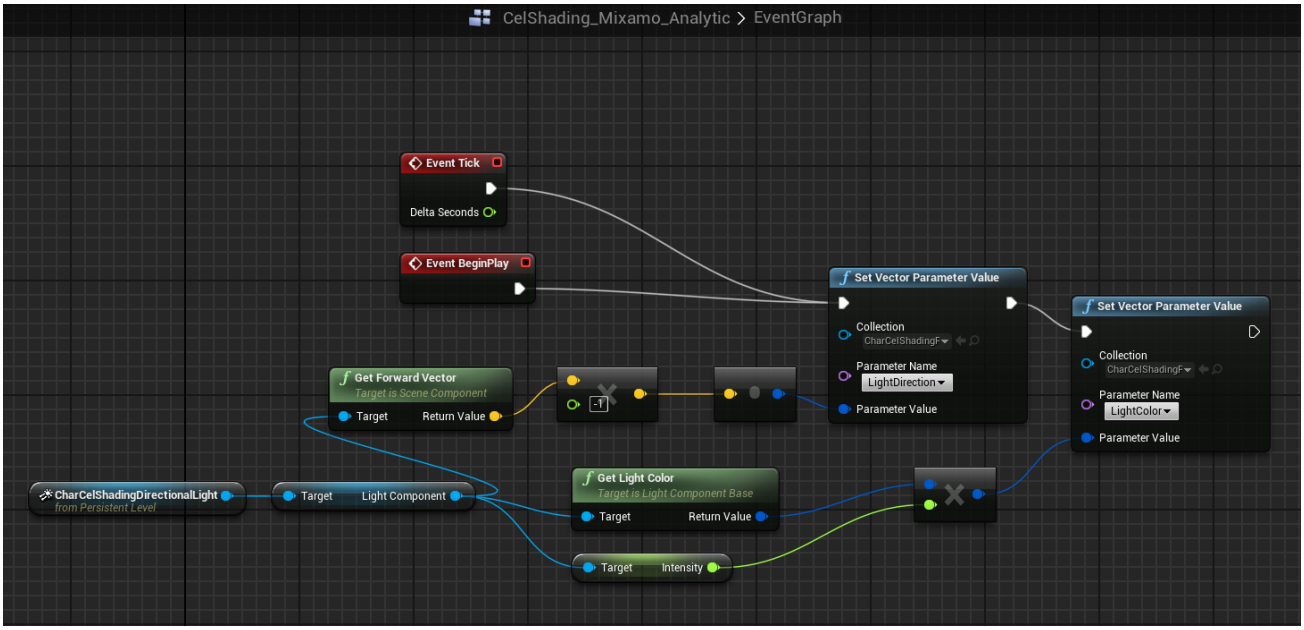

Figure 3. The level blueprint to feed parameter collection values from the light component values.

The Custom Per-Character Lighting

Despite the non-physicality, Cel shading artists usually wants to control the lighting of a character separately to the global settings, to obtain better shape of Cel shading boundaries, etc. The Character Cel Shading Pack supports such a need by providing custom light parameter options in the material instances.

The Custom Character Lighting options in the material instance have custom light direction, custom diffuse light color, and custom specular light color options. They are designed to have static switches so as to minimize performance overheads when the custom lighting is not used. Notice that we enabled separated diffuse and specular light colors for more artistic control of character outlook.

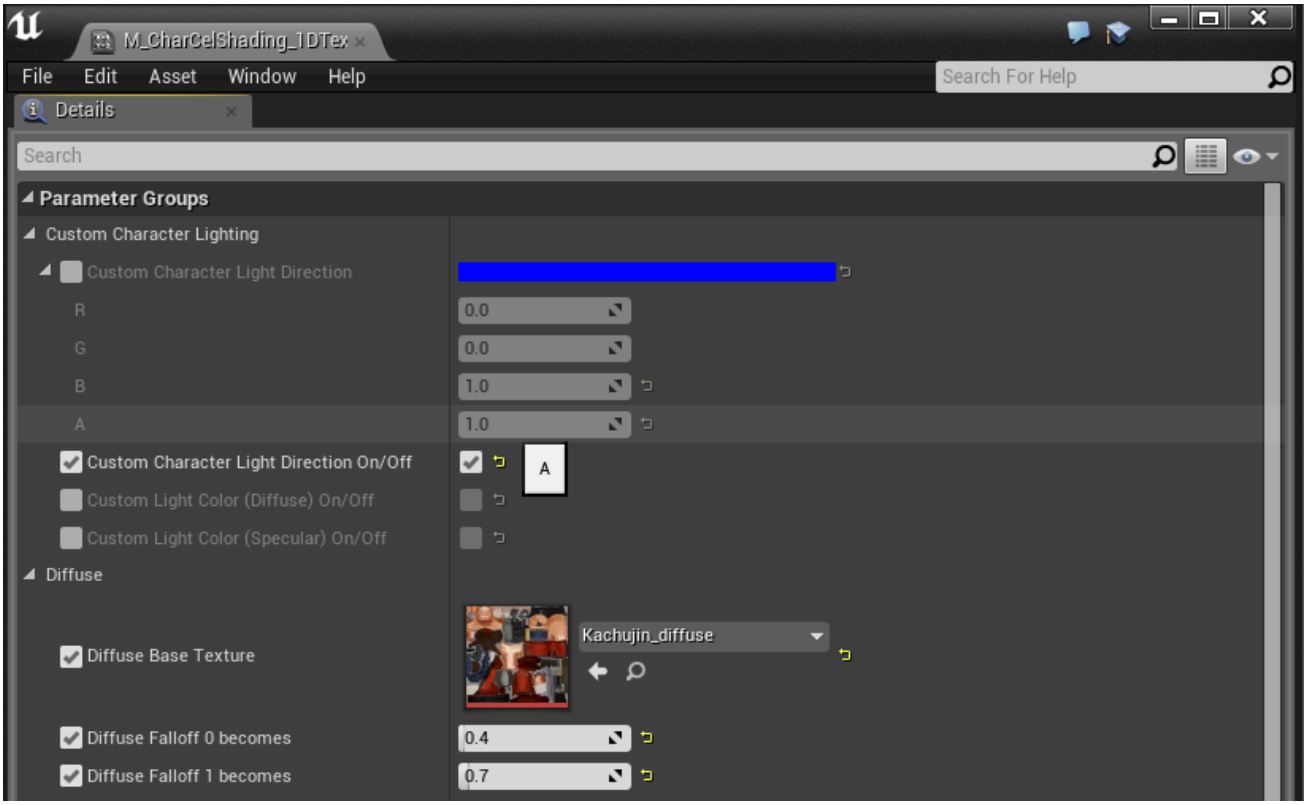

Figure 4. Custom Character Lighting options in the material instances

Controlling the shadow sharpness

When Cel shading is applied, what artists also wants to do is usually make the shadow boundaries sharp. Such a control can be done very easily by built-in UE4 engine light parameter named Shadow Filter Sharpen. When a directional light actor exists in the scene (our CharCelShadingDirectionalLight is basically also a direction light actor), by controlling the parameter, shadow boundary can be smoothed or sharpened. We observed 1.0 value is usually adequate for cel shading characters' shadow.

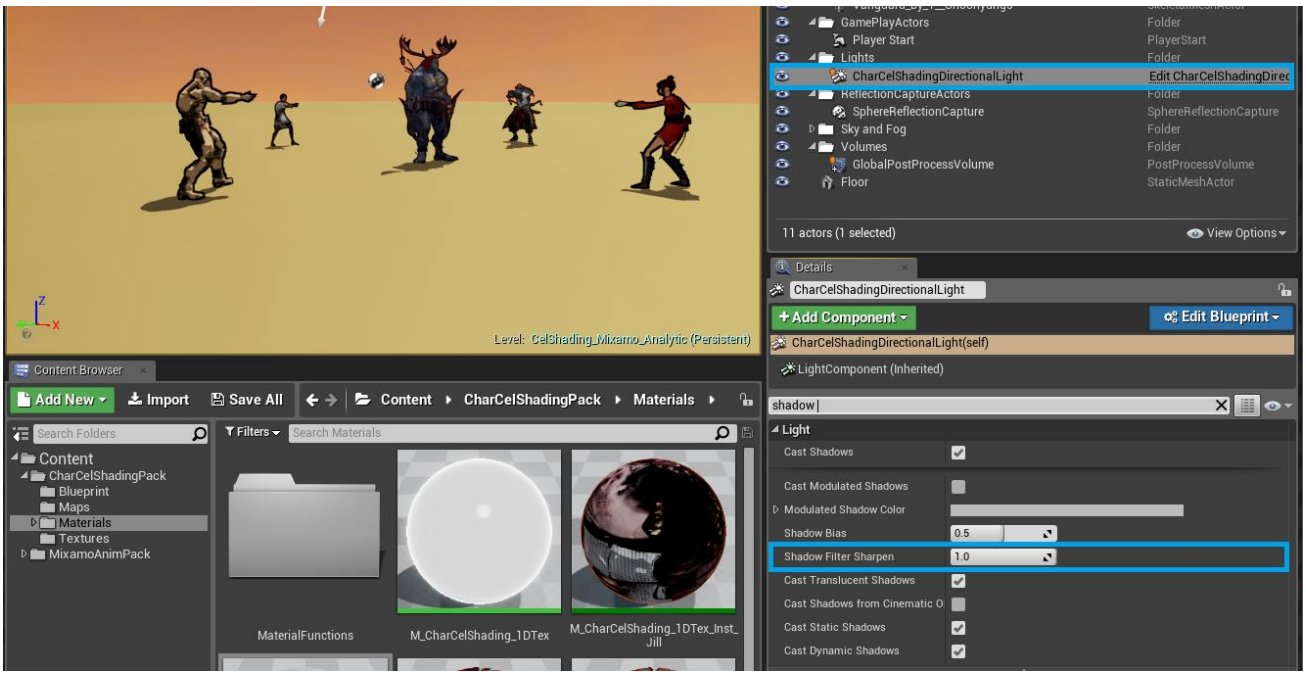

Figure 5. Controlling shadow boundary sharpness