

## Weapon system

With this system being responsible for handling logic for weapons, including, firing, animations etc, I needed a way for it to be easy to create additional weapons, and allow myself to customize their firing to my liking.

To handle weapons in this game, I opted for a Data Asset driven system for the ease of use, and the ease of creating weapons and prototyping them in game.

Similarly to the interaction system, I used an actor component to hold the main logic of the weapon (firing, reloading, triggering animations), that way any single character in the game can hold and use a weapon. This going hand in hand with an AC\_AnimationManager, which holds an Enum\_AnimationState variable that the Character's Anim BPs will use to display specific interactions, AC\_Weapon, tells AC\_AnimationManager to play the Character specific animation (recoil, reloading), whilst AC\_Weapon handles the weapon's relevant animations.

I created a Primary Data Asset that contains variables to drive the logic of the weapons. Below is the Data Asset that designers would interact with:

Struct_WeaponStats	WeaponDamage (float)	Damage per line trace
	FireDelay (float)	How long to wait before the weapon can be fired again
	WeaponRange (float)	How far the weapon hit traces reach
	WeaponLoudness (float) (not implemented)	How far the audio for the weapon can be heard by AI Perception
	ShotsPerTriggerPull (int)	How many line traces will be fired on the player firing the weapon.
	ShotSpread (float)	How inaccurate additional line can be from directly in front of the player.
	ShotsPerTriggerPull_Delay (float)	The time gap between each Line trace, >0 = Burst fire <=0 = Shotgun
Struct_WeaponSoundData	FireSounds (Audio Wave Array)	The firing audio for the weapon, will be randomly chosen when the weapon is fired
Struct_WeaponAesthetics	WeaponID (Enum_ItemAnimationID)	Allows the player Anim BP to adjust idle and aiming pose to the correct set of animations
	WeaponMesh (Skeletal Mesh Asset)	The Skeletal Mesh asset for the weapon
	WeaponAnimations (Struct_WeaponAnimations)	The weapon's personal animations

	CharacterAnimations (Anim Sequence Array)	The character specific animations relating to the weapon
Struct_WeaponVisuals	CartridgeMesh (StaticMesh)	The mesh that will be produced when the weapon is fired
	CameraShakeScale	How much to multiply the shake provided by CameraShakeClass, only used when I need to specifically use it, i.e. for a shot with increased power.
	CameraShakeClass (CameraShakeClass)	The camera shake to apply when the weapon is fired

When a Data Asset has been created, it can be assigned in the AC\_Weapon component, it will then automatically update everything that is relevant, including the weapon mesh, and automatically – the animations.