

Third Person Controller - Shooter Template

(v2.5.1 - 01/05/2020)

Thank you for supporting this asset, we developed this template because a lot of developers have good ideas for a Third Person Game, but building a Controller is really hard and takes too much time.

The goal of this template is to deliver a top quality controller that can help those who want to make a Third Person Game but are stuck trying to make a controller.

With this template, you can set up a 3D Model in just a few seconds, without the need of knowing advanced scripting or wasting time dragging and dropping game objects to the inspector, instead you can just focus on making your game.

--- Invector Team ---

Ps* This Documentation will cover the **Shooter Features**, there is another documentation for the **Basic Locomotion** and **Melee Combat** on their respective folders.

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FIRST RUN

IMPORTANT

This is a Complete Project, and as every complete project it includes a custom InputManager, Tags, Layers, etc... Make sure that you import on a Clean Project.



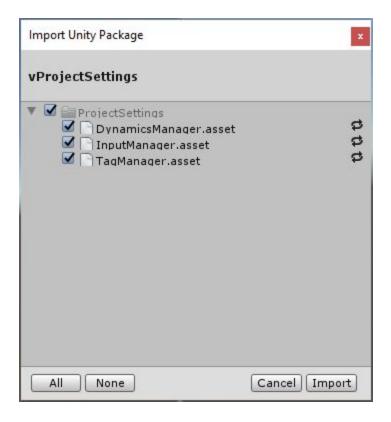
Importing on an existent project

There are basically 3 files that are extremely necessary for the correct functioning of this template.

- **DynamicsManager**.asset this will apply correct all the Collision Matrix of our Layers, for example we need the layer "Triggers" to not collide with the layer "Player".
- *InputManager*.asset We have a custom input mapped with the Xbox360 controller, if you don't input those 2 files, the template will present errors and undesired behaviour.
- TagManager.asset Includes all the necessary Tags and Layers for the project to work correctly.

After importing the template you can manually import those files by going to the tab **Invector** > **Import ProjectSettings.**



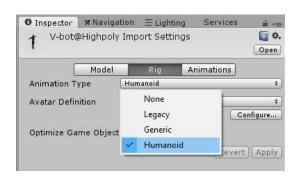


Now that you have imported the necessary files, you can explore the several demo scenes and figure it out what kind of Third Person Game you want to create.

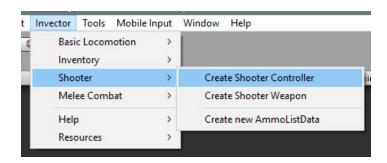
*Updates also need to be imported into a Clean Project, so MAKE SURE TO BACKUP your previous project and transfer the necessary files to your new project. *

CREATING A NEW SHOOTER CONTROLLER

Make sure that your fbx character is set up as Humanoid



To setup a new character, go to the tab Invector > Shooter > Create Shooter Controller

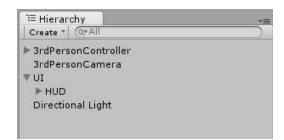


Make sure your Character is **Fully Rigged** and set up the FBX as a **Humanoid**, then assign the FBX to the field "FBX Model" and click on the button "Create".



Ps* Make sure to select the **Invector_ShooterOnly or Invector_ShooterMelee** if you want to use both shooter and melee as your Animator Controller, you can find the file at the folder: Shooter > Animator, or just click on the little circle icon.

The **Character Creator** window will take care of all the hard work automatically and set up components such as capsule collider, layers, tags, rigibody, etc... It will create the **ThirdPersonController**, **ThirdPersonCamera** and a UI Canvas with a **HUD** to display health, stamina and other information.



Your Capsule Collider settings will be based on your model proportions, if the capsule gets the wrong size, make sure that you rig is correct, and that your **model is using the correct Scale Factor** the same goes if the ragdoll **gets** weird.

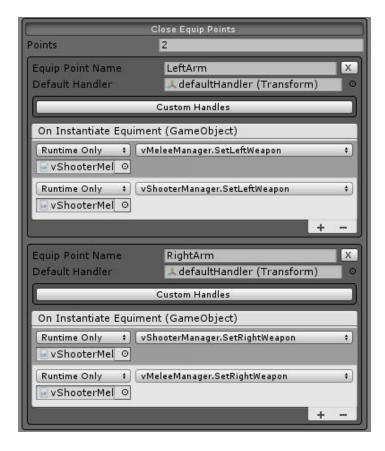
Hit Play and enjoy ⊙

HOW TO ALIGN A SHOOTER WEAPON (RIGHT HAND)

After creating your character, you will need a 'handler' to manage the position/rotation of the weapons you instantiate in game.

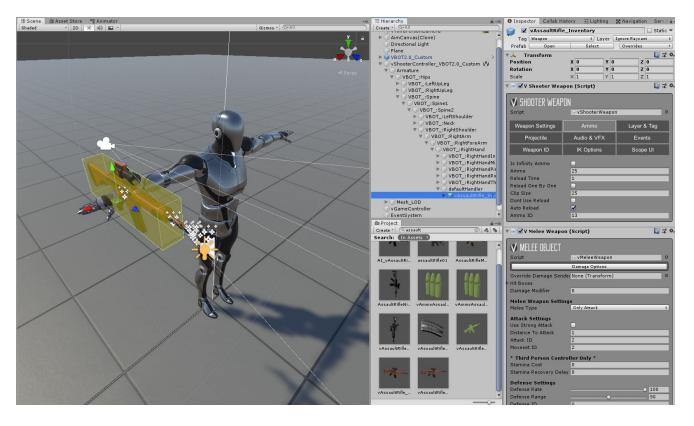
A **Handler** is basically an empty transform located inside your character's left and right hands, you will first align this handler into a position where a weapon looks correct in the characters hand and all weapons will be instantiated there when you pick up the collectible.

If you choose to use our **Item Manager**, both handlers will be automatically created for you once you attach the ItemManager to your character and you can see them or create customizable handlers for specific weapons in the "Open Equip Points" tab.



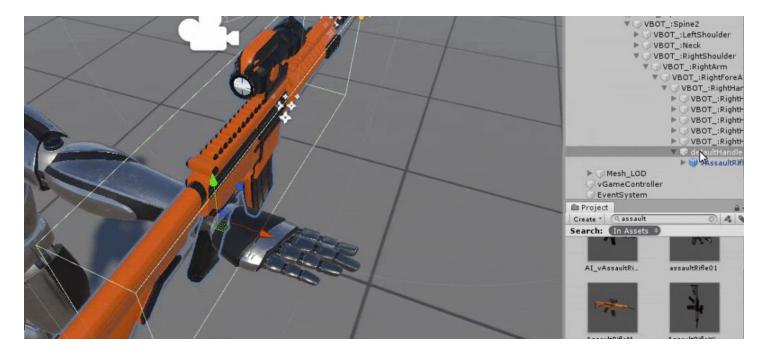
Shooter Weapons will be equipped in the **RightArm defaultHandler**, so select this transform in the hierarchy and drag and drop any Weapon Prefab inside the defaultHandler.

For example search in the Project window to "vAssaultRifle_Inventory", drag and drop inside the 'defaultHandler" and reset it's position and rotation back to 0, 0, 0.

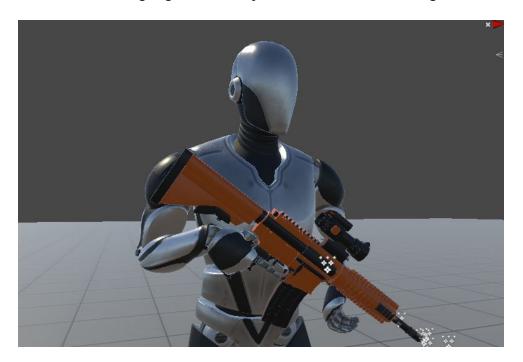


Now you can manually align the 'defaultHandler' to a position close to where the weapon should be located.

* ATTENTION: You should NOT move the Weapon Prefab itself, this gameObject should be at 0,0,0, you will only move/rotate the Handler, this way all the weapon prefabs that will be instantiated inside the handler will be aligned as well.



You can now hit **Play** to see if the **weapon position in the RightHand looks good**, it doesn't need to look perfect because we're still going to the **IK Adjustments** where we will **align the LeftHandIK**.



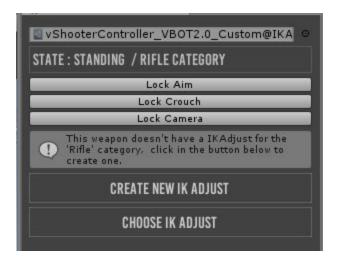
HOW TO ALIGN THE LEFT HAND IK FOR ALL WEAPONS

Go to your ShooterManager inspector and select the tab "IK Adjustment" and hit the button to create a new "IK Adjust List".



A new IK Adjustment List will be created and automatically assign for you, a new button called "Edit IK Adjust List" will appear, click on it and a new window will open, you can dock this window anywhere you like.

Hit Play and select the ShooterController to see this menu:



Hit "Create New IK Adjust" and before we started playing around with the many cool IK options, we first need to align our LeftHand IK, you can do this by sliding the XYZ Left IK Rotation and Position Offsets.



As you can see in the infobox this offsets will affect all weapons just like the Handler position/rotation you previously set up. Now that we have a base alignment we can proceed to explore the features of IK Adjust.

Once aligned, you don't need to change the values of the LeftIK again since you now be able to create adjustments for each weapon and state.

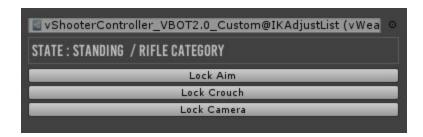
IK ADJUST FOR FINE TUNING OR CREATE NEW POSES

Now that we properly align the **defaultHandler** and the **LeftHandlK** for **all weapon prefabs**, we can start modifying the IK to create more **polished** or **even entirely new poses**, **for each state and each weapon category.**

The "State" will inform what state you are, there are basically 4 states that you can create unique IK modifications, those are:

- Standing
- Standing Crouch
- Aiming
- Aiming Crouch

You can switch the state by pressing the buttons to LockAim, LockCrouch and LockCamera. Start by Locking the Camera so that the Headtrack doesn't influence your pose.



You can create different IKAdjusts for each weapon or use the same adjust if the weapon share the same **Category**, for example, if you have a large number of Pistols in your game that use the same pose, you don't need to create an IKAdjust for each weapon, just set the same Category for all the ShooterWeapon prefabs.

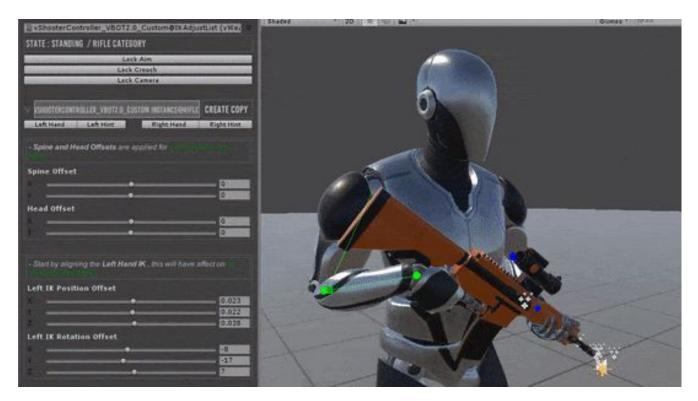
You can type any Category directly in the ShooterWeapon prefab:



You can create a **Copy** from another **IK Adjust**, for example if you have **2 rifles slightly different from each other**, just make a copy and do the adjustment for the other rifle.



You can also select the gizmos handlers directly from the menu or click on the little sphere/square of each arm. Or reset the position/rotation by clicking in their respect buttons, the "Reset" button will reset both.



You can also create Offsets for the Spine and Head to help you set up the position.



This feature was designed to help you better align the weapon into your Character Pose, but if you
want the best result as possible the ideal is to replace the animations to animations created using
your Character Rig. We recommend the use of uMotion to quickly and easily adjust the animations
to your character's rig.

HOW TO APPLY DAMAGE TO A TARGET

The target must have a vHealthController and a Capsule Collider so that our Damage System can identify it as a living target and actually apply damage to it.



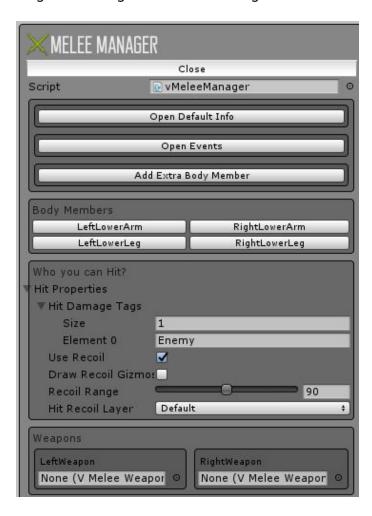
Shooter: You need to set the DamageLayer of your target in the ShooterManager.

If you want to apply damage to individual body parts you can create a Ragdoll and set the collider layers to BodyPart, each ragdoll collider comes with a DamageReceiver, you can even set a Damage Multiplier if you want to apply extra damage in the Head for example.

OR if you're creating a simple top down game for example, you can save performance leaving the enemies without a ragdoll and applying damage directly to the main capsule collider, in this case you can set the Damage Layer to Enemy.

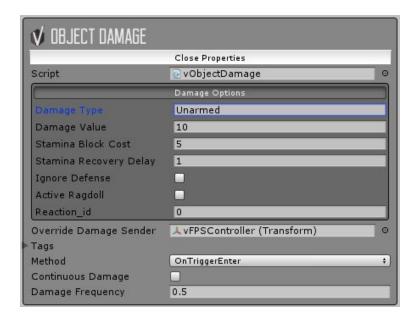


MeleeCombat: You need to set the Tag of your Target in the MeleeManager / HitDamageTags field, you can assign several tags to hit different targets.



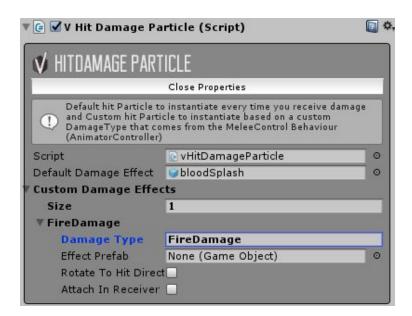
HOW TO APPLY DAMAGE TO THE PLAYER

We have a few examples on how to apply damage to the Controller, basically you need the **vObjectDamage** script which is attached to the Pendulum and Spikes.



- **DamageType**: Used together with the HitParticleDamage component, you can trigger different particles for different type of damage.

For example if you have an area with fire, you can add a vObjectDamage there and add a DamageType of "FireDamage", then add a Custom Damage Effect with the same DamageType to your **HitDamageParticle** on your Character and add the particle effect to burn your character.

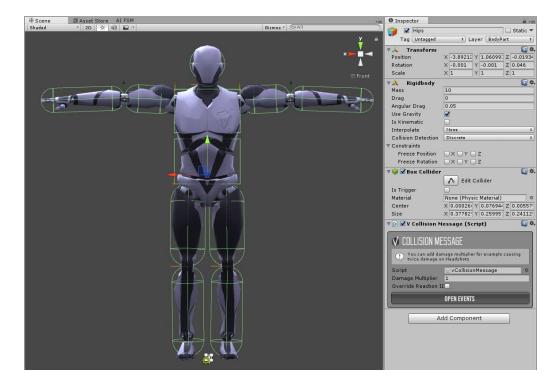


^{*}This component is attached to the Controller or any object that contains the HealthController

- DamageValue: How much damage it will be applied to the vHealthController of the target.
- Stamina Block Cost: You can ignore that option, it's only for the ThirdPersonController.
- Stamina Recovery Delay: You can ignore that option, it's only for the ThirdPersonController.
- Ignore Defense: If you're using a MeleeCombat Controller, it will ignore the defense and apply damage anyways.
- Active Ragdoll: It will activate the ragdoll on your character, if it has one.
- **Reaction ID**: You can trigger specific hit reaction animation, you can use -1 if you don't want to trigger any animation.
- Override Damage Sender: Assign the root object otherwise the AI will target the object that has this component instead. For Example: If you apply the vObjectDamage to be a Hitbox of a LeftHand of a character, the vHealthController or AI will have the LeftHand as the target instead of the GameObject parent.
- Tags: What tags you will apply damage to
- Method: OnTriggerEnter or OnCollisionEnter
- Continuous Damage: Useful for fire damage for example
- Damage Frequency: Frequency to apply the damage, if Continuous Damage is enabled.

Using the Ragdoll Colliders as BodyParts to inflict precise damage.

SHOOTER > If you want to cause damage for each body member using the ragdoll colliders, UNCHECK the "Disable Colliders" and you can add damage multiplier on each member.



* You must use a different Layer in the Ragdoll Colliders like "BodyPart" and another for the main capsule collider like "Enemy", this way the Detection will detect the Enemy object as a target, but the ShooterManager will actually apply damage to the "BodyPart".



Body Parts use the Damage Receiver to receive damage.

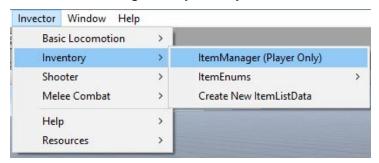
A DamageReceiver is attached to each ragdoll collider, this will allow to Player or AI to apply damage to each bodypart instead of the CapsuleCollider.

- Damage Multiplier: multiply the damage value
- Override a Reaction ID: Check this option to override the hit reaction animation to trigger a specific animation.

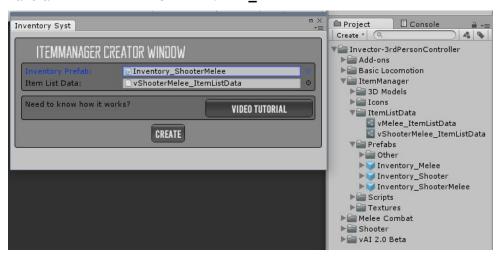
For example, if you want to cause 2x damage and trigger a specific reaction animation when shooting in the Head, simply change the values in this component.

ITEM MANAGER

- Add the ItemManager into your Player from the menu Invector > Inventory > ItemManager



- Select the Inventory Prefab from the Project > ItemManager > Prefabs then drag and drop inside your Third Person Controller, when you hit play it will be automatically assigned to the ItemManager.
- and a ItemListData > vShooterMelee_ItemListData



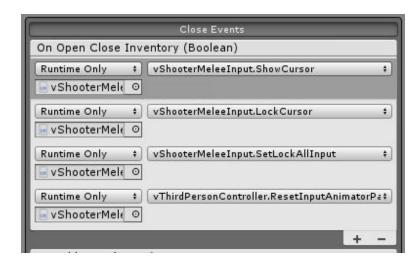
- You can also add the ItemManager manually using the Add Component button via inspector, but don't forget to assign an ItemListData.



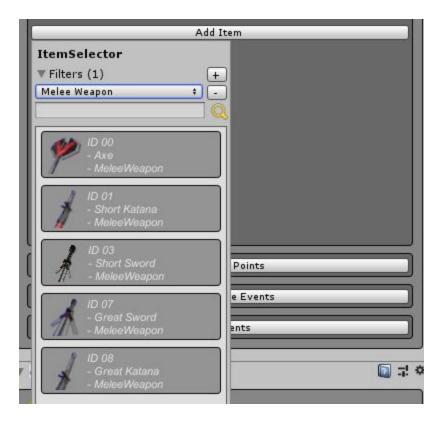
In the tab **Events** you can call methods like lock the input of the character while the Inventory is Open, just assign the Character (from the scene hierarchy) and call the method LockInput from the vMeleeCombatInput or vShooterMeleeInput.

Here are the most used events you can use to:

- Hide/Show the mouse cursor
- Lock/Unlock the cursor at the screen center
- SetLockAllInput to lock all the input from the controller (basic, melee and shooter)
- ResetInputAnimatorParameters to reset back to zero the animator parameters, usefull when using the CharacterCameraPreview inside the Inventory, this way if you're walking and open the inventory, there character will be at Idle in the camera preview.

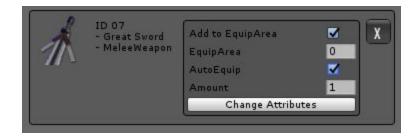


Click at the Add Item button to open the Filter, so you can search or filter exactly what ItemType you need: You can add multiple ItemTypes to filter multiple items.



Once you add a Item in the list, you can use the option **Add To EquipArea** to automatically assign this item to a specific EquipArea (it will only be assigned if your itemSlots are currently empty, if one is already assigned, it will be equipped in the next one in the list)

The **AutoEquip** will auto equip this item to the EquipArea and also change the EquipmentDisplayWindow to where the Item is equipped.

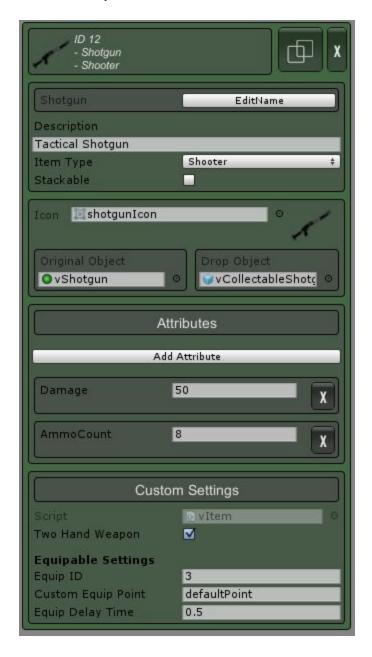


Click in the Open Item List button, to manage, search or create new items



You can create new items or duplicate a current one, keep in mind that each item has a unique ID.

When creating a Weapon Item, you need to assign the **Original Object** (that instantiate into the Player with a vMeleeWeapon or vShooterWeapon) and a **DropObject** which we have a prefab called "**CollectableEquipment**" that you can use and it will automatically drop the item you assign or create a unique collectable with a mesh that matches your item.



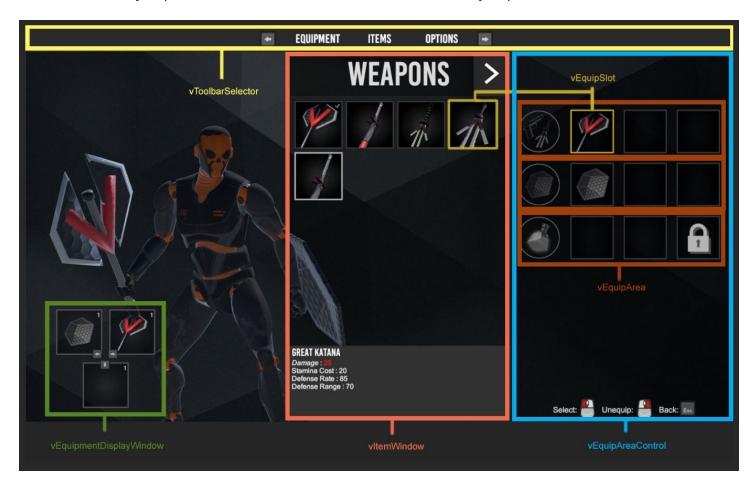
Don't forget to add the attribute Damage & AmmoCount of your weapon, this will allow you to drop and collect your weapon with the same amount of weapon, making it into a unique weapon.

This Inventory Example goes further and further into options to customize, like consumable items, if is stackable or not, and much more that is better explained on video tutorials that you can watch on our <u>Youtube Channel</u>.

INVENTORY

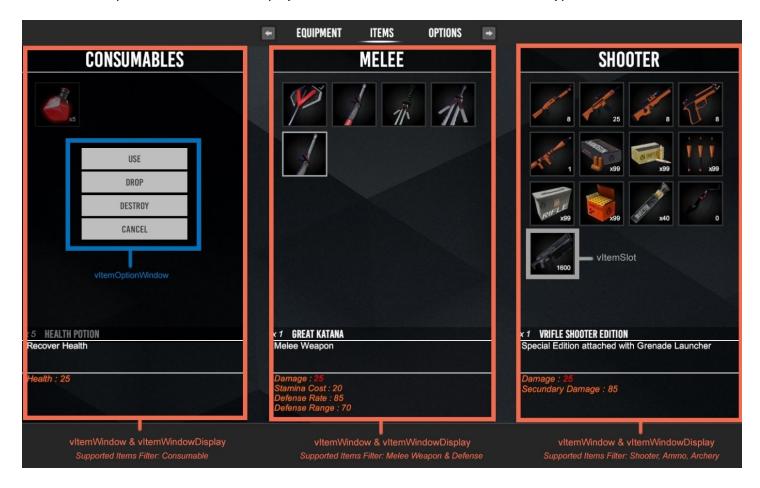
We have basically 3 Inventory Examples in the project, you can find them in the folder ItemManager/Prefabs. Just drag and drop inside your character to test it, make sure to also use the corresponding ItemListData at your ItemManager according to what Inventory you're using.

For ex: ShooterOnly requires the vShooterMelee_ItemListData, MeleeOnly requires the vMelee_ItemListData



- ToolbarSelector: It's basically a menu, you can set the input to switch tabs at your Inventory
- **Equipment Display Window**: It shows the current slot of a EquipArea, you can have multiple slots and multiple EquipAreas at the same time and rotate the slots via input
- EquipArea: A row of EquipSlots
- Equip Area Control: Responsible to inform the EquipmentDisplay
- **EquipSlots**: Display a specific Item, you can use the ItemType to filter what item can be displayed on this slot
- **ItemWindow**: A window that display Items, you can filter what ItemType will be displayed using the filter 'Supported Items'

This is an example of a window that displays several different Items based on their Types.



- ItemWindowDisplay: Manage what happens with the ItemWindow when using, drop, destroy and cancel
- ItemOptionWindow: Buttons that buttons UI to use, equip, drop, destroy and cancel

You can see a **MasterWindow** component on each main window of the Inventory, you can use the MasterWindow to manage your windows for example if you open a window and open another, you can press the back button to close the current window and get back to the previous, it's basically a window manager.

You can also use the Events OnEnable/OnDisable to for example, turn on / off specific objects, call animations, sounds, etc...

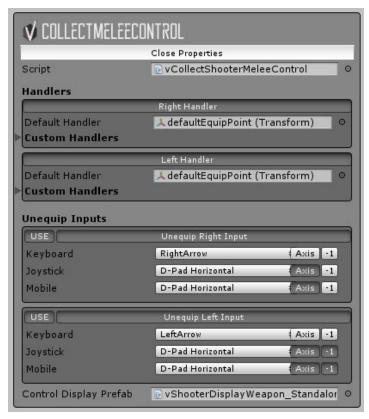


COLLECTABLE STANDALONE (NO INVENTORY)

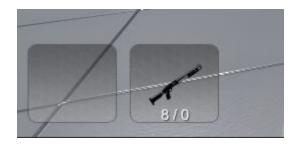
If you don't want to use the ItemManager to manage your items, we have another solution for 'on demand' collectibles, notice that you can only equip 1 item, once you try to equip another the current item will drop.

Take a look into the Demo Scene called "vShooterMelee_NOInventory", instead of adding the ItemManager component, now you will add the "vCollectShooterMeleeControl" component to automatically collect and equip weapons.

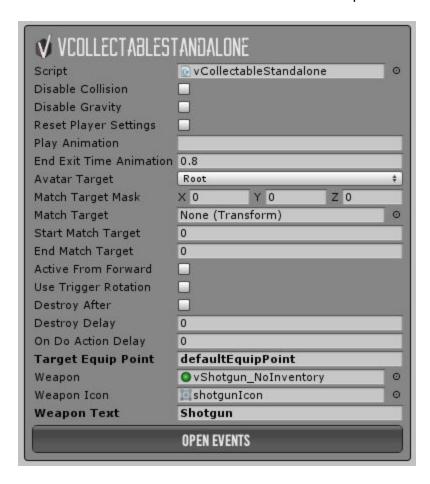
You need to create the defaultEquipPoint to equip weapons and assign inputs to drop them.



We also have a pretty simple example of a Display HUD to show what weapons you're equipped with, it's call "vShooterDisplayWeapon", search in the project folder and drag and drop the prefab into the scene.



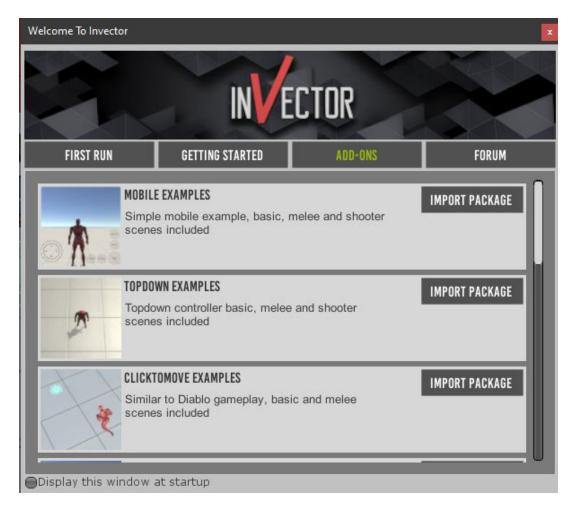
For the ItemManager we need a prefab for the actual weapon that goes into the Player and another to be the Collectable, but in this case the CollectableStandalone is both. Take a look into one of the several example of collectables we have for both melee and shooter weapons.



It's important to assign the correct gameobjects into the Events, we turn off the collision and gravity of the weapons when equipped and turn on when you drop them.

TOPDOWN / 2.5D / POINT & CLICK CONTROLLER / MOBILE

We have different types of controllers that are included in the project as a bonus, you can import those packages by going to *Invector > WelcomeWindow > Add-ons*



Each scene contains examples on how to set up each gameplay type.

To turn your Third Person Controller into a TopDown or Isometric controller just go into your ThirdPersonCamera and change the CameraState to TopDown@CameraState, Isometric@CameraState or 2.5@CameraState depending on what controller you want.



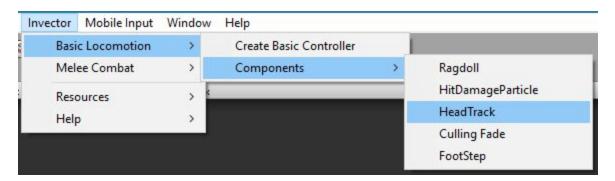
Go to the add-on folder you want and replace your current vThirdPersonController component for the vTopDownController or 2_5Dcontroller in the Player Inspector.

To use the **Point&Click** you can still use the vThirdPersonController, but you will need to replace the Input to **vPointAndClickInput** or **vMeleePointClickInput** (if it's a melee character), for more information check the Invector_Point&Click_Melee.

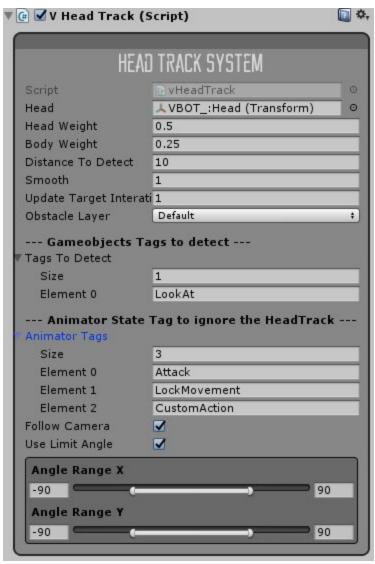
And for the 2.5DController check the 2.5Demo scene, you will need a 2.5Path to navigate.

HEAD TRACK

*Shooter - automatically add the headtrack in order to aim up/down

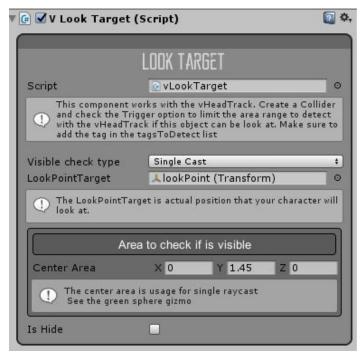


Now we have a lot more options and we can use the LookAt feature as well.



If you don't want the HeadTrack in a specific animation, you can add the Tag CustomAction into the animationState and the headtrack will turn off while this animation is playing.

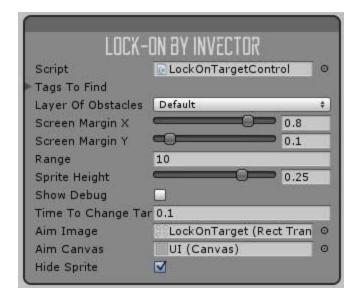
To make the character look at an object, you need to add the component vLookTarget into the object, you can take a look at several examples in the DemoScenes.





LOCK-ON TARGET

You can add a Lock-on component into the Camera by opening the 3rd Person Controller menu > Components > Lock-On. The component will be ready to use, you can set up the input that activate the Lock-on in the ThirdPersonController script, at the method LockOnInput.



You can also display a Sprite Image into the Target by assigning an Image and Canvas.

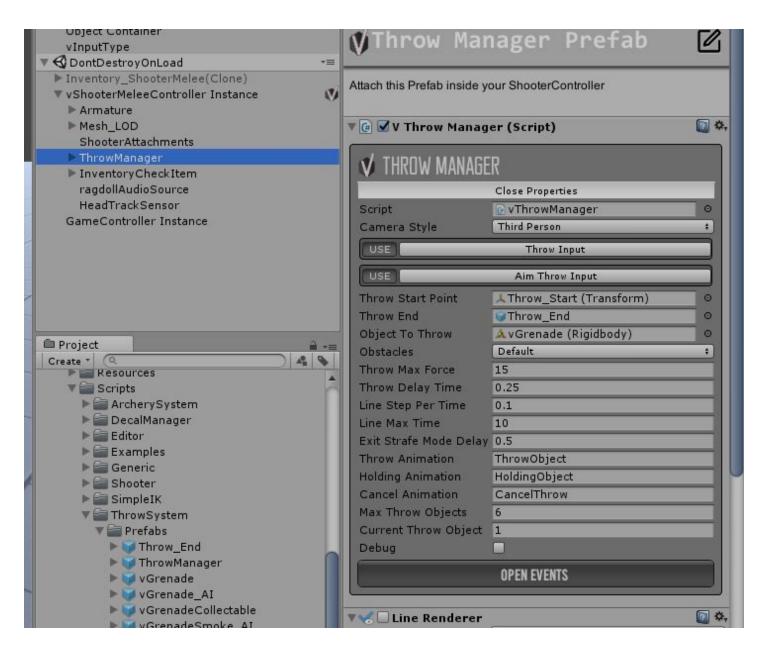
Hide Sprite will hide the sprite if the target if lock-on is false. Set off-set Y by changing the value of the **Sprite Height**.

This Lock-On currently works exclusively with our AI, it will not work out of the box with Non-Invector Characters because it needs the **vCharacter** interface to know if the target is alive. You can assign a **vCharacterStandalone** script into your gameobject, it contains health and a **TakeDamage** method to receive damage.

Shooter - You can use the Lock-On by checking the "Use Lock-On" option on the ShooterManager.

THROW OBJECT

The Throw System is pretty **Plug & Play**, just drag and drop the **ThrowManager** prefab inside your ShooterController, you can call the Event ForceToHideWeapons from the DrawHideWeapons to hide your weapons while is using the throw aiming.



BODY SNAPPING ATTACHMENTS

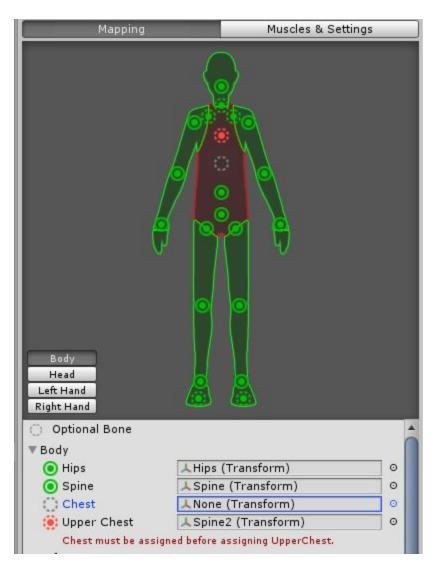
We created this feature to make it easier to transfer attachments from one controller to another.

This means that you can create a Prefab of a Character Attachments and quickly add to another character, without the need of adding attachments one by one on each bone.

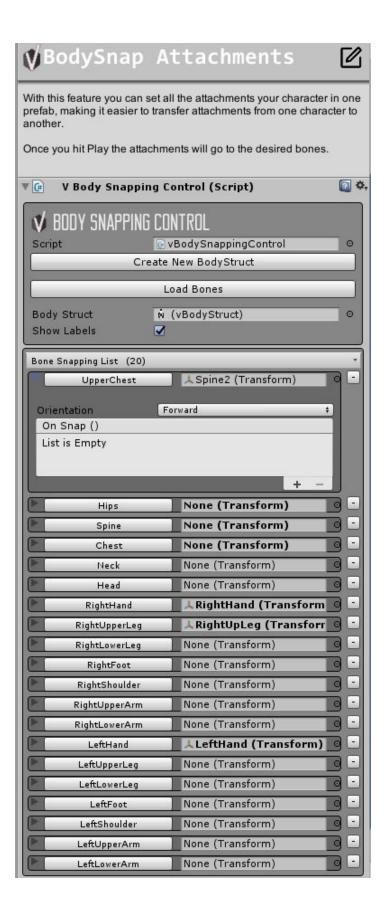
First, create an Empty GameObject inside your character, add the "vBodySnappingControl" and hit the "Create New BodyStruct.



If your Avatar is already set up as Humanoid and all the bones are correctly mapped, it will all be automatically assigned for you, in some cases Unity doesn't recognize a Spine or Chest, so you need to fix by going to your Avatar and assigning the correct Bone, example:



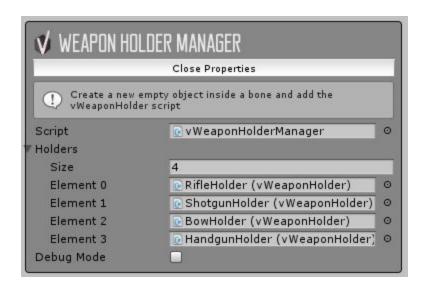
Now going back to our Character BodySnap Control, you can add all your character attachments such as particles that activated on a specific bone, itemManager Handles, anything that you may use and assigned to a specific bone, once you hit Play that GameObject will be attached to the bone you assigned.



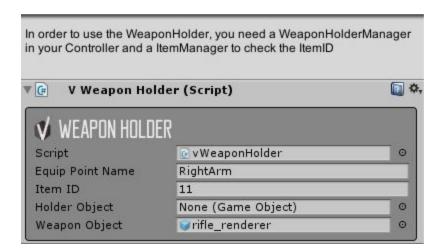
WEAPON HOLDER MANAGER

*This feature requires a ItemManager

Add this component to your Shooter Controller and there is no need to setup anything here:

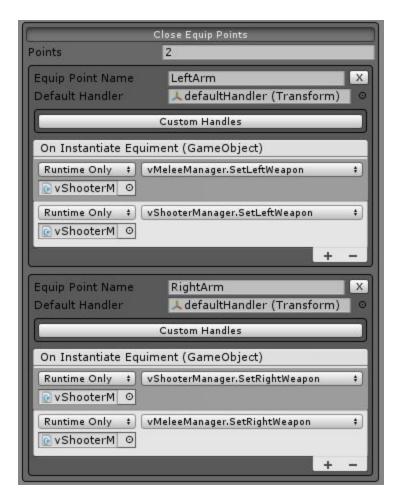


Now go inside your controller, create an empty gameObject and add the vWeaponHolder component.

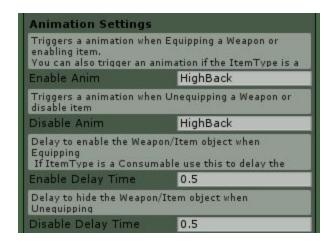


The **EquipPointName** can be found in the **ItemManager** > EquipPoints.

By default it comes with 2 EquipPoins, LeftArm and RightArm but you also create your own custom equipPoints.



The **ItemID** can be found in the ItemManager **ItemListData**, there you can also set what animation will be played when you equip/unequip your weapon.



The HolderObject is in case your weapon has a holster or something.

And the **WeaponObject** is just the 3D model without any scripts or collision, you can add all of this inside the character and leave it disabled. (Check our demo scenes to see examples)

DRAW/HIDE WEAPONS

This feature is to automatically or via input hide weapons without unequipping them.

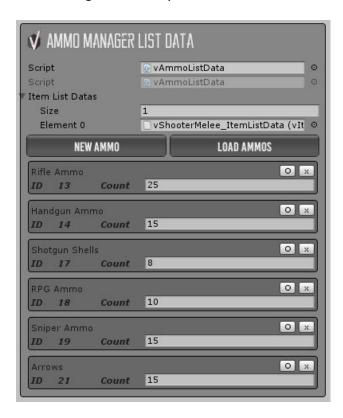


It's pretty straightforward to use, simply add the component to your ShooterController, it must already have a ItemManager and a WeaponHolderManager already setup.

By checking the option Hide Weapons Automatically a field will appear so you can set a timer, for example after 5 seconds with the weapon equipped if will hide or you can leave it unchecked and use an Input to draw/hide the weapon.

AMMO MANAGER

To create a new AmmoListData you can duplicate the original .asset and don't forget to assign to your AmmoManager in the inspector



Here you can create new AmmolD for new weapons, just select your Weapon Prefab and assign the new AmmolD



The 'Ammo' is how much your weapon already starts with loaded, the ClipSize is how much the clip of this weapon can storage, and finally the AmmoID is the ID you created in the AmmoListData.