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Getting Started

(MANDATORY)Install UCC

(Optional) Install Photon 2 and Enter app id in PUN settings

(Optional) Install UCC Multiplayer

(Optional) Install RCC => (Note: If using earlier version of RCC that does not use Input System as standard then ignore this) => (MANDATORY) Input System Package with latest RCC => (MANDATORY) Input System integration package for UCC

(MANDATORY)Install SeatingController package last

Layer Setup

If not using RCC and Its layers

Use one of your own layers or add at least one layer, Name it something unique like "Boardable". The Demo Scenes use layer 20: Boardable.

PRO TIP: For fast setup use Tools > FST > Seating Controller Manager > Add Boardable Layer (20)

All BoardSources should use this new layer.

ProjectSettings > Physics > CollisionMatrix > Ignore all collision between new layer/s and Character, SubCharacter, Overlay, VisualEffect and UI.

PRO TIP: For fast setup use Tools > FST > Seating Controller Manager > Update Collision Matrix

On character set SolidObjectLayers to include Boardable/YourOwn layer

CharacterLayerManager > SolidObjectLayers > Add Boardable/YourOwn layer

NOTE: will also work with vehicles set to "Default" layer out of the box, not preferrable for performance reasons.

If using RCC and its layers

ProjectSettings > Physics > CollisionMatrix > Ignore all collision between all RCC layers and Character, SubCharacter, Overlay, VisualEffect and UI.

PRO TIP: For fast setup use Tools > FST > Seating Controller Manager > Update Collision Matrix

On character set SolidObjectLayers to include RCC layer

CharacterLayerManager > SolidObjectLayers > Add RCC layer

Input Setup

If using standard input

Tools > FST > Seating Controller Manager > Update Input Manager

OR

Create your own inputs and change the inputs to whatever you created on the Board Ability Component when adding it to the character

NOTE: Default Input Names are "Equip Next Seat" and "Equip Previous Seat". Default keys are numpad + and numpad -

If using input system

First, ensure your project is setup for input system.

Make sure you have the UCC input system integration installed.

Make sure you have input settings created in the project manager.

Add your seat inputs to input system, name them "Equip Next Seat" and "Equip Previous Seat" for simplicity, or optionally create your own inputs and change the inputs to whatever you like on the Board Ability Component

NOTE: Default Input Names are "Equip Next Seat" and "Equip Previous Seat". Default keys are numpad + and numpad -

Camera Setup

Ensure that the required ViewType's have been added.

VehicleWeapon(First Person), VehicleWeapon(Third Person), Adventure and FreeLook are essential if using both third and first person.

VehicleWeapon(First Person) and Freelook are required for First Person

VehicleWeapon(Third Person) and Adventure are required for Third Person

Add the State Presets that you will be using, see the Demo Scene for an example.

NOTE: I have included a set of presets that will get you started for most situations, you can see how they are applied in the demo scenes.

Setup Character to interact with a BoardSource

UPDATE: you can now easily setup your character within the Ultimate Character Controller AddOn Manager, and save doing the following.

If not using the Add On Manager to setup your ability then...

Add Board Ability to character

Add BoardDemo Animator Controller to your character, or modify your animator to match the BoardDemo animator where required.

PRO TIP: You can click on Build Animator in the ability inspector after you have added the ability to build the animator for you.

Add state presets to character(whichever components you will affect(ik, thirdperson objects etc)

NOTE: I have included a set of presets that will get you started for most situations, you can see how they are applied in the demo scenes.

Ability Settings

OffsetY

For different characters you can set this value to set the character into correct position. Saves changing seat reference positions.

Input Change Seat Forward

The name of the input that allows changing seats forwards.

NOTE: Default is "Equip Next Seat". Default key is numped +

Input Change Seat Backward

The name of the input that allows changing seats backwards.

NOTE: Default is "Equip Previous Seat". Default key is numpad -

Auto Arms Setup

Now can also be done on a per seat basis via Hide First Person Arms seat property. This option will force third person arms visible when in first person view and **a**) seat Type is Driver or **b**) seat has Controllable Vehicle Weapons or **c**) the seat Allowed Slot Mask allows no items.

This can be achieved with state presets but is tedious to setup all the objects, suggested to have this true.

IMPORTANT: If you are using ucc first person controller only and you want the arms visible you must set the "Visible Materials" on the relative "Third Person Object" Component. In the demo scene this is handled under the hood upon install to give you an example of the setup.

Setup an object for use with Board ability

Quick Setup

Tools > FST > Seating Controller Manager

Drop or Select Gameobject in the Object to Setup field

Click Setup Object

OR

Add BoardSource component to vehicle

Add MoveTowards object/s and an ObjectIdentifier component and enter 14 for the ID, as you would for drive.

Vehicles in demo scene will show different types of setups.

NOTE: Bake navmesh in OfflineDemo scene for rcc AI to work (can takeover ai cars like in gta).

Setup Animator on vehicle if need left and right door animations

See "Setting up an animator for a BoardSource"

For IK

Use empty gameobjects with an AbilityIKTarget component to set the desired positions. If they are not child of seat then set the root in the seat, eg hands to steering wheel > steering wheel is root.

Pro Tip:

Naming conventions matter! Here's what the asset uses for quick setup if you like speedy setup.

For seats - The tool will search for names containing "Seat/seat" and "Driver/driver, Passenger/passenger, Gunner/gunner" respectively. It will add the seats to the component and prefill the Name, Type and Seat Position fields.

Example "DriverSeat", "PassengerSeat", "GunnerSeat"

It will also search for "Feet/feet" and "Hand/hand" combined with "Root/root"

Example "HandlkRoot", "FeetlkRoot"

It will also search for "FirstPersonCamPos/FirstPersonCameraPos/FirstPersonCameraPosition" if added for vehicle weapons.

Attack Colliders are also found and added, It will search for "Attack/attack" combined with "Collider/collider". Additionally it will find "Left/left", "Right/right", "Front/front", "Rear/rear". If none of these are found it cannot determine how you would like it setup so it'll show you a handly little window to assist the setup in a speedy manner.

Base BoardSource Settings

Dont Destroy On Load

If the BoardSource GameObject should stay alive between scenes enable this.

Disable On Death

If using the Heath Component you can enable it there, this is just a handy bool to save going to the Health Component

Insta Kill Players On Death

If enabled all players will be instantly killed when the BoardSource is out of Health.

If disabled then the players will be ejected only, it's possible that explosion could kill them then or they may survive.

Animator ID

Refer to UltimateCharacterController Drive Documentation

Attack Threshold

The BoardSource must be above this speed to make use of any Attack Colliders

NOTE: Requires RigidBody on root object

Front Attack Colliders

Colliders can be added here (imagine invisible bullbar). Any Colliders in this array will become active to kill UltimateCharacterControllers upon contact, only if the BoardSource speed is above the Attack Threshold

NOTE: Requires RigidBody on root object

Side Attack Colliders

As above but for sideways speed

Rear Attack Colliders

As per front attack colliders, but for when speed is negative

Disable Colliders

Optionally add any colliders here that should be disabled when player boards. They will be re-enabled when player disembarks the BoardSource

Far Clip Plane

Adjusts the camera far clip plane, useful for aircraft etc. -1 for no override.

Seats

Where the magic happens. Add seats players can utilise here. See next page for per seat settings.

Per Seat Settings

Name

You can set any name for the seat here for your own reference, this is entirely optional.

Type

There is three main types of seat to choose from.

Driver

Has control of the vehicle and will be considered the owner online. If has vehicle weapons, can also use them. If no vehicle weapons and allowed equipped slot mask allows, character can use items from inventory.

Passenger

If has vehicle weapons, can use them. If no vehicle weapons and allowed equipped slot mask allows, character can use items from inventory.

TODO: will be possible to walk around designated areas of vehicle(eg back of truck) and not allow vehicle weapons OR allow one vehicle weapon and one inventory slot.

Gunner

If has vehicle weapons, can use them. If no vehicle weapons and allowed equipped slot mask allows, character can use items from inventory.

TODO: will only allow vehicle weapons

Seat Position

GameObject attached to the BoardSource GameObject defining where the character position will be when seated in this seat. The character will be parented to the Seat Position GameObject.

Affect Third Person Cam Limits

Only used when not using any Override State.

Cam Limits

Only used when not using any Override State.

Field Of View

Overrides the camera field of view, -1 for no override. Only used when not using any Override State

Hand IK Links Root

A reference to the root Transform of the Hand Ability IK Targets. Useful for steering wheels, handlebars, vehicle weapons etc.

NOTE: If Hand Ability IK Targets are child of seat GameObject then it is not necessary to set this reference.

Feet IK Links Root

A reference to the root Transform of the Feet Ability IK Targets. Useful for pedals, pegs, vehicle weapons etc.

NOTE: If Feet Ability IK Targets are child of seat GameObject then it is not necessary to set this reference.

Use Car Camera Controller

True to use RCC Camera while in the seat, else will use UCC camera

Can Change Perspective

Can the player change view perspectives while in this seat?

Hide First Person Arms

This option will force third person arms visible when in first person view. Useful for showing arms while driving, shooting from a window or operating a manned weapon etc.

This can be achieved with state presets but is tedious to setup all the objects, suggested to have this true unless character can openly fire a weapon like on the back of the quadbike.

Teleport To Seat

Set this true to have character snap to seat, false to use animated entry/exit from this seat

Can Aim

Can the player aim while in this seat?

Visible Player

Should the character be visible while in this seat?

Invincible Player (only available if Visible Player is true)

Should the player be invincible? If false the player can take damage while on board a BoardSource and in this seat.

NOTE: If the character is invisible this will be true as naturally it should be. The option will be hidden.

Override State

Optionally enter the name of the State that should be set when in this seat. Useful for different IK and Camera setups etc.

Components To Enable

Any components that should be enabled while character is in this seat.

Components To Disable

Any components that should be disabled while character is this seat.

Controllable Vehicle Weapons

Add VehicleWeaponShooters here, and enter input names they will use.("Fire1" "Fire2" are standard)

NOTE: If using character item setups with ShootableWeapon components, then the characters Use Ability determines input as per character inventory items.

If first person perspective will be available, First Person Cam Pos CANNOT BE EMPTY in the seat that uses this weapon.

NOTE: See next page for VehicleWeaponShooter documentation

First Person Cam Pos

The reference GameObject for the camera position and rotation for seats with VehicleWeapons.

Allow Equipped Items

Slots

Which slots are allowed to be equipped from the inventory?

Allow Item Definitons

Optionally only allow items specified in this array.

Vehicle Weapon Shooter

This component delivers a way to shoot weapons attached to a vehicle eg. Tanks.

Weapons do not need animations as I have included a system that can simulate the mechanics of the weapons.

If first person perspective will be available, First Person Cam Pos CANNOT BE EMPTY in the seat that uses this weapon.

The main settings all replicate ucc shootable weapon settings combined with all of the extra settings required (like found in usable item, third and first person properties components on a UCC setup character weapon).

Grenades can also be launched. Just add as per projectile.

NOTE: Vehicle Weapon Shooters that fire grenades should have the "Minor Item Setup" or no item and pickup at all. If using character item setups with ShootableWeapon components, then the grenade should not be used and a warning will prompt you to remove them upon equipping the item.

Objects To Rotate

Please ensure all origins are correctly aligned in your models, else make an empty gameobject that will act as a pivot, I have included a demonstration of this on the tank. Also, if using two or more weapons that will rotate, and they are parent child setups, then only setup the Objects To Rotate on the parent.

Each Object To Rotate has some settings as follows:

Object To Rotate

The object that will be rotated towards the player look direction.

Input Axis

Which input should drive the object rotation when in first person view.

Axis To Rotate Around

Which axis should the object rotate around when in first person view.

Limit Min Max Angle

Limit the rotation here, overridden by states.

Smooth

This affects the speed of rotation in first person view.

VehicleWeaponShooter Extra Settings

Pickup

You can create items to "pickup" when player enters the seat that makes use of this vehicle weapon shooter. Currently this allows you to have UI crosshairs and Icons very easily, much the same as any item is setup. This can also be further extended to add ammo count etc to vehicles and have them reloadable by option "See Item Setup For Character".

The Pickups should be a child of the BoardSource and the Pickup GameObject should be disabled.

In the demo these items are designed as runtime pickups and items have been assigned as runtime pickup prefabs in the character Inventory component. Items can also be created on the character if you prefer that method.

Slot ID

Is which slot the item should equip to

Fire Force

How much force to apply to the object that is firing (if it has a rigidbody). Perfect for a Tank Blast!

Add Object Velocity To Projectile

Should the BoardSource rigidbody velocity be added to the projectile?

Use First Person Layers

Should the renderers attached to the weapon be changed to Overlay when in First Person perspective?

Attributes

Attributes are not an extra compared to Shootable Weapon except the Attribute Monitor field but deserve a little explanation.

Attributes can be used for item or character. If for item, then ensure you add the Attribute Monitor it will use to the Vehicle Weapon Shooter Animator Monitor field under the "Attributes" foldout. The Demo scene has an example use case for "overheating" weapons.

Use Attribute will not display in the editor unless an Attribute Manager component is attached to the Vehicle Weapon Shooter GameObject.

Item Setup for use with Vehicle Weapon Shooters

No Item Setup

Vehicle Weapon Shooters can be used without any pickup, or character item.

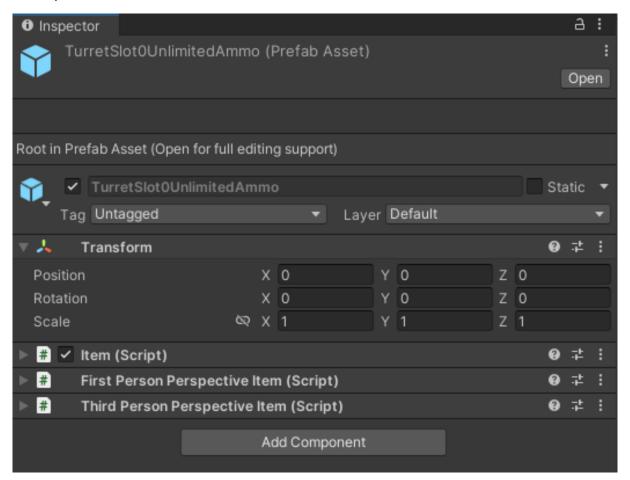
The Pickup field should be null.

Pro Tip: Use attribute for a cooldown for overheat.

Minor Item Setup

Vehicle Weapon Shooters can be used with a pickup, and character item. The minimal setup is best used when you only want an Icon and Crosshairs displayed and there is no ammunition requirements. The character Item should only contain Item components, no ShootableWeapon components.

Pro Tip: Use attribute for a cooldown for overheat.

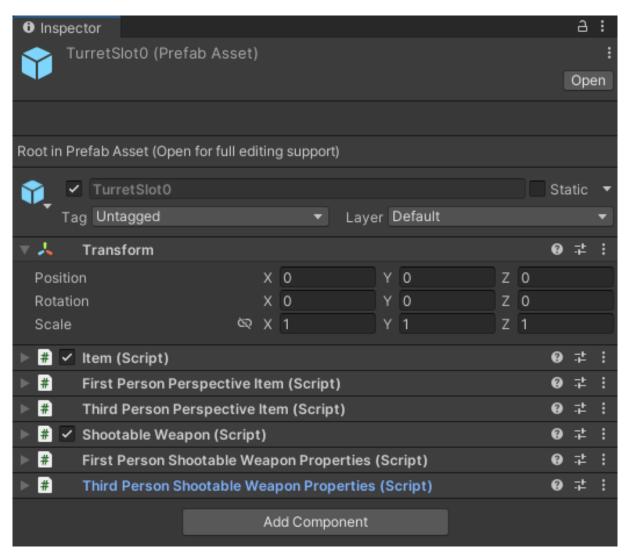


Major Item Setup

Full UCC character Shootable Weapon system, best used when there is requirement for ammunition consumption and reload functionality.

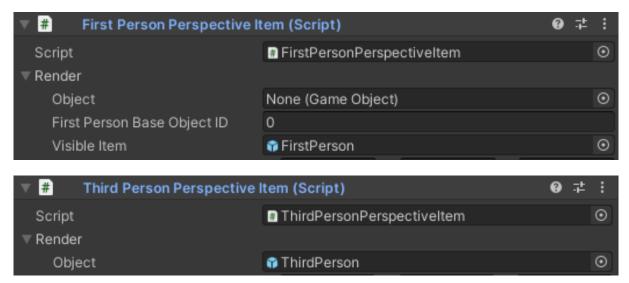
As per Minimal Item setup except with Shootable Weapon components.

Pro Tip: Use attribute for a cooldown for overheat, yes you still can combine attributes.

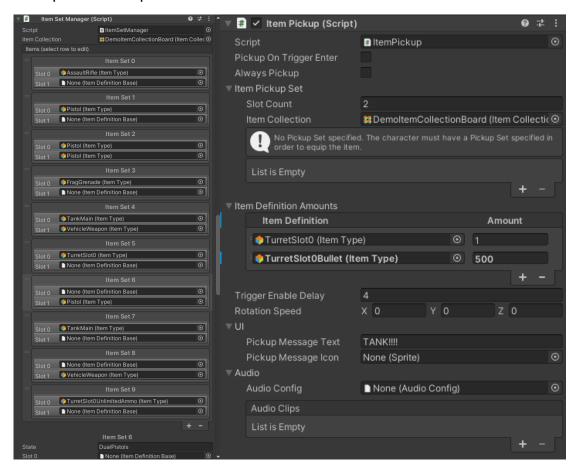


For Minor Item and Major Item Setups

The Item has two fields that need to be set with a dummy prefab, they are First Person Perspective Item > Render > Visible Item, and Third Person Perspective Item > Render > Object. See Images on next page.



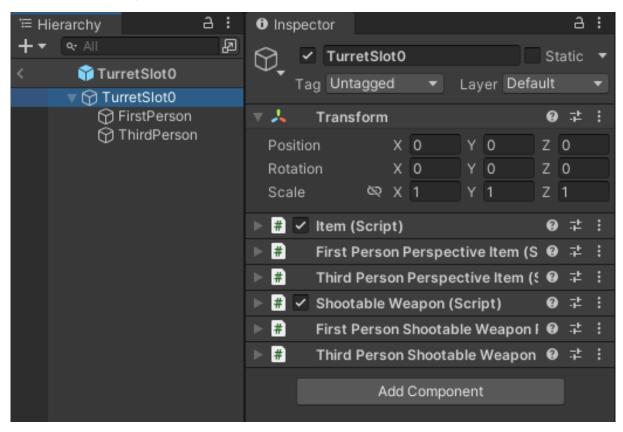
Also be sure to define the Item Sets in the character's Item Set Manager or on the Pickup. Standard procedure for a UCC item.



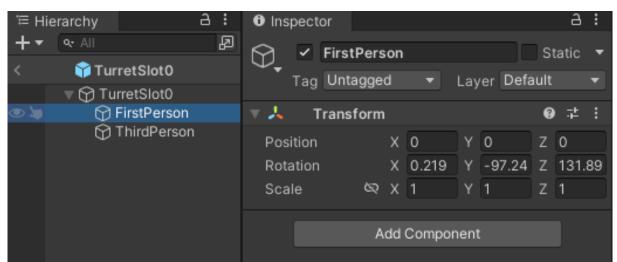
Please see Character Item GameObject Structure on the next page...

Character Item Object Structure

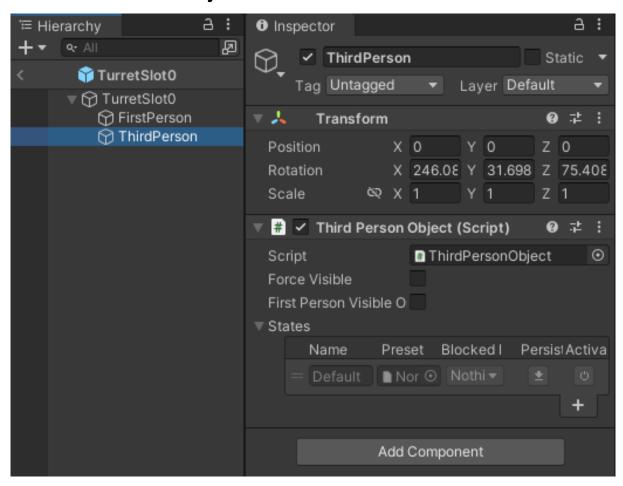
Root GameObject



First Person GameObject



Third Person GameObject



Parachute

Included is a Parachute ability, along with a gunship example you can parachute from. The Start Type and Stop Type should be set to Automatic.

The following fields are specific to Parachute ability.

Parachute GameObject

The GameObject that represents the visual transform of the parachute, can be attached to root of player or a prefab to spawn.

Unequip When No Chute

If the bool is true, then weapons are only equipped whilst the parachute is depoyed. If the bool is false the player can equip throughout all states during the fall.

Pickup On Board

Should a parachute be picked up when board is triggered. Lots of games use this feature.

Requires Pickup

Does a parachute need to be picked up to be able to use the ability?

Is Single Use

Can the parachute be deployed more than once during a single fall? (useful if cord is cut)

Min Deploy Altitude

The ability cannot start below this altitude.

Deploy Input

Any inputs in this array can deploy the parachute. Demo uses "Action".

Cut Cord Input

Any inputs in this array can cut the parachute cord and resume the characters fall. Demo uses "Crouch".

Auto Start Altitude

The parachute can be auto deployed at or below this altitude. -1 to never automatically deploy by altitude.

Auto Start Delay

The parachute can automatically deploy after a set delay. -1 to never automatically deploy by delay.

Auto Stop Delay

Upon landing the ability will stop after this delay.

Chute Disable Delay

The parachute GameObject will disable after this delay.

Start Landing Altitude

When the character reaches this altitude it will go into a landing state which realigns the character to the gravity direction.

Early Death Prevention Hieght

The character can cheat death if they cut the cord below this altitude

Jump Force

Jump force that will be applied when the character leaves a ledge that is higher than the Min Deploy Altitude.

Ambient Forward Force

While the parachute is deployed this much ambient forward force will be applied.

Rotation Speed

The speed at which pitch and roll character rotations will be applied while the parachute is deployed.

Max Forward Pitch

The maximum amount the character can pitch forwards while the parachute is deployed.

Max Backward Pitch

The maximum amount the character can pitch backwards while the parachute is deployed.

Pitch Gravity Multiplier

The multiplier for pitch affecting gravity while the parachute is deployed.

Max Roll

The maximum amount of roll that can be applied while the parachute is deployed.

Roll Force

The sideways force to be added when rolling while the parachute is deployed.

Pitch Force

The forwards force to be added when pitching forwards while the parachute is deployed.

Roll Gravity Modifier

The multiplier for roll affecting gravity while the parachute is deployed.

Max Gravity Effect

The base gravity which determines fall rate while the parachute is deployed.

Gravity Transition Speed

The gravity transition speed when deploying the parachute, more for more snappy, less for more smooth.

Parachute Root Bone

The root bone Transform of the parachute GameObject, should be located at the harness location.

Parachute Root Bone Object ID

The root bone ObjectID of the parachute, for use at runtime when Parachute GameObject is spawned.

Attach Point Bone

The character bone the Parachute Root Bone should attach to.

Altitude Text

Optional UI text to display altitude and rate of descent.

Is Wind Affected

Can Unity Wind affect the behaviour?

Skydive Wind Multiplier

How much the Unity Wind will affect the behaviour while in a skydiving state.

Parachute Wind Multiplier

How much the Unity Wind will affect the behaviour while the parachute is deployed.

Skydive Move Force

How much input can steer while skydiving.

Integrate with Crest

Note: UCC Swimming Addon Pack required (also UCC requires the Agility Pack Addon for Swimming Pack)

You can easily use UCC + USC + Crest, No coding required, A perfect exmple is the submarine, as it can go beneath the water this shows how to setup for swimming also.

Open the UCC Main Manager, Setup Scene as per normal.

Setup your character, ensuring you have the swim and board ability added.

Simply open the USC Manager or UCC Addons Manager and setup the Submarine Gameobject (found in the Crest Submarine demo scene) as you normally would via quick setup (leave all default values for the driver seat).

In the driver seat section add the Submarine Component and the Submarine Camera Component to Components To Enable array. Optionally you can just remove the submarine camera entirely if using another camera or remove that component from the Submarine GameObject if you setup that camera with UCC.

Add the Crest Simple Floating Object component to the Submarine GameObject. Then add the freshly added component to the driver seat Components To Enable array.

Within the Ultimate Character Locomotion Component Abilities section, ensure that the MoveTowards Ability is at the top, followed by the Board Ability.

Add a box collider with the layer set to water and Is Trigger set to true. Scale it to size you wish to play in.

Press play, its good to go.

Multiplayer

The BoardSource must have a BoardSourcePun component.

The VehicleWeaponShooters must have a VehicleWeaponShooterPun component.

The above can be setup fast using the Seating Controller Manager (Tools> FastSkillTeam> Seating Controller Manager)

IMPORTANT NOTE:

The UCC Multiplayer addon sometimes encounters a bug when firing projectiles at a fast rate. And now that this asset makes use of the PunObjectPool you may encounter it. Don't worry the fix is easy.

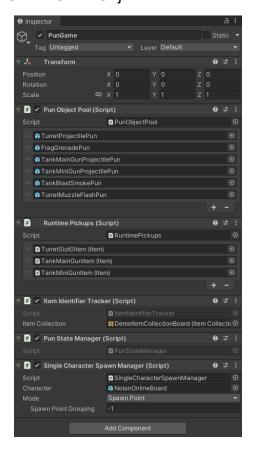
This fix has been passed on to Justin and will be included in the next UCC update. To fix this bug simply insert this line in the PunObjectPool script at line 118...

if (!m ActiveGameObjects.ContainsKey(instanceObject))//hot fix >FastSkillTeam

Note: For Multiplayer Demo scene you are expected to know how to use UCC to create a multiplayer character, you can simply copy the character from offline demo and add the multiplayer components with UCC add on manager. The only thing the character needs added is the Board ability if you are creating from scratch.

Once you have created your prefab for multiplayer you can add it to the SingleCharacterSpawnManager Component attached to the "PunGame" GameObject in the multiplayer demo scene.

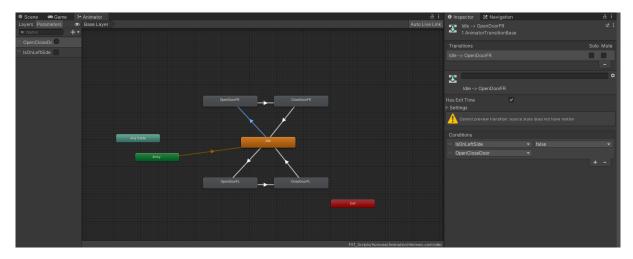
The inspector for the PunGame GameObject should look something like this



Setting up an animator for a BoardSource

Currently I have added support to open left/right door and enter from respective door.

I will be adding support for more than two doors soon, and it will be unlimited.



Event System

The following events can be registered to. See Ultimate Character Controller documentation to familiarise yourself with the Event System.

BoardSource Events

- EventHandler.ExecuteEvent<int>(m GameObject, "OnSetOwner", actorNumber);
- EventHandler.ExecuteEvent<GameObject, bool, bool>(m_GameObject, "OnEnablePlayerCollision", character, enable, transmit);
- EventHandler.ExecuteEvent<bool>(m_GameObject, "OnOpenCloseDoor", board.IsOnLeft);
- EventHandler.ExecuteEvent<int>(m_GameObject, "OnTryAddPlayerToList", actorNumber);
- EventHandler.ExecuteEvent<int>(m_GameObject, "OnTryRemovePlayerFromList", actorNumber);
- EventHandler.ExecuteEvent<int, bool>(m_GameObject, "OnSetTeamOwner", teamNumber, transmit);
- EventHandler.ExecuteEvent<GameObject, bool>(m_GameObject, "OnEnableDisableUCCIK", character, enable);

Board Events

- EventHandler.ExecuteEvent<bool>(m GameObject, "Board", true);
- EventHandler.ExecuteEvent<int, bool, int, bool>(m_BoardSource.GameObject, "OnSetSeat", seatIndex, seatActive, actorNumber, transmit);
- EventHandler.ExecuteEvent<bool>(m GameObject, "Board", false);

Tutorial Links

Basic Character and Vehicle Setup

https://youtu.be/wiBkLwvyBKM

Basic Tank Setup

https://youtu.be/-FwJBKTRPqU

Adding UI to the Tank

https://youtu.be/aagGvMV0DZs