

# Projectile Launcher

We need this so players can make custom UGC ranged weapons!

## Definitions

In the context of Rec Room, the word “projectile” can be a little muddy.

**Projectile** - Bullets present while firing RRO weapons that do not have special behavior. Specifically, Paintballs/Corks/Lasers/Arrows. Specifically not Grenades from a grenade launcher.

## Goals

1. Creators can use CV2 to launch projectiles (see definition above)
2. Can be used with the Gun Handle to make first class feeling one-handed ranged weapons
3. Does not require any stage of Object Model
4. Reuse current RRO projectile logic as much as possible
5. Can fire the Projectile Hit event that is being built currently
6. Out of beta in time for UGC team to incorporate into the Q2 marketing push ship, Ideally in UGCs hands before the end of Q1.
  - a. Initially ships in beta

## Non-Goals

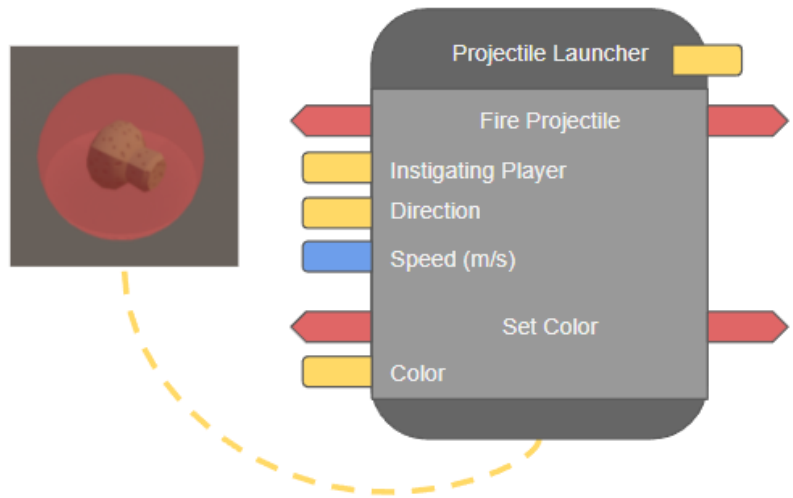
1. Expand the definition of Projectile to include other things like:
  - a. Maker pen shapes
  - b. Props
  - c. Inventions

## Anti-Goals

2. Don't make this work with the Game Rules chip.
  - a. I think we actively don't want this!
  - b. It's already crazy complex
  - c. We don't plan on supporting it in the long run so let's not expand it's already trespassing reach.

# How it Works

The Projectile Launcher is a new building block in Rec Room that players can use to fire a selection of projectiles seen in RRO weapons.



## Config Menu

- Type
  - Players will have the choice between Paintballs/Corks/Lasers/Arrows initially. The visual also includes a trail.
- Color
  - Additive color on top of the visual. Alters the trail as well.
- ~~Lifetime~~
  - ~~Time that a projectile lasts before being destroyed automatically.~~
- Speed
  - Speed of the projectile
- ~~Damage (Projectile Hit Data)~~
  - ~~This is just a know nothing int that players can use to more easily assign damage to guns.~~
- Specify Damage Per Limb
  - If you turn this on, you will need to specify damage per limb rather than all at once.
  - Once you flip this switch, more fields populate the config menu (one for each limb)
  - If you want the damage to be the same overall use the same numbers for each limb
- Affected by Gravity
  - Is the projectile affected by gravity or not.
- Hit VFX?
  - You could do this yourself potentially with set position + emitter but its fair to say the current emitter won't serve our purposes here.



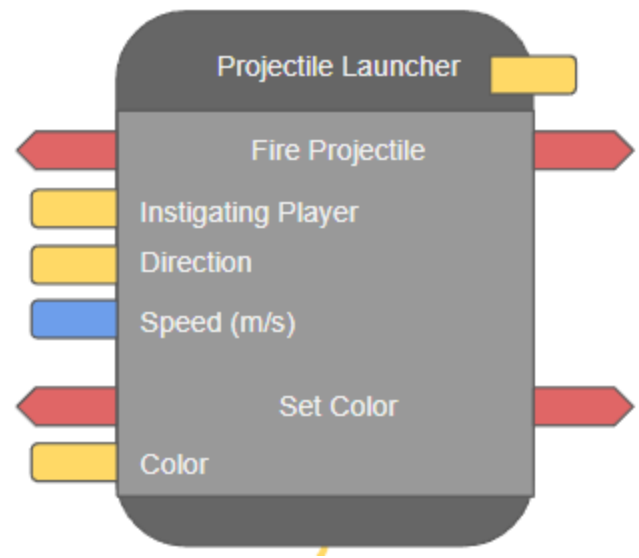
## Object Board

### Inputs

- Fire Projectile (exec)
- Direction (Vector3)
  - Note, we may want to set this up as “optional” and have a default forward value so it works out of the box.
- Set Speed (m/s) (float)
- Instigating Player (player)
- Set Color (exec)
- Color (color)

### Additional Chips

- Fire Projectile (required)
- Set Damage
  - Allows for per limb specification like the config menu does.
- Set Color
- Set Speed



## Q&A

Q. How would I make a shotgun?

A. Use multiple projectile launchers in sequence aimed in different directions.

Q. What's the limit on the amount of projectiles that can be live at once/owned by a projectile launcher?

A. [TODO] Find out :]

# Shotgun Blast Addendum

We found while building the projectile launcher that using multiple projectile launchers for a shotgun is somewhat untenable due to heat/RPC cost. To fix this, we should add another config option that offers a pattern and randomness to a shotgun blast.

## Shotgun Config Options

- Shotgun blast (on/off switch)
  - Options under this are an expansion of turning this setting on
- Number of projectiles (int input field)
- Emission Cone Angle
- Random spread (on/off switch)

Additionally, we should add a “lifetime” config option to help control the range of guns. Without this, shotguns will have an infinite range!

## Extra Config Options

- Lifetime (float input field)
  - In combination with projectile speed, you can control the range of the weapon.