LiDAR Project for Unity

-CONTROL-

Basic Movements:

- Move with WASD
- Space for JUMP
- T for unlock/lock camera

Scanner:

- Left click for Circular Scanner
- Scroll with the wheel to change the size of the circular scanner
- Right click for line scanner
- R for sweep mode, this will scan a large area

-CONFIG-

Player Prefab:

- You can change the main scanner options
- 3 types of scanners
- Each scanner has its own configuration (All configuration have comment or tooltip)

Scan Manager:

- You can change the particle texture directly in the scan manager
- You can also change the particle size
- Use normal allows to change the orientation of the particles so that they follow the shape of what they touch (You must disable the "Orient: Face Camera Plane" in the VFX Scanner in Effects Folder)
- The Laser Mark allows you to choose which layer will apply the particles
- The Particle Colors Palette allows to change the colors according to the tags. You can
- The Random Range allows you to add a little randomness to the color to avoid having a single color (0 for no random)

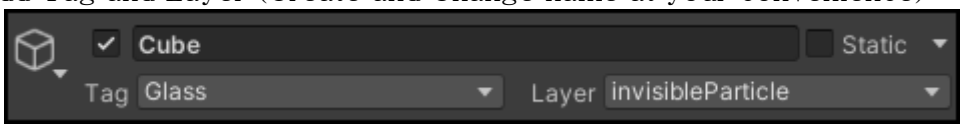
-HOW TO USE-

Prefab:

- Add player
- Add Game Manager
- Set the player variable with the player prefab (Used for singleton)
- Add Scan Manager

3D Objects:

- Place any object
- Add Tag and Layer (Create and Change name at your convenience)

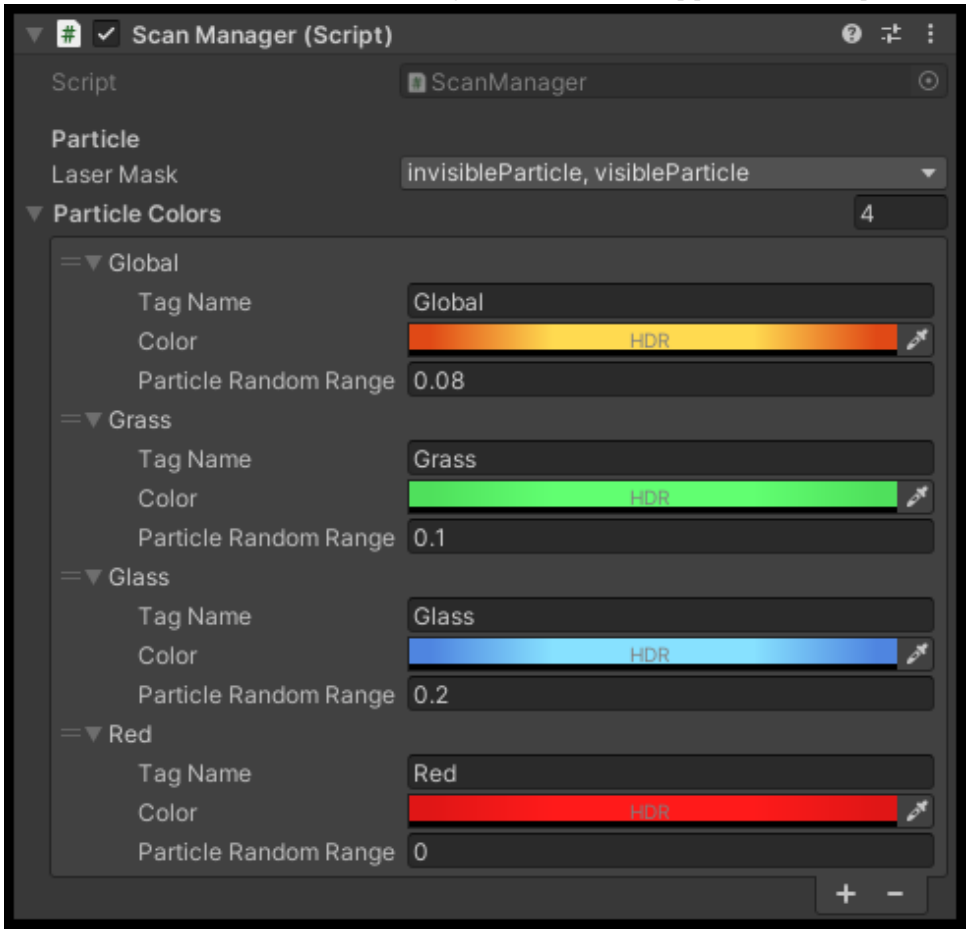


1. TAG
   - Set a tag to set color
   - Using a tag that is not in the scan manager will use the "Global" configuration of the scan manager (Don't change the name of Global Tag or modify in script)
   - You can create as many tags as you want, just configure it they don't need to have a specific name but it will be necessary to configure the colors with the same tag name
2. LAYER
   - Also set a layer (The package currently uses the default unity layer)
   - Due to the limitation of packages and layers it is impossible for me to use custom layers, here is the list of layers that I recommend (You can name them as you wish):
   - "InvisibleNoParticle" - Obviously Invisible but it does not receive any particles.
     Example: Can be used to draw a shape or to prevent lasers from passing through.
   - "InvisibleParticle" - Default layer for most objects, the object is invisible and the particles are added on it.
   - "VisibleNoParticle" - Visible but it does not receive any particles.
     Example: Can be used on items like player's scanner or portable scanners.
   - "VisibleParticle" - visible with particle allows to have a completely visible object but still receive the particles (Can make strange, used sparingly)

You can create as many layers as you want, just configure it they don't need to have a specific name

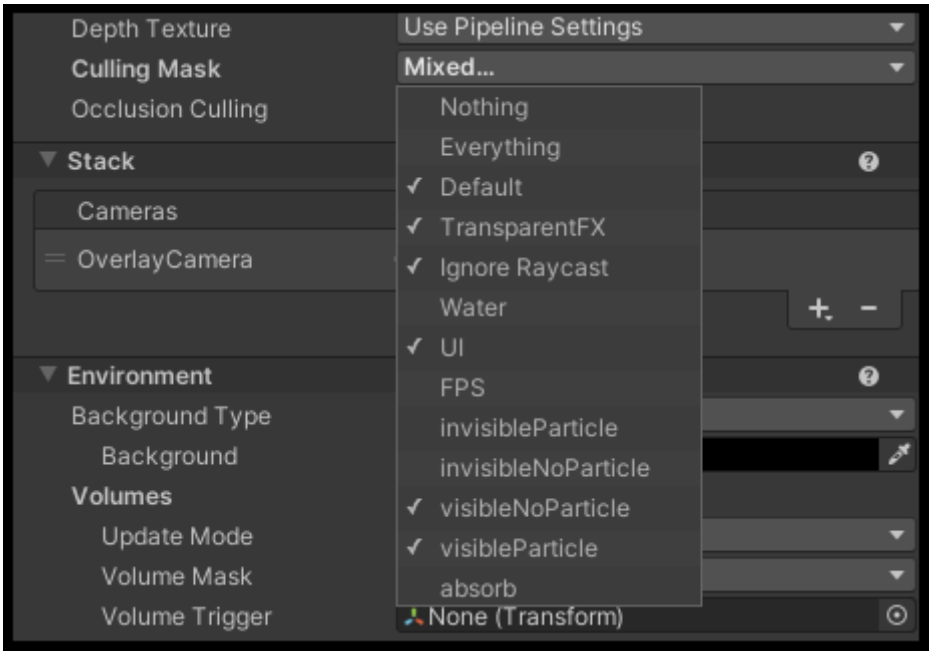
You can configure the tags and objects that receive the particles in the Scan Manager.

The Laser Mask defines which layer allows the application of particles



To define the invisible layers, you can change this in the "Culling Mask" of main camera.

All unselected layers are invisible to the camera



Custom Laser:

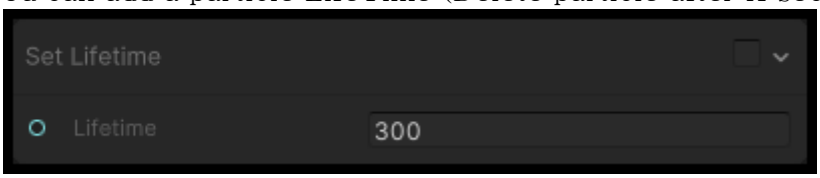
- For add any laser where you want place Prefab Generic laser or create your own
- For custom laser script you can check in script section it's quite simple
- You need to link/place or instantiate VFX Star Field available in the folder Prefabs > Effects.

If you want to use a lot of lasers with same "Reference" you would need to use multiple VFX as there might be a delay. You can also look for using a buffer like in the Scanner script but it could be complicated if you don't know.

I might do a tutorial for that if really the request is there, while waiting for the first solution remains very functional

Config:

1. Particles
   - You can use the Shader Particles Shader in Shaders Folder if you want highly customized particle (No performance info)
   - Also, you can add a particle LifeTime (Delete particle after X seconds)



2. Lasers
   - In the same way you can modify the lasers

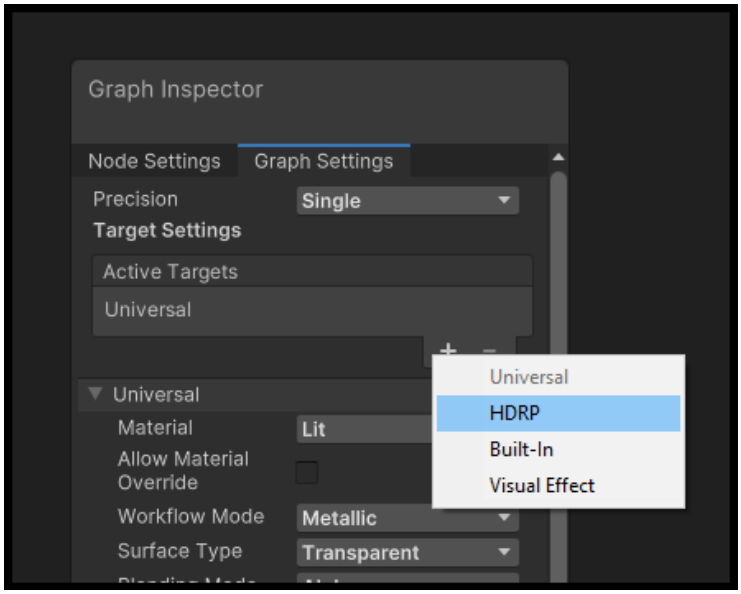
Script:

- You can simply use AddParticle() function of Scan Manager script with a position for add a particle at position. Example: ScanManager.instance.AddParticle(_raycastHit.pos)
- For add laser with any object use also SetLaser() function of Scan Manager for spawn a laser (See Generic Laser script at line 55 for example)

```
ScanManager.instance.AddParticle(hit);
ScanManager.instance.SetLaser(VFX, hit.point, laserCooldown, Color.white, false);
```

HDRP Pipeline:

- For HDRP users you will simply need to change the active target in the “Material Shader” shader available in the Shader folder.
- For this in the Shader then in the Graph Inspector and in the Graph Settings change the Active Targets with your Pipeline (You can remove the universal)



- Alternatively, you can use your own Materials and Shader
- If you have a white light that blinds you, you need to edit Volume Profile in Project Settings > Graphics > HDRP Global Settings and remove HDRI Sky (Or Change configuration as you own)