DC STORE

USER MANUAL

FLAT LAND

Contents

1 Introduction

Flat Land is a complete flat terrain solution. It is designed to meet the following needs

- Limited and endless terrain generation
- Different biomes with different elements
- Elements placed regarding to height and width of the terrain
- Integrated Flatten System
- Prefab placement

With these features you will be able to create unique terrains each and every time. Flat Land is designed as a runtime solution . Editor features will be added in the near future.

The properties of Flat Land is designed for simple to complex purposes. With proper usage of the Flat Land there won't be any need for any other Flattening asset. Because it even has an internal mesh flattener .

With surface noise algorithm inside Flat Land , you will be to get good looking very unique results at the start of the game.

2 Technical Information and General Overview

2.1 Surface Extraction Algorithms :

Flat Land implements its special Direct Noise algorithm. In the near future it is planned to add algorithms like Surface Nets.

Direct noise algorithm directly manipulates the height map values extracted from noises .

In the near future it is planned to add different type of algorithms to noise engine. Upcoming island pack will be compatible with the improvements as well.

2.2 Automated Concepts:

Flat Land has three different generators.

- Procedural Noise Generator.
- Integrated Flatten System.

Internal Mesh Flattener converts your prefabs to flatten style, and renders as flattened in runtime.

2.3 Manual Concepts:

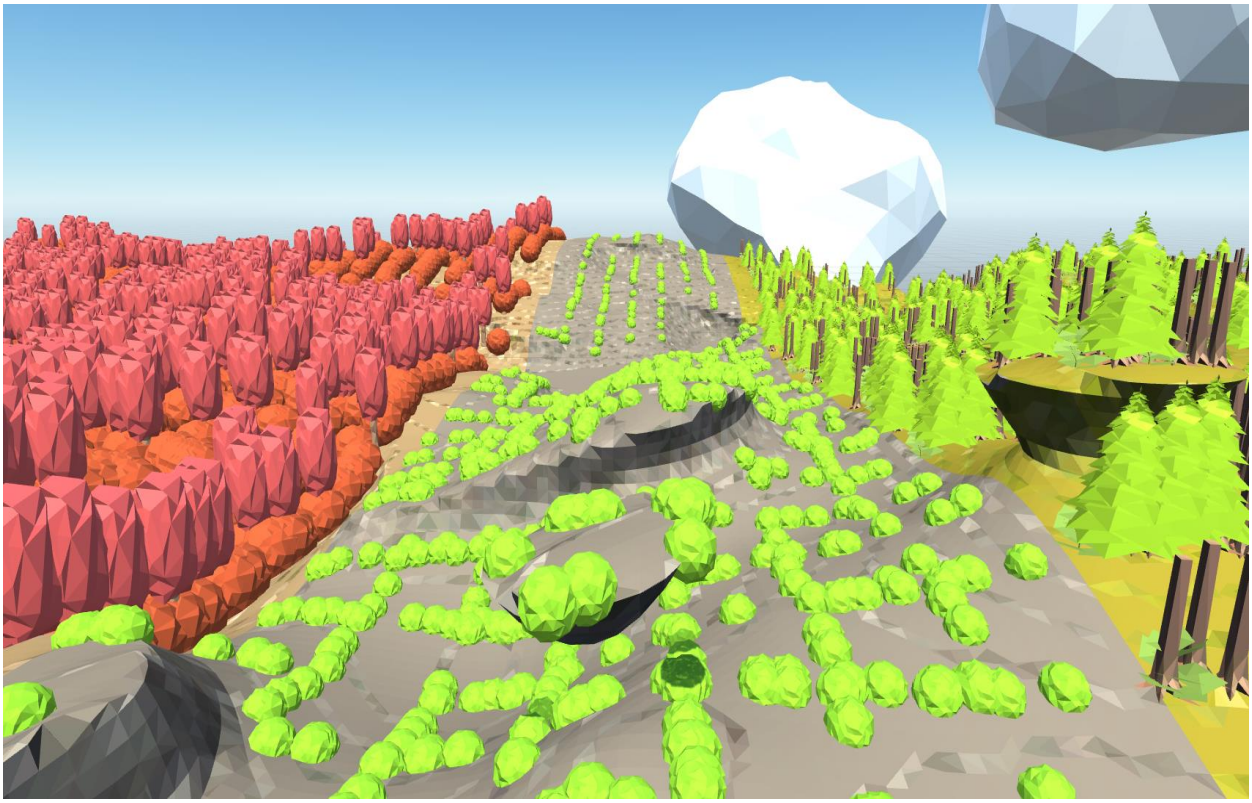
You need to assign land material and prefabs to to get beautified customizations. As a summary a biome which is the combination of prefabs and the land material. The biomes are bounded with respect to height and width parameters of the terrain.

2.4 Biome Formation Algorithms:

Flat Land has three different biome algorithms:

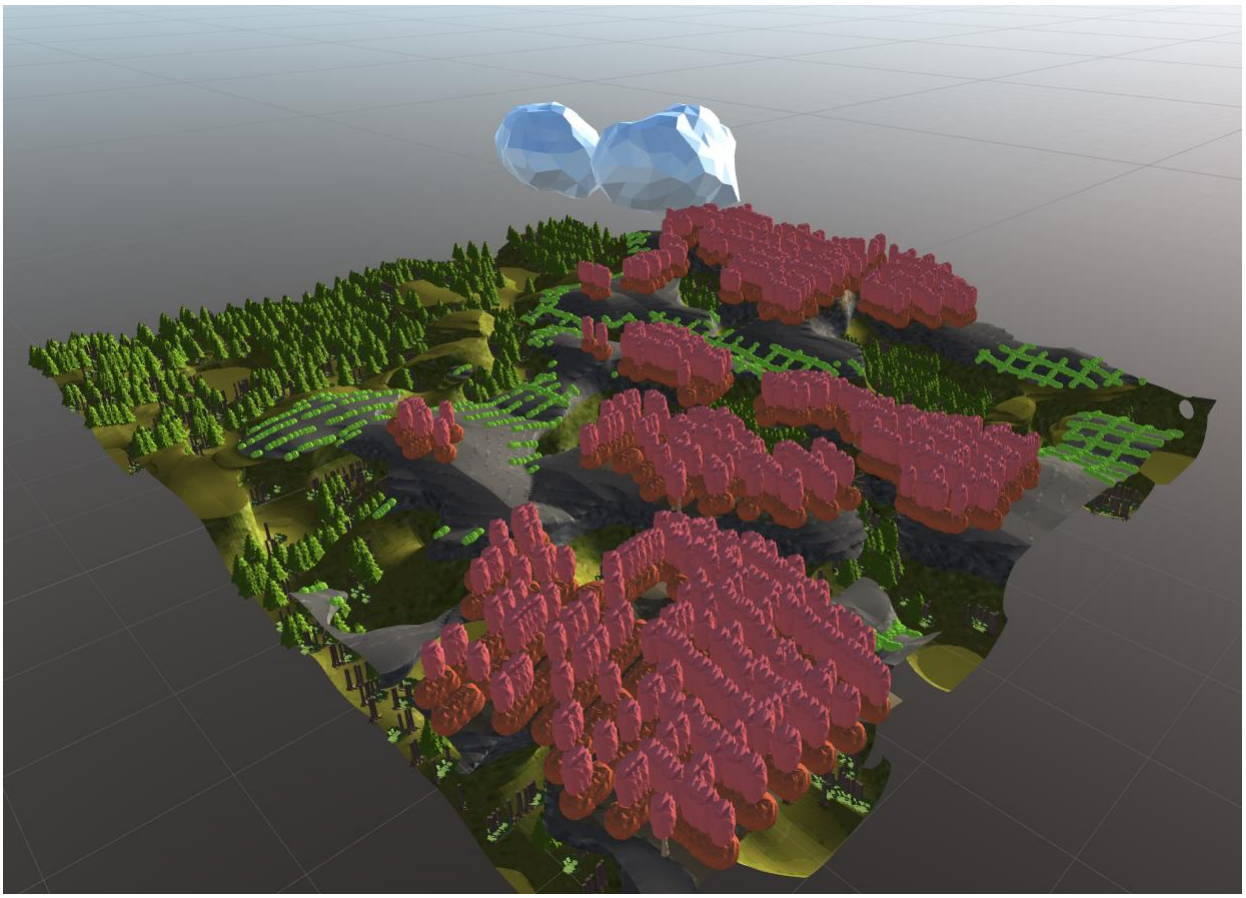
- Horizontal Biome
- Vertical Biome
- Dispersed Biome

2.4.1 Horizontal Biome:



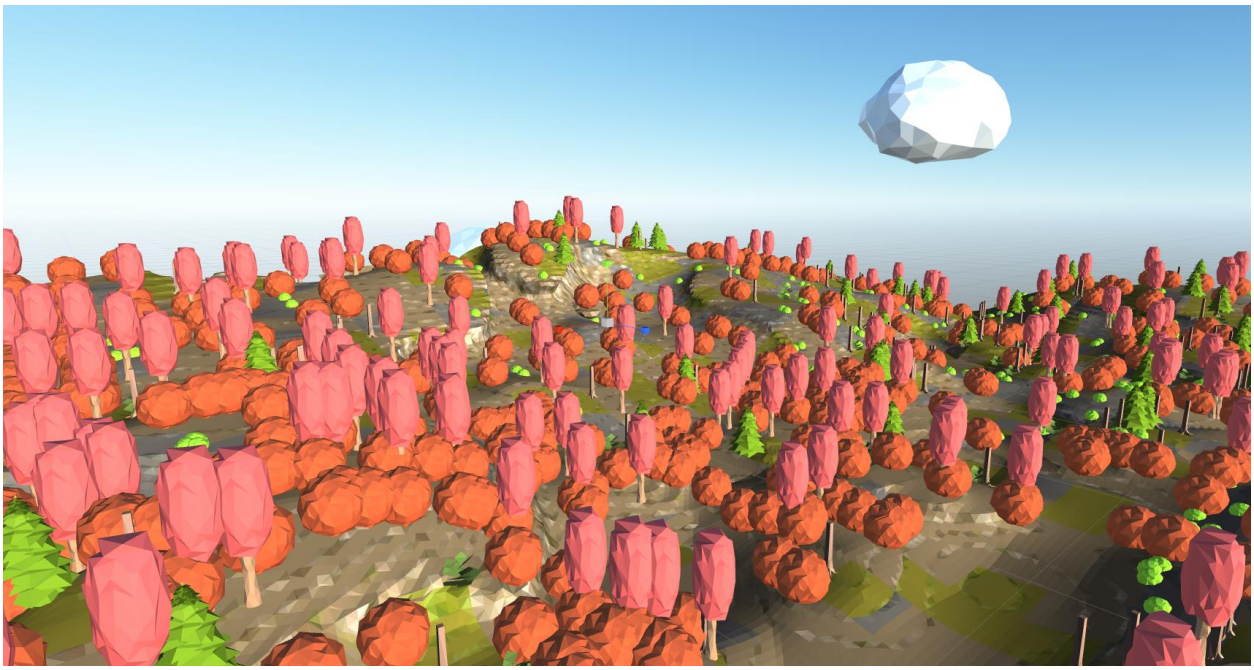
In this algorithm the terrain divided into equal sized horizontal rectangular regions and they are aligned horizontally. For instance in the above representation there are three biomes . You can recognize them from their different colours.

2.4.2 Vertical Biome:



In this algorithm the terrain divided into equal sized vertical rectangular regions and they are aligned vertically. For instance in the above representation there are three biomes . You can recognize them from their different colours. The upper most biome is with light green color, the middle biome is dark color and the deepest biome is dark colored.

2.4.3 Dispersed Biome:



In this algorithm the terrain has random distributed vegetation. As you can understand from above image the top trees are completely random and there is no order in vegetation.

3 FAQ

- There are problems with the locations of the placed prefabs.

This problem occurs because of lack of MeshRenderer in the root prefab transform. Because system effectively uses bounds of the renderer.

- Can I manipulate the surface off the terrain after it is generated?

Yes you can dig and build at runtime with primitive shapes of the terrain.

- Is there any hole cave system?

No, but in the next release there will be hole a generator which handles caving process. But in the Dig & Flatten Map section will help you to play with iso-surface of the terrain.

- Is there editor support?

No, it will be deployed in the next release.

- May I save the terrain?

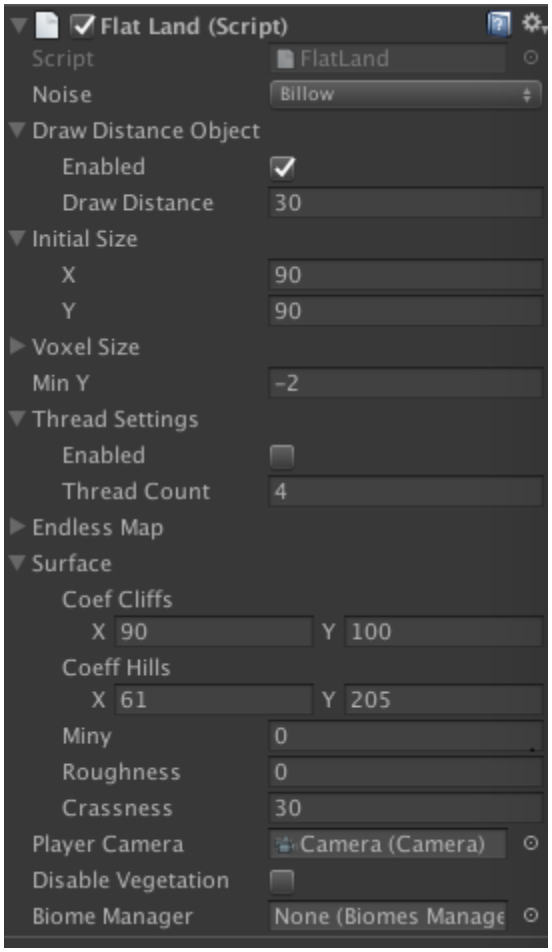
No, it will be deployed in the next release.

- What does Internal Flattener do?

Internal Flattener flattens the prefabs with very efficient architecture. You will not look far to get flattened prefabs.

4 PROPERTIES OF THE COMPONENTS

4.1 Flat Land



Main terrain generation component is the FlatLand component.

Noise parameter defines the surface extraction noise type. You can switch to the following noise presets:

- Perlin
- Simplex (Perlin 2)
- Billow
- Voronoi
- Rigged
- Flat Noise (Custom)

Draw Distance Object if activates draw the distance threshold from player.

Initial Size stands for the initial terrain size generated at start.

Voxel Size stands for the size of patches. If you increase this you will increase the scale of the terrain.

Thread Settings field defines whether to use threading and defining the thread count.

Endless Map stands for a neverending map.

Coef Cliffs X value stands for the minimum value Y stands for the maximum coefficient.

Coef Hills X value stands for the minimum value Y stands for the maximum coefficient.

MinY parameter defines the minimum Y in world coordinates.

Sharpness coefficient defines the irregular surface.

Smoothness coefficient defines the smoothness of the surface.

Player Camera field generates the terrain the player`s whereabouts.

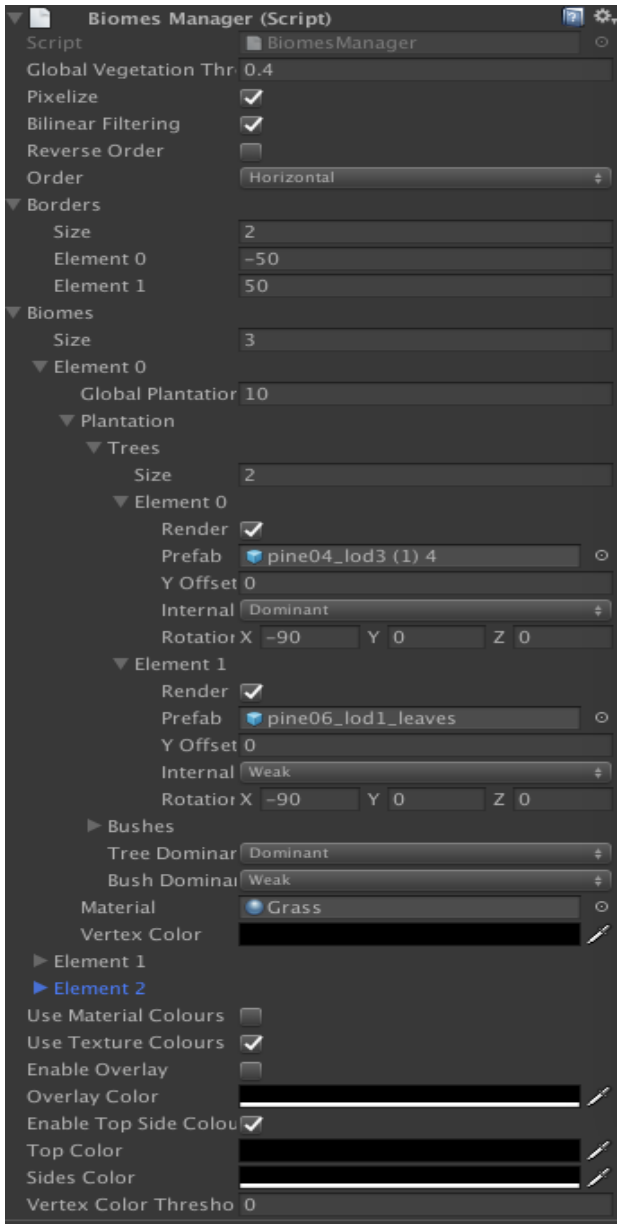
Disable Vegetation checkbox stands for disabling and enabling vegetation.

BiomeManager field stands for assigning the BiomeManager component. There is no need to assign if you have BiomeManager in the scene, FlatLand assigns the field automatically.

Density indicates frequency of the prefab on the terrain. Offset is the vertical offset of the prefab. If you're your object floats in the air just assign negative values.

4.2 BiomeManager:

This is the core component of the vegetation and texturing.



Global Vegetation Threshold is the main threshold of all biomes of the vegetation.

Pixelize command enables texture pixelation process of the textures.

Billinear Filtering determines whether bilinear filtering will be applied to the textures.

Reverse Order command reverses the sorting of the biomes.

Order command is about biome sorting. Please read the previous Biome Formation Algorithms section.

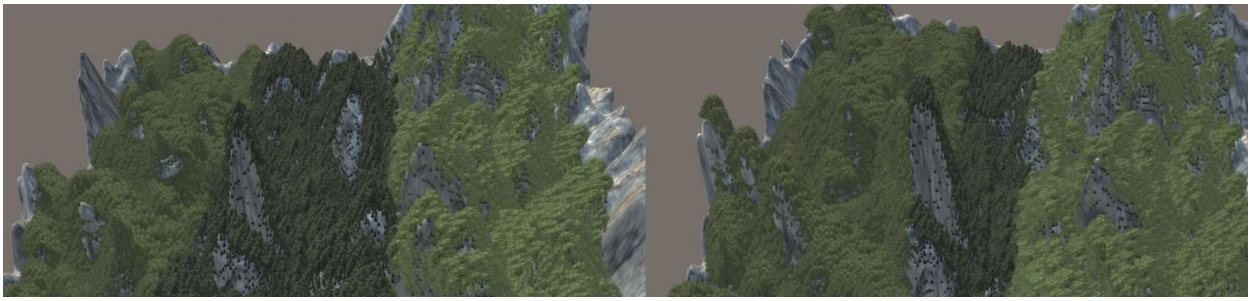
Borders parameter represents the thickness of the biome layers . If it is set to 0 it will be automatically calculated. But if you want to set it manually you need to specify values in world coordinates. The important thing size must be 1 less than count of the total biomes.

Use Material Colors will be enabling usage of the material colour in material of the prefabs.

Use Texture Colors will be enabling usage of the colors of the textures.

Enable Overlay will be applying overlay to the generated colours from textures.

Enable Top Side Colour will be harmonized the vertex colouring process..

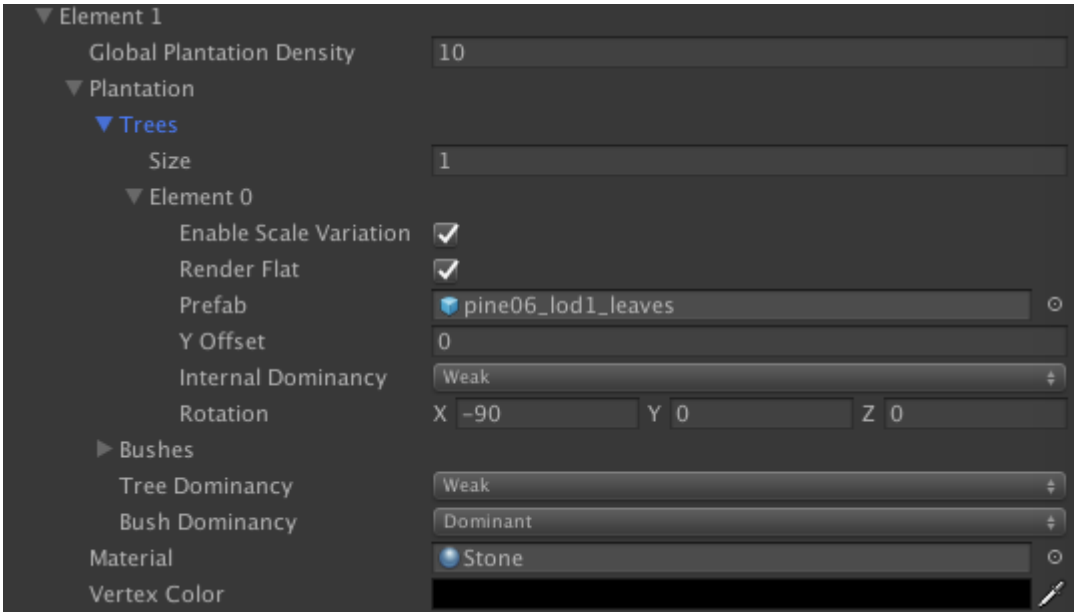


In left side biome located at center is thicker than the right one. You can create this kind of biome sortings with the borders.

4.2.1 Elements of the Biomes Field:

Every biome has independent properties like density of vegetation , material color , vertex color, trees and bushes.

The plants has two types which are Trees and Bushes. Trees and Bushes have relation ship in count. If one is set to dominant another will be less in count.



Element command is about biome sorting. Please read the previous Biome Formation Algorithms section.

Size command is about biome sorting. Please read the previous Biome Formation Algorithms section.

Enable Scale variation lets the objects be in different scale.

Render Flat command is about biome sorting. Please read the previous Biome Formation Algorithms section.

Prefab will be instantiated object in the scene.

YOffset command is the offset of the prefab on Y axis.

Rotation is the rotation which you want your object to have.

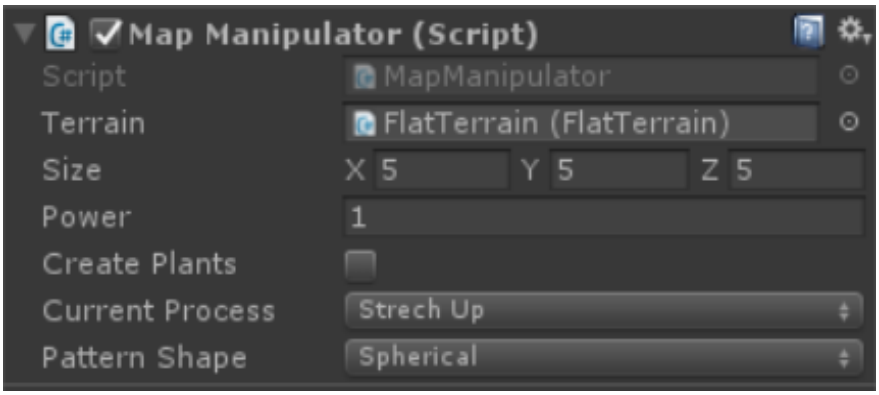
Material is the biomes material.

Internal Dominancy command is about biome sorting. Please read the previous Biome Formation Algorithms section.

You can compare the change in the elements density with following image in this image elements are distributed equally.

4.4 Map Manipulator:

You can manipulate the surface with this component. Digging or stretching up is possible when this component is added to the scene. If you are a developer you can integrate to your own system using the code.



Size represents the size of manipulation.

Power represents the power of manipulation.

Create Plants will let you instiate prefabs especially on the flattened surface .

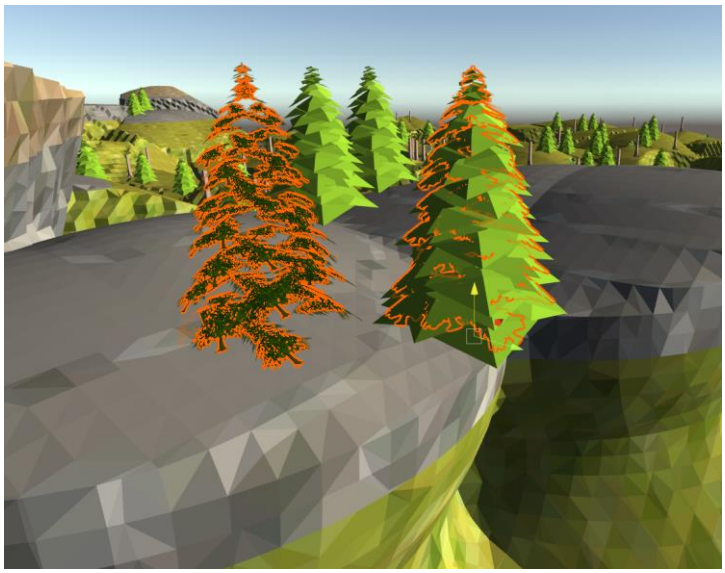
Current Process is the selection between Strech Up or Strech Down .

Pattern Shape lets to manipulate in selected shapes.

5 INTEGRATED FLATTEN SYSTEM

5.1 Sample Result of Render Flat

Flat Land has it`s own Integrated Flatten System with this feature will let you to convert your normal prefabs to flat ones. All you need to do inserting you prefab to biome manager and marking it as Render Flat.



The left selected prefab was the original prefab of converted prefab. Please investigate image to see differences. This tool won`t let you to use other software.