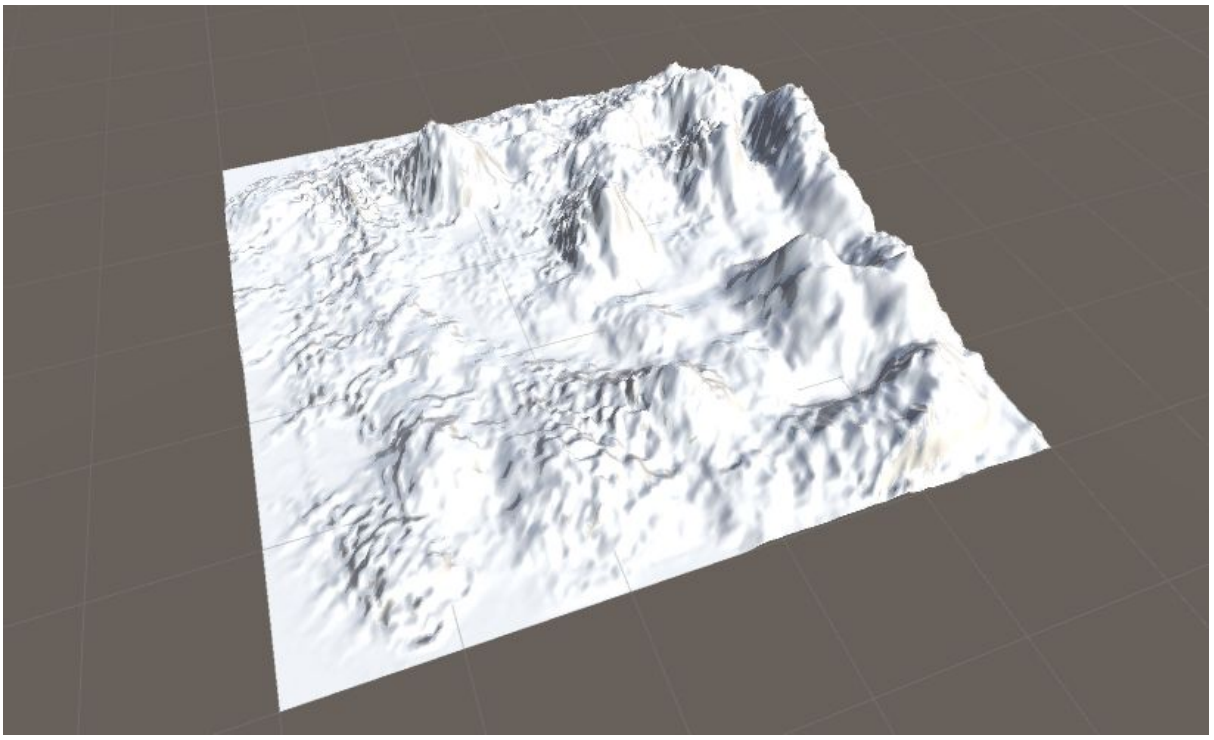
Nav Mesh

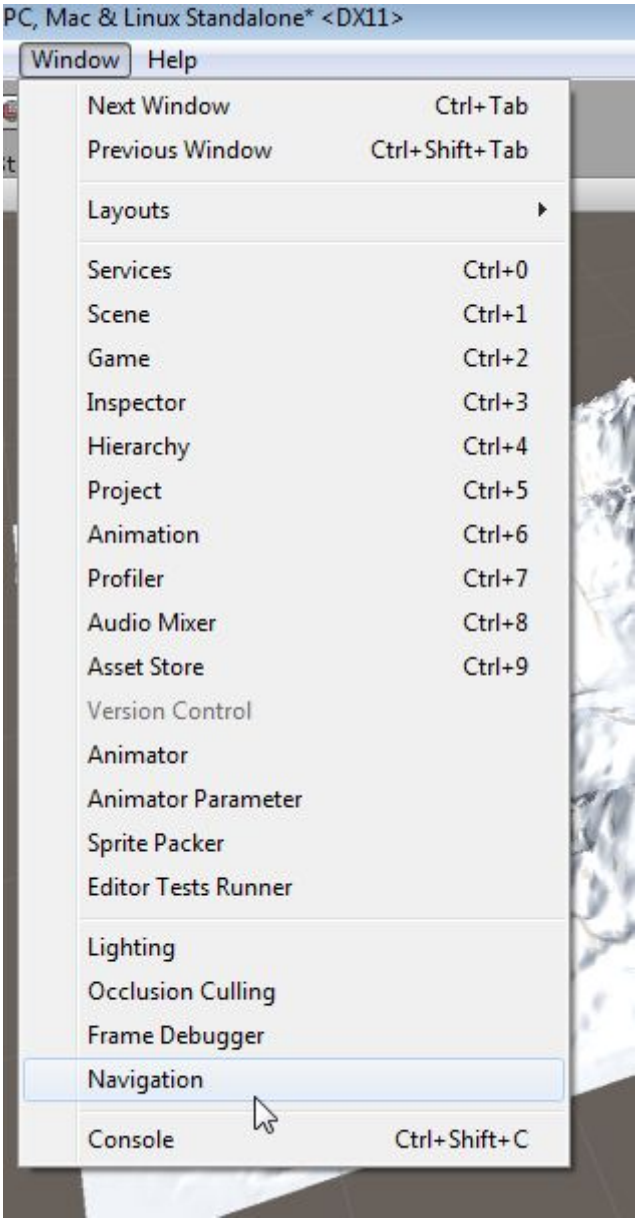
When programming AI you sometimes need the AI to navigate a terrain and obstacles. There are several ways to do this, but Unity has a built in objects called Nav Meshes' that can do this for us.

Create a Nav Mesh

Nav Meshes' can be created on any existing mesh. The most common way to do this is just use a standard terrain mesh.

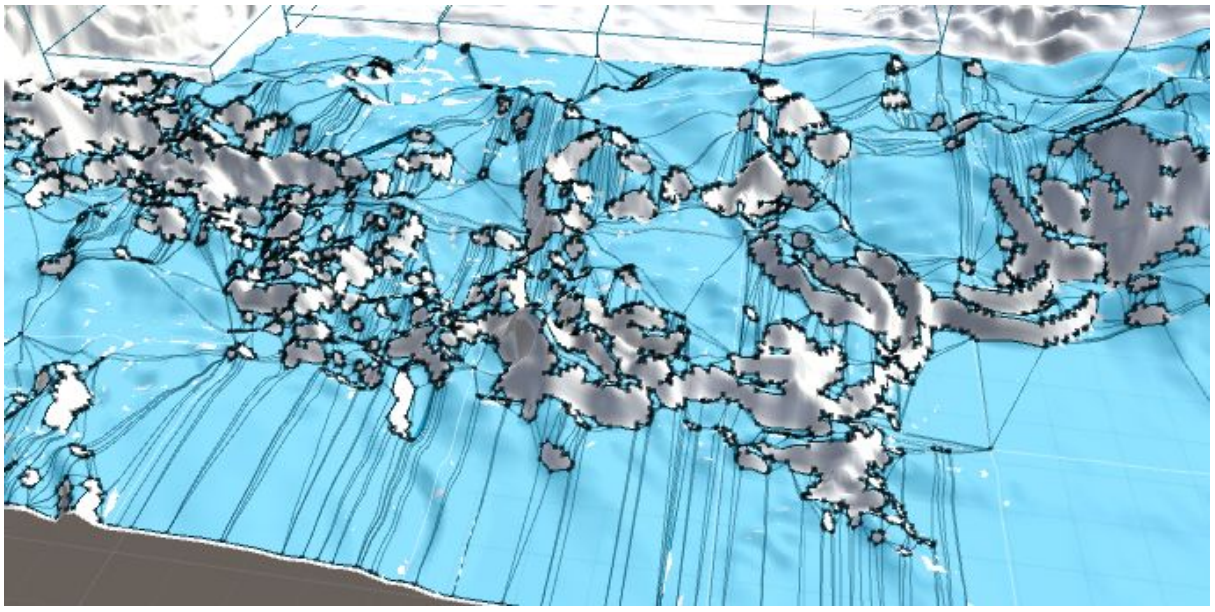


Once this is done open up the Navigation window **window => Navigation**



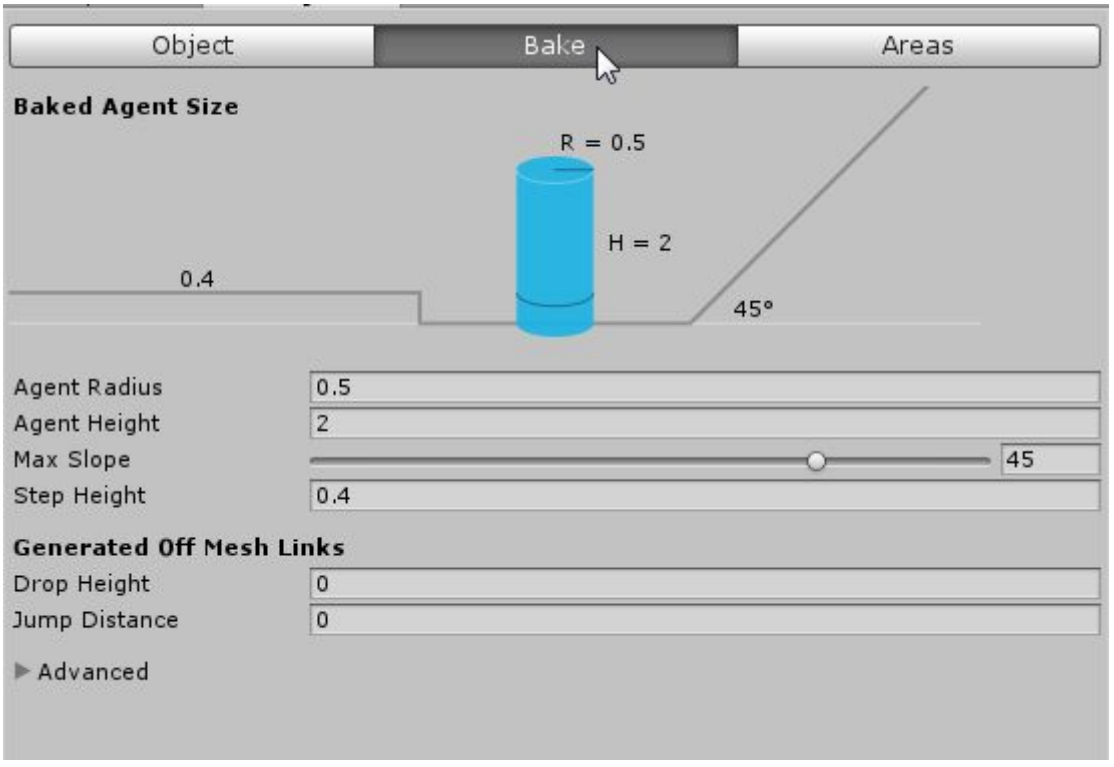
With the terrain selected press the **Bake** button in the navigation window

What this will do plot all the areas on the map where AI can walk .
When finished it should like something like this:



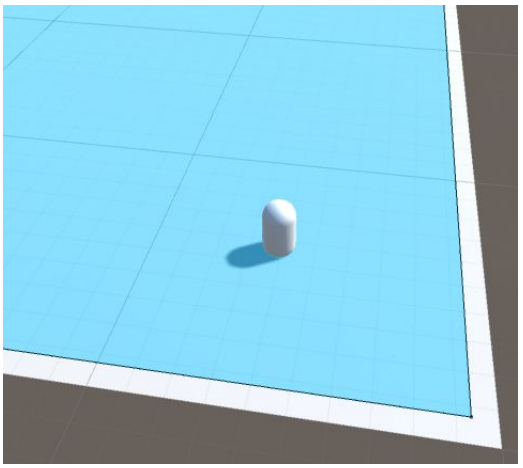
The blue areas are calculated as ‘flat enough’ for the AI to walk on.

These parameters can be changed in the **Bake** Tab in the **Navigation** window

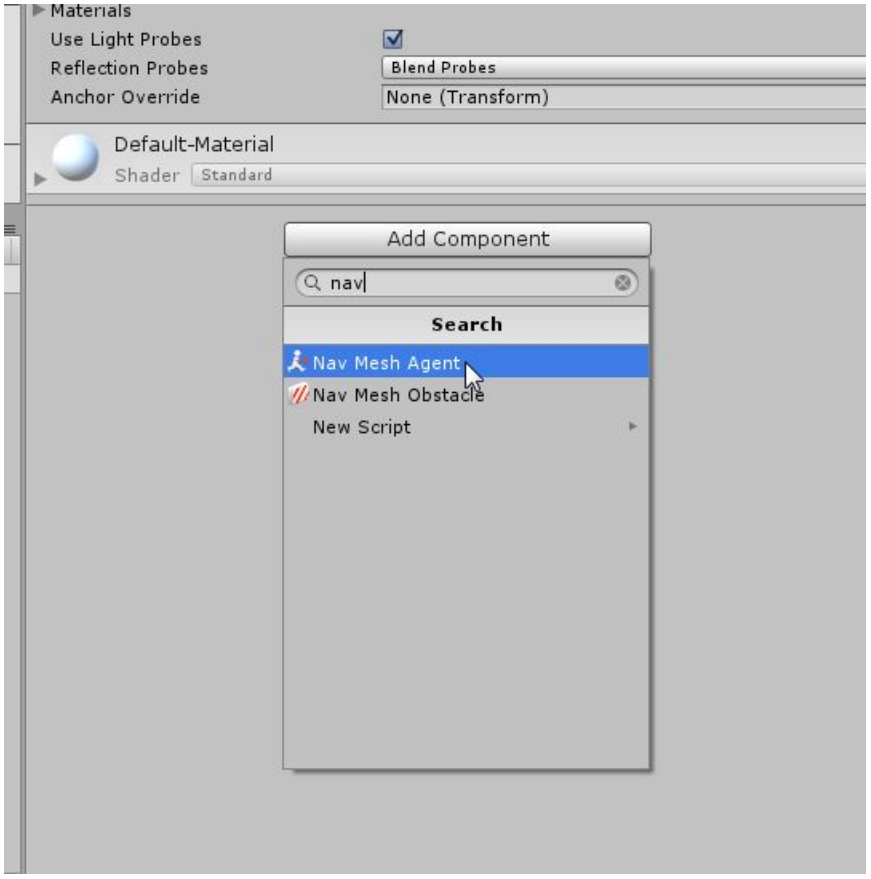


Now let’s create a Nav Mesh Agent to walk on this Nav Mesh

Create a Capsule and place it on the mesh



With the Capsule selected in the Inspector, add a **Nav Mesh Agent** component to it.

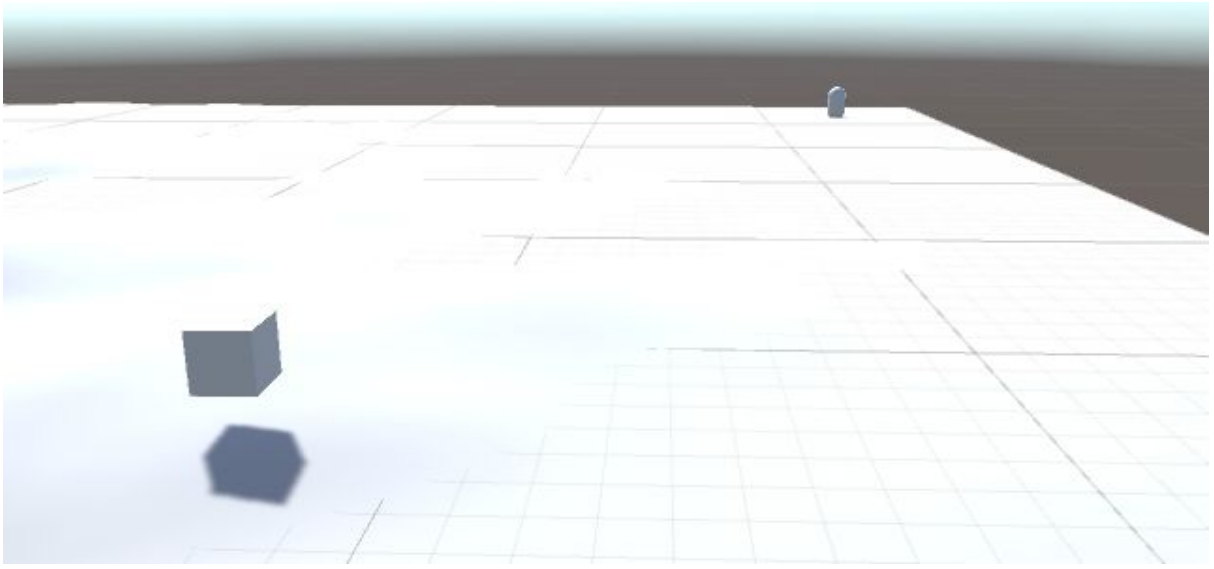


Programming the Agent

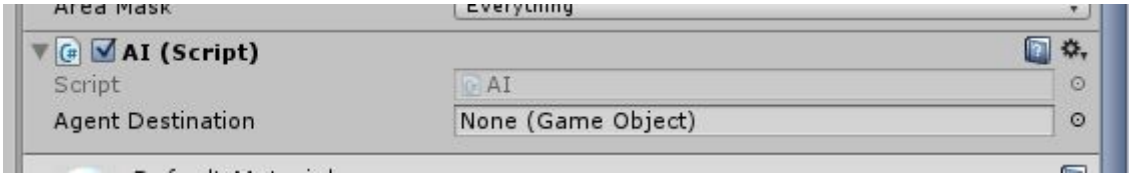
Create a new script to control this Capsule.

```
using UnityEngine;
using System.Collections;

public class AI : MonoBehaviour {

	private NavMeshAgent navAgent;
	public GameObject agentDestination;

	// Use this for initialization
	void Start () {
		navAgent = GetComponent<NavMeshAgent> ();
	}

	// Update is called once per frame
	void Update () {

		if (agentDestination != null) {
			navAgent.destination = agentDestination.transform.position;
		}
	}
}
```

Create a cube in the scene, this will be used as a target for the AI script.



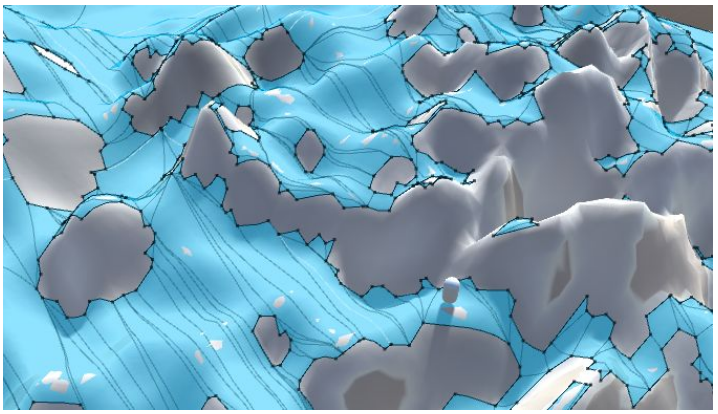
Once you have attached the AI script to the capsule you will see a space for a destination.



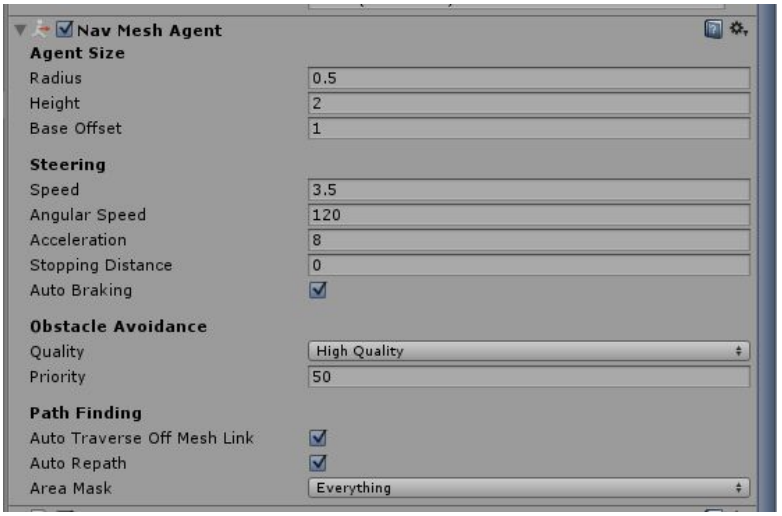
Drag the cube from the Hierarchy into this empty slot.

Run the game and see what happens.

If done correctly the Capsule should navigate the Nav Mesh to the cube



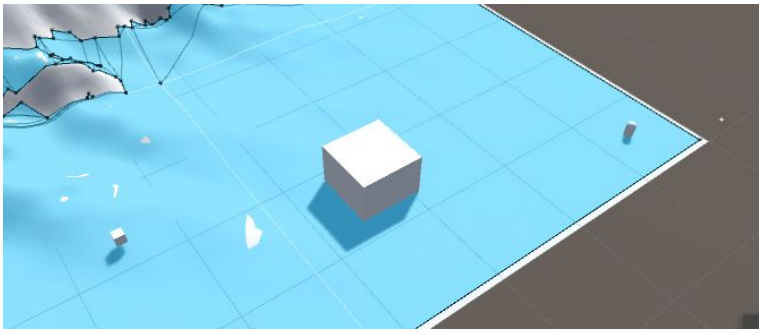
If you select the capsule you can see a whole lot of options under the **Nav Mesh Agent** that you can adjust if you wish



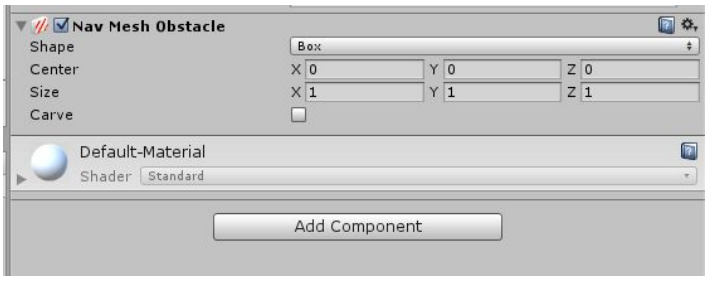
Obstacles

If you wish to create an obstacle for the agent (such as a house you have built on the terrain during the game) you can do so with a **Nav Mesh Obstacle**

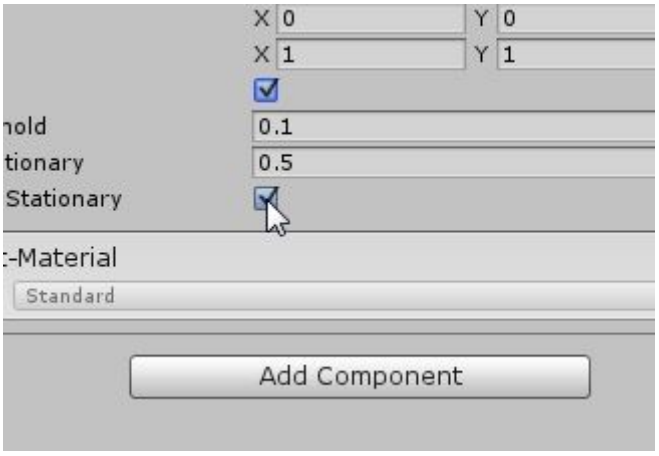
Create a new cube, Make it large and stuck into the terrain.

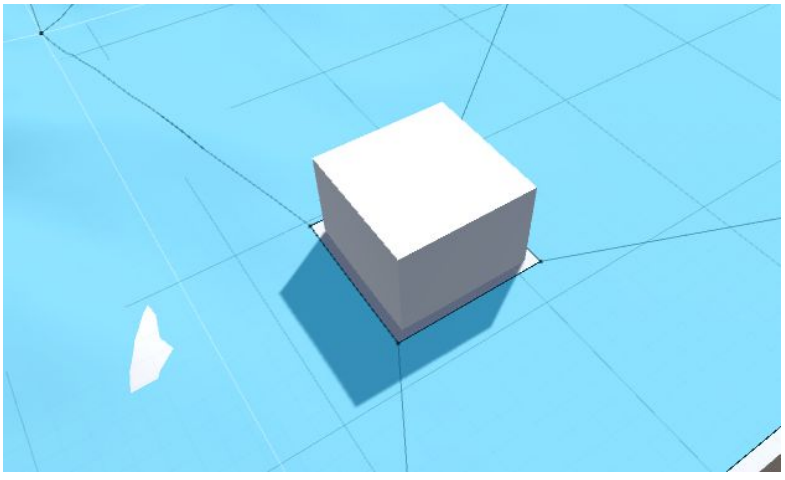


Add a **Nav Mesh Obstacle** component to this object.



Now if you check the option box for **Carve** you will see it will cut away at the mesh





Why is this useful?

If you want to make a game like Diablo where you click on an area and the player moves there, you will need some form of obstacle avoidance and path finding like a nav mesh. Also for games like starcraft where units move around a map by themselves.

Further information

http://docs.unity3d.com/Manual/nav-BuildingNavMesh.html