RTS Battle Kit

Documentation

v2.3

Thank you for purchasing the RTS battle kit

Contents

INTRODUCTION

This kit was designed to let you make RTS games with real-time battles. Set up cool battles and let players deploy, select and move several different units in real time. Defeat automatically spawned AI enemies but make sure you defend your own castle as well.
In this documentation, I'll give you an overview of the asset and I'll explain its features.
There's some stuff that needs to be set up. After that, you can just open the example scene to play the game.

SETTING UP THE GAME

TAGS

The kit uses some tags to find characters, enemies and castles. It also uses one tag called ‘battle ground’ to check if player clicks the battle ground, so troops will not be deployed on top of enemies for example.

If the tags are not automatically correct, follow these steps to set up tags:

First, add five tags: ‘Battle ground’, ‘Knight’, ‘Enemy’, ‘Player Castle’, ‘Enemy Castle’ and ‘Enemy spawn position’. Than find the Battle ground in the scene and tag it as Battle ground.

Now, go to the prefabs and click ‘Castles’. Add tags to the enemy/player castle as well. It’s best to add your tags to each wall and tower of the castle with a castle script attached, to make sure these will be destroyed separately.
Finally, click ‘characters’, and give the low poly enemy Viking an ‘Enemy’ tag. All other characters should have a ‘Knight’ tag. Please add tags to each individual character prefab, so for the ‘Unarmed knight x16’, click dropdown arrow and add a tag to all of them (hold down shift to select all 16 at the same time).

The game should be working now!

GAME CONTROLS

- wasd to move camera around
- press scroll wheel to look around
- Click UI button to select a unit and click anywhere to deploy troops
- Press space or use button to start/end selection mode
- In selection mode, click & drag mouse to select troops
- If troops are selected, right click to move them or press ‘x’ to deselect all
- Hover over buttons to see stats
- Press the gear button to pause game and open settings or use p

NAVMESH

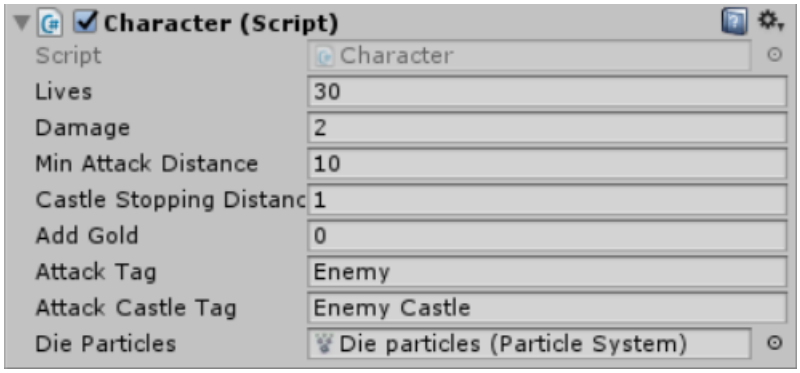
This kit uses navmesh. I used Unity's navmesh system to create battles between characters fighting each other. The fact that it uses navmesh is also the reason all characters have a navmesh agent component. The only thing you should keep in mind is that, when you create your own terrain with trees, mountains or any other static objects, all static objects should be set to navmesh static (including the ground) and then you will need to re-bake the navmesh.

CHARACTERS/TROOPS

Of course, characters are very important in the kit. Everything is based on characters fighting each other and attacking the castle. All of the included character prefabs have an idle, run and attack animation. Additionally, they all have a navmesh component and a character script. The character script is for both knight and enemy and handles everything for the character like animations and movement. Except the character script, there's one character manager script too. The character manager does general stuff for all characters. It also handles gold amount, troop deployment and troop selection.

CHARACTER SCRIPT

The character script is probably the most important script. The script stores all attackable targets in an array using tags, handles character animations & movement, castle attack, holds a 'selected' variable for each individual knight and handles character damage & lives.



Character script- Armed Knight prefab

In the inspector, there are some adjustable variables for the character script:

- Lives and damage speak for themselves.
- Min attack distance represents the range in which characters attack their nearest target. If there's no target within this range, the character will (if selected) move to a clicked position or attack the opponent's castle. If you set this to 0, like the giant, the character will immediately attack the castle and won't attack any enemy.
- Castle stopping distance is the distance from the castle where this character stops and starts attacking. For example, giants will need to stop earlier then very small troops. The stopping distance also depends on the castle size which you can adjust for each castle part.
- Add gold is the amount of gold the player receives when character dies. For the player's troops (knights) this should be 0, since you only want players to receive gold when they defeat an enemy.
- Attack tag is the (name of the) tag that will be attacked by this character. So, for example, if you add a cube to the scene, give it the tag 'a' and write 'a' in the attack tag field, this character is going to attack the cube (of course the cube needs a character script too then).
- Attack Castle Tag works the same, only is this used to find the castle that will be attacked.
- Die Particles is the particle system that appears when character dies. If you add a ragdoll prefab, it will be used instead.

From the 'wizard' checkbox, these values are only used by the wizard.

ADDING YOUR OWN CHARACTERS

You could of course use the included characters in your game, but maybe you don't like them, you need more characters or they aren't detailed enough. If so, there are a few steps to set up your own characters and make them deployable.

MAKING A NEW CHARACTER

- First, import your character model and use the 'Humanoid' animation type.
- Than drag your character in the scene. It should have an animator component already. Please choose one of the animators (or create your own).
- If your character is an enemy, give it the 'Enemy' tag. If your character isn't an enemy, give it the 'Knight' tag
- Now, add a navmesh agent component and a capsule collider. Adjust their sizes to fit your character. For the navmesh agent component, set speed and copy all other values from the knight prefab as well.
- Add a character script to your character
- To keep it simple, if you want your character to be an enemy, copy the values from the enemy Viking prefab. If you want your character to battle the enemy, copy values from the knight prefab. Now, you can adjust them a little.
- Adjust the lives & damage for your character and set min attack distance.

- Next, if your character is an enemy, set the 'Add Gold' value to make sure the player receives gold when he defeats an enemy. Otherwise, leave this value at 0.
- Finally, copy the healthbar, the 'selected object' and the Minimap icon from one of the character prefabs and add it to your character. Position those above its head.

You now have a new character. Put it in the 'Prefabs' folder. If it's an enemy, use it as one of the prefabs for the 'Enemy Spawner'. Otherwise, follow next steps to make your character deployable for the player.

MAKING YOUR NEW CHARACTER DEPLOYABLE

For characters to be deployable there are some very simple steps:

- To start, find the manager prefab in the 'Prefabs' folder and select it.
- Go to troops and expand its size by 1. In the new element, add your character prefab, add troop costs and add an image to show your character in the list.
- After you did this, it will automatically create a new in-game button for you and you should be able to select and deploy your character.
- **Under 'Prefabs – UI' you'll find a character button. Please don't delete or change this, since this is the default character button.**

CHARACTER MANAGER

The character manager holds the amount of gold players have to deploy new troops, it does troop deployment and troop selection too. Currently, the gold amount is not something players can store and save to buy new characters from. It just makes the game more fun to play. If there would be no gold in the game, players could just deploy infinite amounts of troops. Using gold, the game gets a little more challenging and players will need to use a good strategy to win the battle.

ATTACKING CASTLES

One of the most important goals of this game is attacking the opponents' castles and protecting your own castles. If troops don't have a target within their attack range, they will attack the castles. Also, if you defeat all enemies they will attack the castle. Make sure castles are always positioned on the navmesh, because characters won't leave the navmesh.

USING YOUR OWN CASTLES

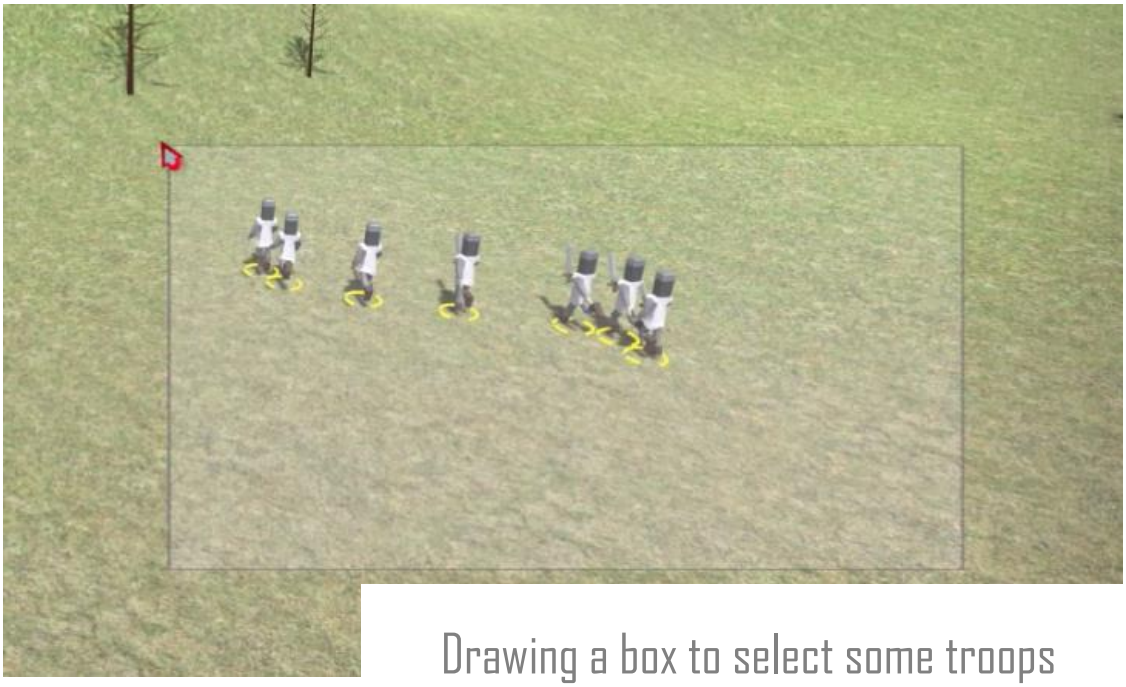
There are a few things you will need to do in order to use your own castles:

- Give your new castle a castle script.
- Than declare the amount of lives for your castle and set the size.
- I you are making a new castle for the player, give your caste the 'Player Castle' tag. If not, give it the 'Enemy Castle' tag.

SELECTION TOOL

As I said earlier, the character manager script handles character selection. Basically, if you are in selection mode and drag with your mouse, it sets a start position for the GUI rectangle. Then, when you are drawing the rectangle, it scales the rectangle according to the current mouse position compared to the start mouse position. To actually select troops, it stores all characters (in scene) that have a 'Knight' tag in an array. Then, when you're drawing the rectangle, it checks each knight position and looks if it's within the rectangle. If it is, it finds the character's 'Character' script and sets selected to true.

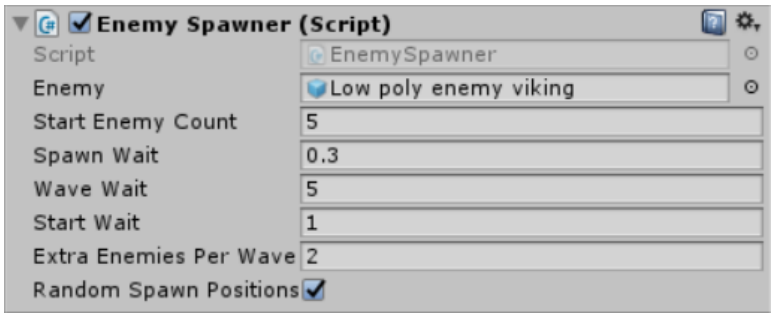
To change the look of the selection rectangle, go to the manager prefab and change the GUI style 'Rectangle Style'.



Drawing a box to select some troops

ENEMY WAVE SPAWNING

The kit includes an enemy wave spawner (attached to the manager object) to challenge the player with growing groups of enemies:



The spawner uses each object with an 'Enemy spawn position' tag to spawn enemies.

MANAGER SCRIPT

You may have noticed that the manager prefab doesn't only contain a 'Character Manager' script. It has a 'Manager' script as well. This script isn't very important. It just handles the game UI. It finds UI like the victory panel and the fail panel and turns them on and off. The script also contains a few functions like starting the game and surrender. You can adjust the start fade speed and the minimap GUI border style.

BLENDER FILES

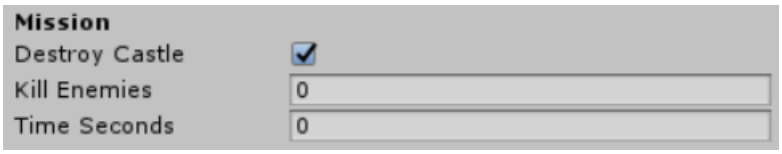
The RTS Battle Kit comes with some Blender files for customization. Use the 'unit images' file to create images for your units in game.

OPTIONS MENU

The options menu auto-saves each option using PlayerPrefs. To reset the options, click ‘delete playerprefs’ (canvas object) and press play. Then exit playmode and turn it off again. If you want the default slider values, change their slider value and reset the options. To change other default values, go to edit -> project settings -> quality and change the settings here. Then reset the options.

MISSION

Since version 2.1, you can set a basic mission:



If you have ‘destroy castle’ selected, the mission will automatically be to destroy the castle of your opponent. You can also uncheck ‘destroy castle’ and set the amount of enemies that need to be killed or set a time in seconds. You can combine the timer and the ‘kill enemies’ values to make a harder mission.

MOBILE CONTROLS

To use the mobile controls, drag the 'Mobile' prefab in the scene (prefabs – other - Mobile). If you want to use multiplayer, use the 'Mobile multiplayer' prefab instead (multiplayer – prefabs – mobile multiplayer). Then go to the build settings and set platform to your mobile platform (Android for example). Now open edit-project settings-quality to set the quality to something more mobile friendly.

Like this:

Disabling shadows might also be a good idea.
After that we'll need to **apply these quality settings to be the default settings in the options menu**. To do so, take a look at the options menu part.

Now you can build and test it with your device.

DRAG & DROP INPUT

The default controls work perfectly fine for pc, however, for mobile devices tapping the screen to deploy your units might feel a bit awkward. To fix this issue, in v2.3 of the kit I've added drag and drop input. First off, to use the drag and drop controls, you need to enable mobile input. Then you can go to the manager object and in the character manager, make sure mobile drag input is enabled.

The drag and drop input basically looks like dragging cards onto the battlefield. By checking 'original preview size' the card preview will use the original button size. If you leave this unchecked, it'll use the 'drag preview size'.

ADMOB

If you want to add ads to your mobile game, you could simply choose to use Unity ads by enabling the ads services and adding Advertisement.Show(), however with admob you can choose for different ads like banners. To use the admob ads, please first open the GoogleAds script and follow the instructions (import the google mobile ads package into your project and then uncomment the script). Also make sure to uncomment the AdmobExample script. The GoogleAds script is basically an example of how to use the google mobile ads package and the AdmobExample script links this to the ads button in the Unit Shop prefab. Now please enable the admob example located in the 'Mobile' prefab and fill in the variables. Moreover, make sure to select a mobile platform for the ads to work.

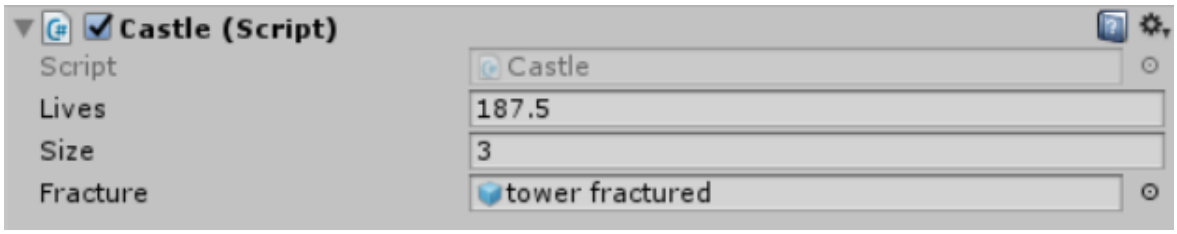
MECANIM

Since update 2.2 the RTS Battle Kit uses mecanim animation controllers. This is because Unity doesn't really recommend the legacy system anymore. Additionally, this makes it easier to provide any humanoid unit with animations. It already includes 10 controllers so there are animations for a lot of different types of characters/units. For cavalry, the horses use the Generic animation type. So when using the horse animation controller it's important to have the same bones (Blender files for the horse are included).

CASTLE DESTRUCTION

Castle destruction adds a nice effect after you destroy a castle. It's based on simplified, fractured versions of the castle parts. These fractured objects are instantiated after the main castle object gets destroyed. The fractured castles exist of a lot of small parts with rigid bodies and colliders so this might not be handy for mobile games. This is also why the main fractured object has a script attached which destroys it after 15 seconds.

To show the destruction effect, click one of your castle parts. You now probably see this script (just add it if you don't):



The 'Fracture' object is the fractured version of this part of the castle. If you leave this field empty, that's fine too. You just won't see an effect.

CREATING FRACTURED OBJECTS

To create a new fractured object, there are two options:

1. Choose one of the included objects and scale it so it corresponds with the size of your castle.

2. If you have some Blender experience:

1) Go to Blender and create a simplified version of this part of the castle.
2) Make sure the model has some subdivisions (for fracturing).
3) In the user preferences, search for 'fracture' and enable the Cell Fracture add-on.
4) Select the model and under 'tools' (t) you should see the cell fracture option. If you press this, you can fracture the model (make sure you've named it already).
5) Export the FBX and import in Unity.
6) Put the object in your scene, select all cells and give them a rigid body and a convex mesh collider.
7) If you put it above the ground and press play, it should fracture nicely. For performance, it's a good idea to also add a 'Delete Particles' script to the main empty.
8) If you now drag the fractured object into your prefabs folder, you can use it with one of your castle parts.

BASIC UNET MULTIPLAYER

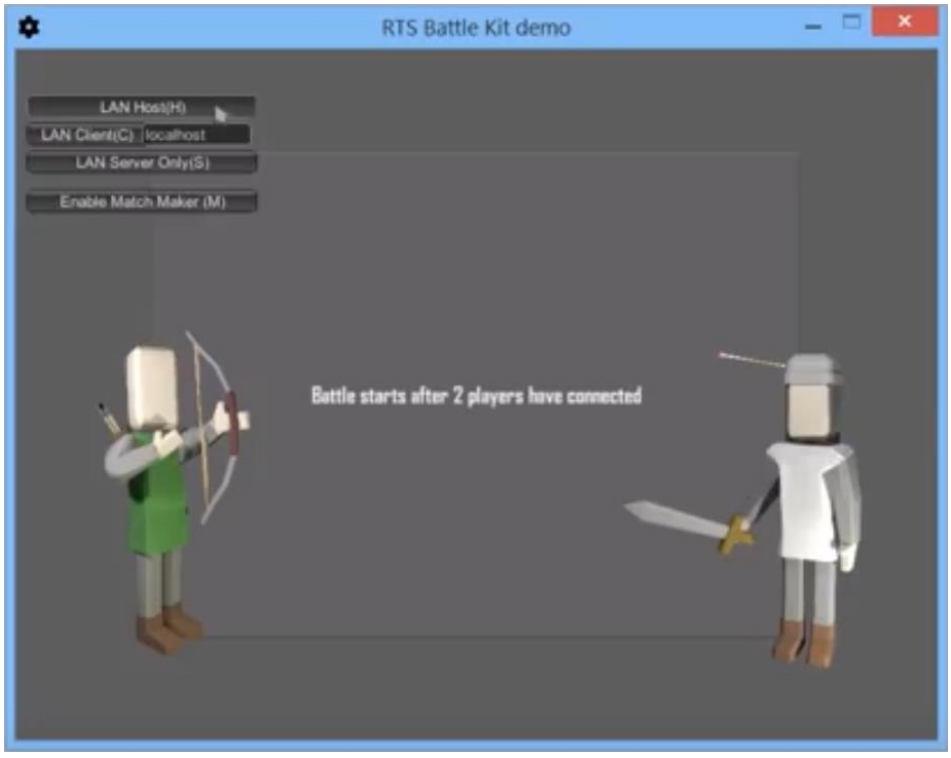
v2.2 comes with a uNet multiplayer example. This has been requested a lot so while I'm not really an expert at network/multiplayer games, I've added a basic multiplayer example. The reason it uses uNet is because you won't need any additional plugins to have it work.

SETUP

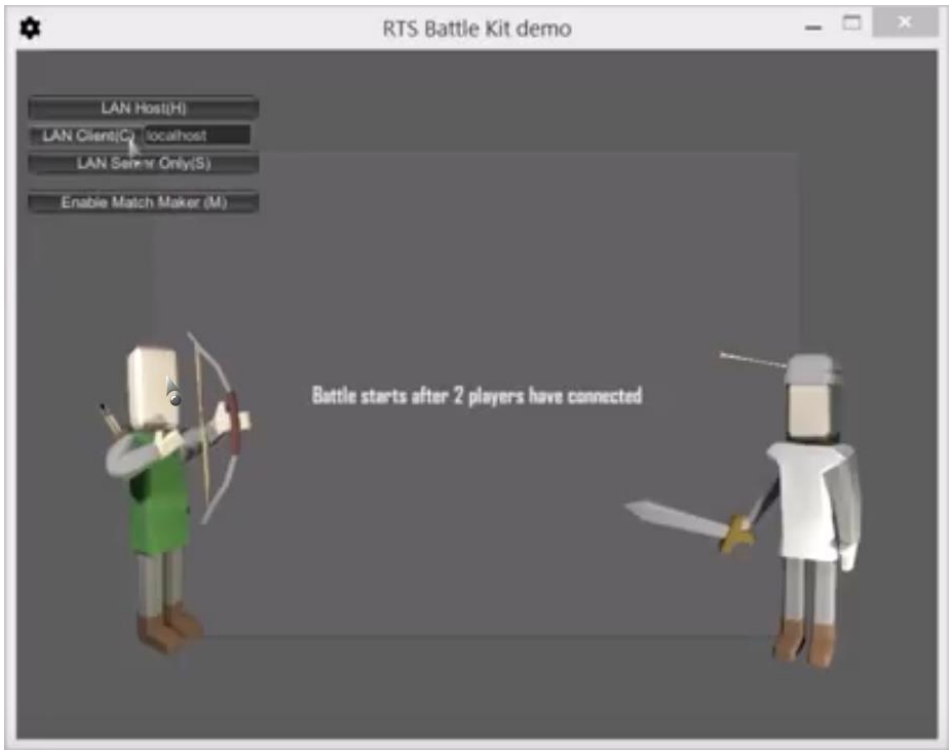
First of all, you might need to add these tags to the project settings:

- *Player 1 castle*
- *Player 2 castle*
- *Player 1 unit*
- *Player 2 unit*
- *Flag*

You can now test the multiplayer example scene by building the game and opening two windows. Make the first one the host:



And the second one the client:



This way they should both display the battle field:

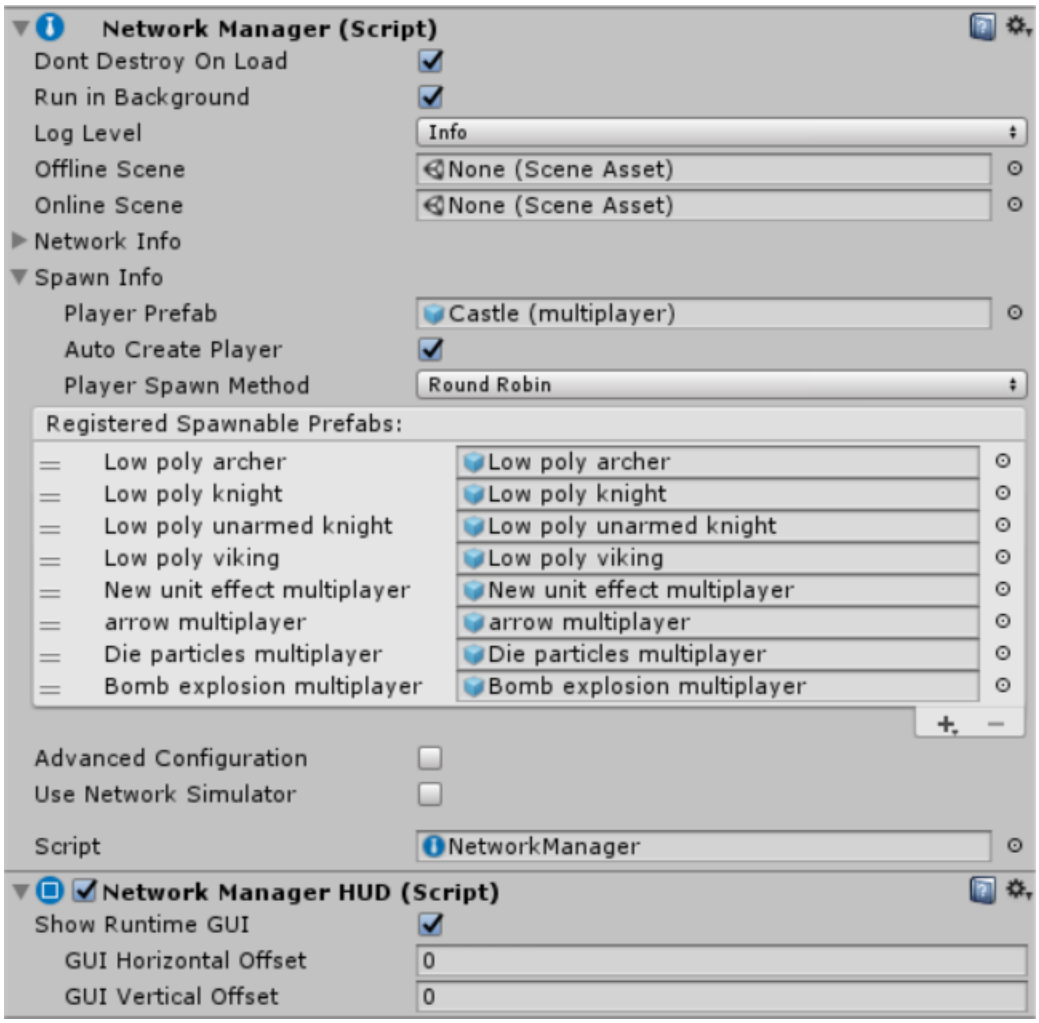
You can try the game by deploying units, selecting them and placing bombs. The game settings are still not synced, because players of course don't want their settings to adjust to the other player's settings.

STRUCTURE

Basically what happens is, when the host starts a game, it sees nobody has connected to the game yet by checking the amount of castles present on the battle ground and it stays on the gray screen. You can still choose to stop then. When the client connects, it finds the host. Both players now have two castles in scene and the grey panels fade out.
The players can start a battle and units are spawned via the server. Actually, everything is handled at the host. The host units battle each other using their tags and they tell their clones on the client to do the same thing and play the same animations.

Then when one of the castles is fully destroyed, the host tells the client (and itself) to end the battle. Using tags, the game managers locally figure out who won the battle and disconnect the players.

The network manager is essential here, since it handles almost all of the networking:



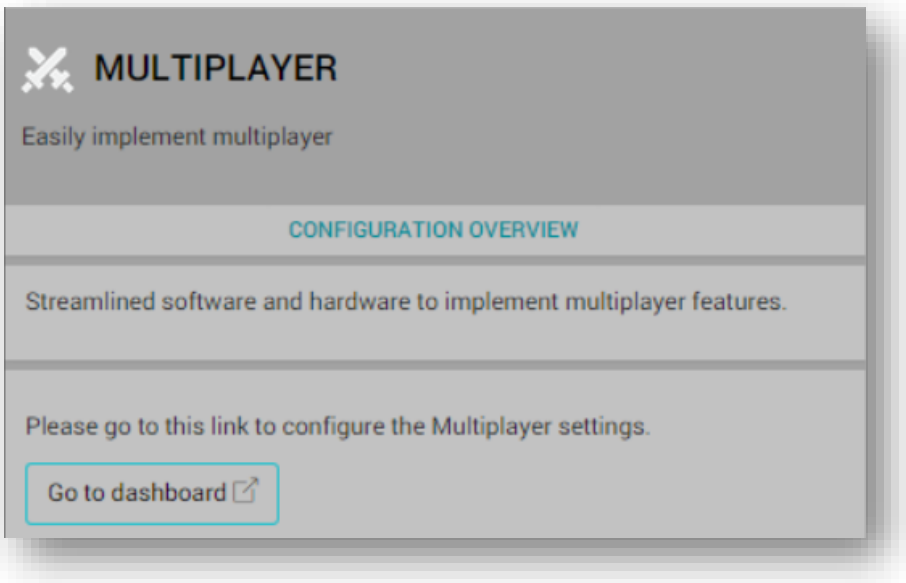
Each unit you want to spawn on the server via script should be added to this manager (unless you handle that via script as well). The castle prefab acts as the player. uNet needs a player to work, so while this prefab has all the managers and handles unit spawning, it is almost like a player. The Round Robin spawn method makes sure both castles are spawned on a different side of the battle ground.

You might have noticed the multiplayer does not include custom UI for connecting players but uses the default Network Manager HUD instead. This is just to provide as much flexibility as possible. For example, some people may want to use Unity's matchmaking service and some people don't.

MOBILE MULTIPLAYER

To test mobile multiplayer you can use the matchmaker. In order for the matchmaker to work, please press ctrl-0 (services) and create a project ID. Then go to the multiplayer section and configure your settings at the online dashboard. Finally, if you haven't already, please take a look at the 'Mobile Controls' part to add mobile controls.

To test the mobile game using matchmaking, instead of pressing the host/client buttons, press the 'Enable matchmaker' button. Then for the first player choose 'Create internet match' and for the second player choose 'Find internet match'. If you can now select the match you've just created, everything should work.



UNIT SHOP

If you want to use a coin/gems system so players can unlock new units, you can simply add the unit shop prefab to your scene. It will work for both pc and mobile devices (currently only single player) and it adds a panel to the start menu where players can unlock new units. Please specify the number of gems needed for each unit under ‘Gems needed’. Also, do not remove the editor folder from your project since it contains the script that will link your characters to the unit shop settings.

CONCLUSION

In this document I gave you an overview of the RTS Battle Kit asset and explained some of its features. Thank you again for purchasing. I hope you like the RTS Battle Kit. Good luck with you project and if the package is helpful, please leave a review.

For any questions or suggestions, please don’t hesitate to contact me via t3dmake@gmail.com.