Real World Terrain

Version 2.5

http://www.infinity-code.com/

Contents

Overview

Description

Real World Terrain is designed to generate Terrains, Meshes and T4M (Terrain 4 mobile) objects, based on the real elevation data of the earth, and buildings, roads, rivers, grass, trees based on data of Open Street Map.

With Real World Terrain comes with a tool that allows you to specify the desired area on Google maps.

Specification

Real World Terrain uses:

- SRTM v4.1 elevation maps, accuracy of 3 arcseconds (90 meters). The relative error in height for the data of less than 6 meters.
  SRTM data do not contain height maps water spaces, so for the seas and oceans value is zero altitude.
- Bing Maps Elevation API. Accuracy: 10m – USA, 90m - 56° S - 60° N, 900m – other.
- To create additional objects used data «**Open Street Map**».
- To create textures used: Google Maps, ArcGIS, Map Quest, Nokia Maps (here.com), Virtual Earth (Bing Maps), Open Street Map.

Using

Select the menu item «**Window / Infinity Code / Real World Terrain / Open Real World Terrain**», to open the Real World Terrain window.

Enter the coordinates of the area in decimal, configure the fields and press «**Start**».

Real World Terrain will automatically download the necessary elevation maps, textures, «**Open Street Map**» data, create new Terrains containing the specified area, and add them to the scene. For each Terrain creates an information block containing the coordinates, texture, and giving the opportunity to re-create it with the new settings.

Created terrains are stored in «**RWT_Result**».

IMPORTANT

Real World Terrain works with a lot of data, and can, depending on the settings to use a lot of memory.

We do not limit Real World Terrain settings, so you can get exactly what you want. But when a large amount of generated Terrains, you may get an error of memory, with crashes to Unity Editor.

To create the most detailed Terrains and avoid mistakes, we recommend the following steps:

- Create the desired area without textures, or with a minimum resolution (128 or less).
- Create a texture with the required resolution.
- Create additional objects.

After the successful completion of each step to save your scene.

Commercial use

You can use terrains, buildings, roads, rivers, trees, grass, created with Real World Terrain, for commercial purposes.

The rights to the commercial use of textures depending on the selected provider. You are responsible to read the license agreement on the provider's site.

Real World Terrain Window

Description of fields

Along with most of the fields added icons, when you hover on which you can read a summary of the field. Clicking on the icon will open a detailed description of the field.

Decimal coordinates - the coordinates of the top-left and bottom-right corners of the area in decimal format. Available latitude from 60 to -60.

Elevation Provider – provider of elevation data.

- **SRTM**
- **Bing Maps**. Disabled by default. To enable Bing Maps specify Bing Maps API Key in the settings.

Result type - the type of object being created.

- **Terrain** - standard Unity Terrain. After creating the object, you will be available built-in tools to work with the Terrain.
- **Mesh** - model.
- **T4M** - T4M terrain.

Count terrains - the number of new terrains by longitude and latitude.

Size type - the method of determining the size of created Terrains.

- **Real world sizes.** Width equal to the average of the lengths of the upper and lower parallels. Height equal to the length of the meridian.
- **Mercator sizes.** The size of one degree of latitude and longitude is fixed.

Scale - a scaling factor to the new area.

Max elevation - the maximum height of the new area.

- **Auto detect** - the maximum height is determined automatically. Recommended.
- **Real World Value** - the maximum height is 15,000 meters.

Max underwater depth - the value used when no value of the height map. Usually it is the sea, oceans, lakes. Uses the absolute depth, such as «-30».

Detail Resolution - resolution map Detail Map.

Resolution Per Patch - indicates the size in pixels of each Detail Path.

Base Map Resolution - resolution Base Map.

Height Map Resolution - resolution height map.

Create prefab - specifies whether to create prefab, in the folder results. Create prefab takes some time.

Generate textures - indicates whether the created texture. **Important:** Textures are for informational purposes only.

Provider - the source that will be downloaded texture. Textures derived from different providers vary in quality, maximum detail and conditions of use.

Count textures - number of created texture. Only Mesh.

Type - the type of texture map.

Texture width / height - size of the texture created for each terrains.

Max level - the highest level of approximation for the textures.

Generate buildings - specifies whether to create buildings and walls.

Generate roads - specifies whether to generated the road. This field is available if the project is present Road Architect, EasyRoads3D or SplineBend.

Generate rivers - specifies whether to create the river.

Generate trees - specifies whether to create trees.

Generate grass - specifies whether to create grass.

Best Settings

If you do not know what settings to use for the selected area, click «**Get the best settings for the specified coordinates**». Move the sliders to the desired quality setting and press «**Apply**».

Settings of Real World Terrain

To open the Settings window, click «**Settings**» in the upper part of the window.

In the settings you can:

- Change the folder of the application cache. This is useful if you want to use a shared cache for multiple applications.
- Specify the name of the created GameObject.
- Enable or disable working with third-party assets. To enable will be available only assets that are present in the project.

Clear the cache

Real World Terrain uses a large amount of data that it caches in the folder «**RWT_Cache**». If this data is not more than you need, you can clear cache by pressing the «**Clear cache**» in the Real World Terrain.

Helper

Usage of the helper

Click «**Run the helper**», to show a helper. Helper will run in the default browser with the coordinates specified in Real World Terrain.

Helper contains:

- A search box.
- Google Map added to it a frame indicating the area that will be used in Real World Terrain. The frame can modify and moved. To temporarily hide the frame, click «**CTRL**».
- Block information on the current position, the code to copy and control buttons.
    - The button «**Add POI**» adds a new POI (point of interest) in the center of map.
    - The button «**Place selector**» fits the frame to the visible area of the map and set the frame size - 70% of the visible area.
    - The button «**Show Open Street Map**» - opens in a new tab «**openstreetmap.org**» in the same position in which the map in the helper.
    - The button «**Show download links**» shows the download links height maps.
- Block POI lists all the POI on the map. What would change the title of the POI, double-click on the title. POI on the map supports Drag and Drop.
- Download links height maps of the selected area.

Place the frame on the desired area on the map, select and copy the text in the block «**Copy this to Clipboard**». In Real World Terrain, click «**Insert the coordinates from the clipboard**» and selected in the helper coordinates frame will be inserted into Real World Terrain.

Alternative helper

If you have any problems when using the built-in helper, you can use an alternative helper:

http://service.infinity-code.com/RWT_Helper/RWT_Helper.html

POI

Contains a list of points of interest. After creating the terrains all the POI will be placed in right places. You can quickly navigate to the desired POI double-clicking on the line in the window «**Hierarchy**».

Additional features

Generation of additional elements (terrain only)

Real World Terrain can automatically create buildings, walls, rivers, trees and grass, based on real data obtained from the «**Open Street Map**».

Before the creation of additional objects please visit «**www.openstreetmap.org**» and make sure that you are required objects are marked on the map. In Europe, perfectly marked, almost all of the city. In America, most buildings are not marked.

Important: the created objects may be slightly different from the picture on the texture. This is because the layout objects in the «**Open Street Map**». If the building is present on the texture, but not created, then it means that it is not marked in the «**Open Street Map**».

For buildings and walls added a description of all available tags «**Open Street Map**». For many of the buildings there including address, name, height, etc.

For buildings, walls and rivers are automatically generated UV-maps.

If the tag contains the height or number of floors, the object will be created with the correct height. You can always correct height, specifying the desired value and pressing the «Update». For buildings can change the type and height of the roof.

If the building was created with the wrong normals walls or roof, you can quickly fix it by pressing «**Invert wall normals**» or «**Invert roof normals**» respectively.

Regeneration (terrain only)

You can recreate the already created objects with the new settings.
To do this, select «**RealWorld Terrain**» in the «**Hierarchy**» and click:

Regenerate terrains - to change the parameters Terrains.

Regenerate textures - to create textures with the new settings.

Regenerate additional - to rebuild the buildings, walls, rivers, trees and grass.

Scale - for quick scaling existing Terrains.

Generation of grass, based on the texture (terrain only)

In the «**Hierarchy**» select terrain, on which you want to create the grass. In the «**Inspector**» click «**Generate Grass from Texture**». In the «**Generator**» add grass texture, and specify grass parameters. Add colors, which will be created grass.

To work was faster for each color indicates range of values.

Press «**Generate preview**», to see the area to be created grass.

Press «**Generate grass**», to create grass and close the window.

You can save and load settings using the buttons at the top of the window.

To remove the grass, remove the relevant Detail in a script «**Terrain**».

SplatPrototypes generation, based on texture (terrain only)

In the «**Hierarchy**» select terrain, on which you want to create SplatPrototypes. In the «Inspector» click «**Generate SplatPrototypes from Texture**». In the «**Generator**» add basic texture, specify parameters. Base texture will be used for all terrain. Add SplatPrototype, you want to use. For each SplatPrototype add color, so it will be created.

To work was faster for each color indicates range of values.

Press «**Generate preview**», to see the area to be used corresponding SplatPrototype.

Press «**Generate SplatPrototypes**», to create SplatPrototypes and close the window.

You can save and load settings using the buttons at the top of the window.

Third Party Assets

Real World Terrain v2.5 can work with:

- Building BuildR Procedural Generator
- EasyRoads3D v2.5.5 (**read the note below**)
- Relief Terrain Pack v3 (RTP)
- Road Architect
- SplineBend
- Terrain 4 mobile (T4M)

These assets are not included with Real World Terrain and working with them by default disabled.

Import the required asset to your project and enable it in Real World Terrain settings.

Integration with third-party Asset is fully automated and does not require additional configuration.

If you want to remove the asset from the project, first disable it in Real World Terrain settings.

If you forget to disable asset and removed it from project, then you will see errors in the console. To manually disable the asset, open PlayerSettings (Edit / Project Settings / Player) and remove the corresponding entry from «**Scripting Define Symbols**».

Important for EasyRoads: supports only Easy Roads3D v2.5.5. When using EasyRoads another version, you get a compilation error. This happens because Easy Roads has obfuscated code. Support Easy Roads in the current version is left for compatibility. In future versions, it will be removed. If someday EasyRoads will be delivered in source code, we again add support.

Updating versions

In the Unity Asset Store, we will send only the stable version. Renewal period is several months.

Real World Terrain has built-in update system, using which you can update Real World Terrain to the latest version and get early access to all versions and updates.

Click «**Window / Infinity Code / Real World Terrain / Check Updates**», to open the window checking for updates. Enter your Invoice Number, select a channel of updates and click «**Check New Versions**».

You can find out your Invoice Number in order confirmation, or visit the account transaction page in Unity Asset Store:

https://www.assetstore.unity3d.com/en/#!/account/transactions

If from the current version was released more than 10 updates in the selected channel then will only show the last 10 updates.

If updates are available, you can read the list of changes and download the update.

If you have any problems with installing the update, then:

1. Open an empty scene.
2. Delete the folder «**Infinity Code / Real World Terrain**».
3. Import the new version of Real World Terrain to the project.

If you want to return to the previous version of Real World Terrain, select the channel «**Stable Previous**». Using this channel, you can get 10 previous updates.

Real World Terrain automatically checks for updates every 24 hours. If a new version is available, you will see a red button in Real World Terrain. When clicked, will open check for updates window.

Automatic check for updates does not require Invoice Number, and works on the selected channel updates. If you do not select a channel update, it will be checked only stable versions.

Troubleshooting

Known issues

If you have trouble downloading elevation maps in Real World Terrain, or you want to download them manually (eg on another computer), follow these steps:

- Select the desired area in the helper.
- Press the «**Show download links**».
- Download the files.
- Put the files «***.asc**» from the archives to folder **«{Project} / RWT_Cache / Heightmaps**».
- Start Real World Terrain.

If you have trouble downloading textures, change provider of textures

If the building has inverted normals, click «**Invert normals**».

To create an intersection with Road Architect, select the nodes, which must be crossed, turn on «**Allow intersect**», and move the one node to the other node.

Your problem is not listed

Please write us about your problem (support@infinity-code.com). We will try to fix all errors and release an update as soon as possible.

Support

If you have something does not work, you find a bug, or you have a suggestion, please contact us.

We strive to answer all messages in the customer support within 24 hours.

Frequently asked questions

Q: What is the maximum area can be created.

A: We are at a time creating an area of 10x10 angular degrees. It's a little larger than the size of Germany. But the maximum created territory, strongly depends on the settings of Real World Terrain.

Links

Product page: http://infinity-code.com/products/real-world-terrain

Support: support@infinity-code.com

Videos: https://vimeo.com/channels/realworldterrain