GPU Performance Analyser

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1 About GPU Performance Analyser

GPU Performance Analyser is advanced pack of scene view overlays which allow developer to fast detect bottlenecks for rendering. With it you can just look at GUI, 2D/3D scenes and check where you should optimise your objects and their density.

2 Where can be used

Plugin will work on all Unity 2017.x and newer versions. Probably should also work on Unity 5.x but this wasn't tested.

3 How to use it

- Open GPU Performance Analyser (GPUPA) window by selecting on top bar: *Window/GPU Performance Analyser*.

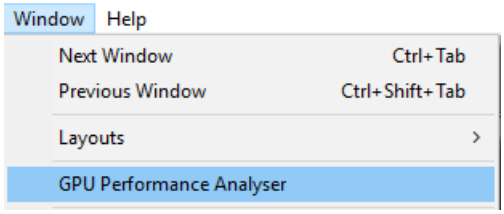

Figure 1: Where to find window of GPU Performance Analyser

- Make sure that you have opened Scene View window and you are looking at scene which you would like to track.

- In opened GPUPA window select one of available overlays:

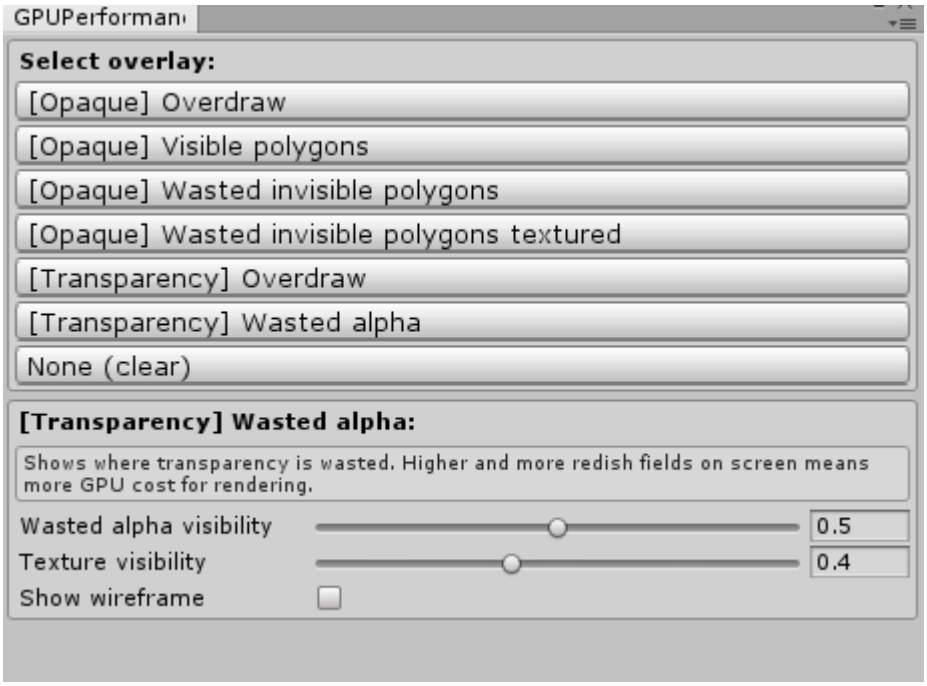

Figure 2: GPU Performance Analyser window

  - [**Opaque**] **Overdraw** - it works like Unity built-in Overdraw layer but filters only non-transparent objects. Additionaly it allows to set color intensity for every new polygon in overdraw queue on sceen (by count ot color scaling parameter).
  - [**Opaque**] **Visible polygons** - shows only overdrawed polygons which are front-faced to camera. *Count to color scaling* allows to manipulate visibility of single overdrawed object.
  - [**Opaque**] **Wasted invisible polygons** - shows only overdrawed polygons which are back-faced to camera. *Count to color scaling* allows to manipulate visibility of single overdrawed object. This one is quite important for mobile games where triangle culling can have huge impact for performance. In many cases it's very usefull what triangles are not needed from player perspective (like in runners-games you need to have triangles only visible from road side).
  - [**Opaque**] **Wasted invisible polygons textured** - same as above but additionaly it allows to show what texture was used in overdrawed certain polygon.

- [**Transparency**] **Overdraw** - one of most important overlays to measure GPU performance hit. It shows where on your scene are tranpsarent objects, how many and how much place on screen can they take.
- [**Transparency**] **Wasted alpha** - shows where on your scene are tranpsarent objects which have wasted transparency (by wasted it's meant to has visibility nearly or equal to 0, so it could by optimised by changing polygons and uv-mapping). Red field shows where alpha value is around 0. Like here:

Figure 3: Example of rendered cloud sprite

Figure 4: Example of wasted field around rendered sprite

- Now you should see on Scene View selected overlay effect.

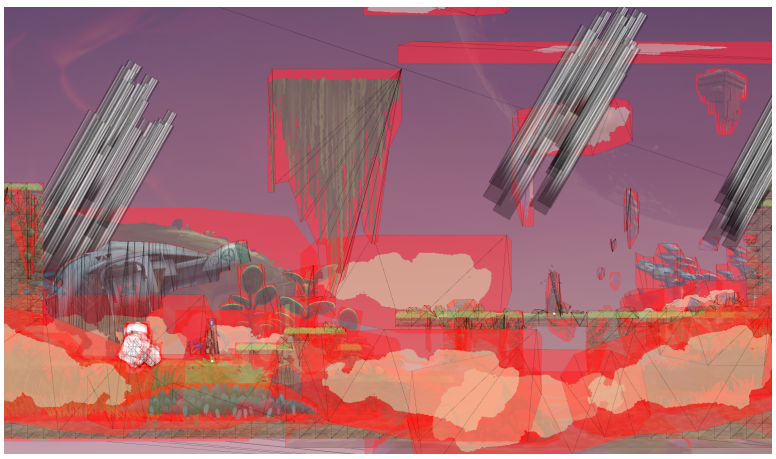

Figure 5: Example Scene View overlay (wasted alpha transparency with textures)

4 Performance tips

Here are some main things that you can do with information which you get from GPU Performance Analyser overlays:

- **Transparency overdraw** - try to keep it as low as possible (so less red on overlay means better). In other case if you have more than 1-2 full screen overdrawed textured, alpha blending will make it nearly as heavy as post-process effect.
- **Wasted transparency** - try to keep it as low as possible (so less red on overlay means better). Good idea is to make sprite meshes or GUI objects to have and render only this part of texture which is visible by player (highly recommended is to use tools like *SpriteSharp* to do this easily). Sometimes it's good to not use transparent shader at all but to replace it with opaque one to get some FPS which we have lost on alpha blending.
- **Wasted/visible opaque geometry** - many assets have double-sided triangles or additional interiors which are not needed for certain game. It's just good to remove them to earn FPS on less culling operations and less vertex shader executions.

5 Scene performance scanner

In GPU Analyser window you can also notice subwindow *Scene performance scanner*. If you click button to scan the scene, tool will check all active game objects for most common performance mistakes like too high poly objects or too many shadow casting lights.

6 Contact

If you need any support or you would like to share with me what do you think about this tool feel free to write on support@modev.com.pl . Also if you need some additional feature which can be helpful write to me too - maybe I'll make this and put it into next update.

It would be great if you could rate my asset on Asset Store (if you like it). This will be good sign for me that tool is needed and should be still expanded.