Destructible

This is the main Destructible 2D component - it automatically converts a normal Unity Sprite into a destructible version.

The way it works is that it stores the original texture of your sprite, and also stores the alpha (transparency) data separately. So when you destroy the destructible sprite, you actually modify the alpha data which then gets combined with the original texture, allowing you to see the damaged version of it.

Reset With

If you drag and drop a Sprite or Texture2D here then you can reset the whole component with new data.
Keep in mind that Texture2Ds have no size information, so they will be treated as 1 pixel = 1 unit.

Reset Alpha With

If you drag and drop a Sprite or Texture2D here then you can reset the Alpha Tex.
This is useful if you want the destructible to have a different collision shape than the visual. For example, to make transparent glass you will want to 'Reset With' using the transparent Sprite/Texture2D, and then 'Reset Alpha With' using a solid version of it.

Indestructible

If you enable this then this destructible cannot take damage.

Record Alpha Count

If you enable this then the 'Original Alpha Count' field will be calculated. This gives you access to the 'Remaining Alpha' property, which allows you to see how many pixels remain since the last time your sprite's alpha was reset.

Auto Sharpen

Every time you 'Optimize Alpha' or 'Halve Alpha' the Alpha Tex will halve in size. If you enable this setting then the 'Sharpness' will automatically be modified to account for this difference in resolution.

NOTE: The actual 'Sharpness' setting won't change, just what's set in the shader.

Auto Split

If you enable this then the destructible will automatically split into multiple pieces when you create pixel 'islands' in the alpha data.

A pixel island is a group of pixels that are completely disconnected from every other pixel in the destructible object.

Whole

This split mode checks the whole destructible objects for pixel islands.

Local

This split mode only checks pixel islands near the previously modified region. This mode is much faster for large objects, but can cause the object to not split in half if the pixel island is too large.

Local Split Expand

When using the local split mode, this setting allows you to set how far from the previously destroyed area will be checked for pixel islands.

For example, If you destroy just the pixel at coordinate 40,40, and this is set to 10, then the area between pixels 30..60 on both axes will be searched for pixel islands.

Min Split Pixels

If you make a sprite splittable then this setting allows you to set how many pixels are required in each 'island' for it to actually get created. For example, if you clip off an 'island' of 20 pixels and your 'Min Split Pixels' is set to 50, then the small chipped off area will be removed from your scene entirely. If you were to decrease 'Min Split Pixels' to 10, then this chipped off area will be created as a separate destructible object.

Feather Split

By default split objects have very sharp/aliased edges. If you prefer to retain the smoothness from before it was split then enable this.

Main Tex

This allows you to set the main texture of your destructible object.

Density Tex

This allows you to set how hard it is to destroy certain pixels in your alpha data.

Sharpness

This allows you to set how sharp the transition between solid and transparent pixels is.

Damage

This shows you the current amount of damage this object has taken.

Damage can be inflicted from impacts if you add the ‘Damage On Collision’ component, or ‘Explosion’ component.

Alpha Tex

This allows you to see what the current alpha data looks like.

Alpha Count

This allows you to see how many solid pixels currently remain.

A solid pixel is one that has an alpha value at or above 0.5 or 128.

Original Alpha Count

This allows you to see the ‘Alpha Count’ the last time the alpha data was reset. Keep in mind that this requires the ‘Record Alpha Count’ field to be set, because calculating the ‘Alpha Count’ takes a bit of time to calculate, so if you don’t need to know this then you can save some performance by disabling it.

Remaining Alpha

This allows you to see the percentage of remaining solid pixels. Keep in mind that this requires the ‘Record Alpha Count’ field to be set.

[EVENT] On Start Split

This gets called before a destructible object is split.

[EVENT] On End Split (List<D2dDestructible> clones)

This gets called after a destructible object is split. Clones contains a list of all the split destructibles, including the original.

[EVENT] On Damage Changed (float old, float new)

This gets called whenever the Destructible’s ‘Damage’ field changes.

[EVENT] On Alpha Data Replaced

This gets called every time the Destructible’s Alpha Data is reset.

[EVENT] On Alpha Data Modified (D2dRect rect)

This gets called every time an area of a Destructible’s Alpha Data is modified.

[EVENT] On Alpha Data Subset (D2dVector2 size, D2dVector2 offset)

This gets called every time an area of a Destructible’s Alpha Data is cropped.

[CONTEXT] Optimize Alpha

This combines the ‘Halve Alpha’, ‘Blur Alpha’, and ‘Trim Alpha’ operations.

[CONTEXT] Halve Alpha

This halves the width & height of the Alpha Tex, giving you 4x less pixels, and much higher performance.

[CONTEXT] Blur Alpha

This smooths the edges of your Destructible object. Adjust the ‘Sharpness’ field to compensate for this.

[CONTEXT] Trim Alpha

This removes any unused rows & columns from the sides of your alpha data.

If your alpha data doesn't contain transparent pixels then this will expand the border by one.

[CONTEXT] Reset Alpha

This resets the Alpha Data to its original state.

[CONTEXT] Try Split

This will split the current Destructible into multiple pieces if there are islands in the alpha data.

[CONTEXT] Add Fixture

This adds a child GameObject with a 'Fixture'.