Bitmap2Material 2.1 User Guide

1. Overview

The Bitmap2Material Substance filter is a new way of quickly creating full production-ready materials from raw bitmaps and photographs. It can be used with any Substance-enabled solution including Unity (from version 3.4), Autodesk Maya and 3dsMax (from versions 2012), UDK/UE3 (from QA_build February 2013) but can also be launched as a standalone tool with the Substance Player.

For support, forum, news and more information on Substance and Allegorithmic's other products, please visit allegorithmic.com !
Forum: forum.allegorithmic.com
You can also find an online version of this documentation here.

Bitmap2Material 2.1 includes 3 filters in its package:
-       Bitmap2Material_2.sbsar
-       Bitmap2Material_2_NoGrunge.sbsar
-       Bitmap2Material_2_RealtimeMobile.sbsar

Bitmap2Material_2.sbsar
This filter should be used in Autodesk Maya (2012 or plus), 3ds max (2013 or plus), Unity (3.4 and higher), Substance Player and Substance Designer.
This filter allows you to generate maps from a single diffuse either offline, or at runtime on desktop and web players in Unity games.

Bitmap2Material_2_NoGrunge.sbsar
This is a specific version of Bitmap2Material_2.sbsar without the grunge maps. This filter is faster than Bitmap2Material_2.sbsar and should thus be used at runtime if you do not plan to use Grunge Maps.
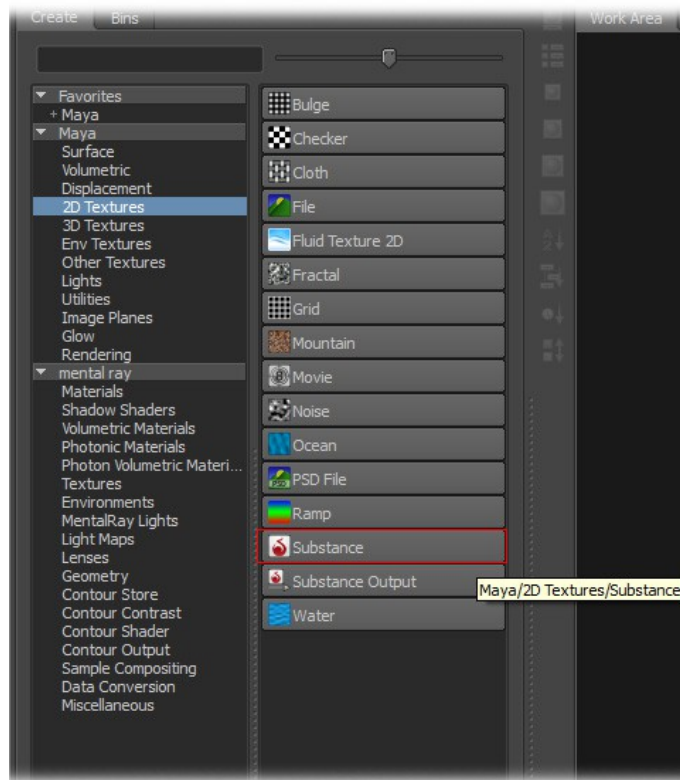You should also use only this filter for 3ds Max 2012.

Bitmap2Material_2_RealTimeMobile.sbsar
This filter is specifically optimized to generate maps at runtime on mobile for games created with Unity 4.1 and higher.
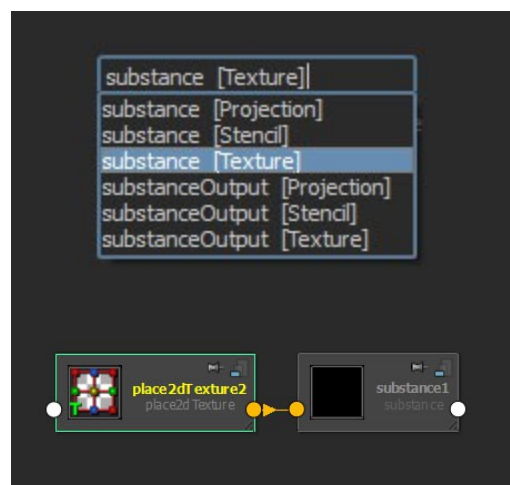
2.1 Autodesk Maya

Workflow:

1. You will find the Substance node under the 2D Textures tab in Hypershade.

Since Maya 2012 SAP*****, you can create a Substance node within the new Node Editor by simply pressing the "Tab" key and typing in the word "Substance", choosing the texture mode will create an empty Substance node with a place2d wired to it.
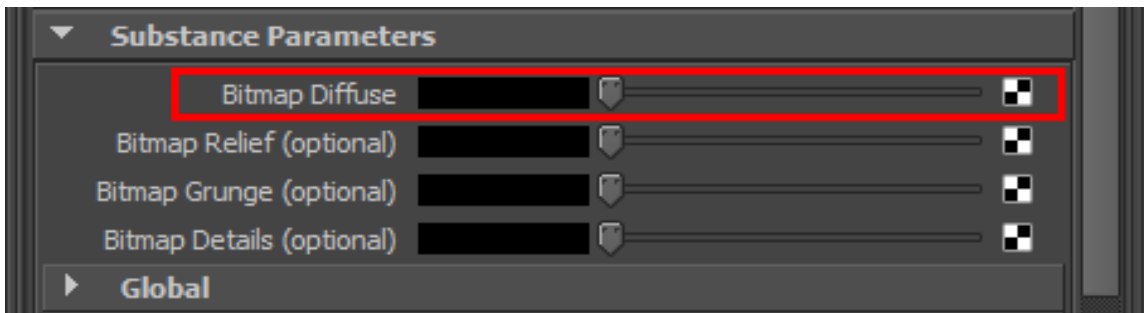

*Subscription Advantage Pack

2. Select the Substance node, click on the load icon within Attribute Editor and browse to your Bitmap2Material.sbsar file.
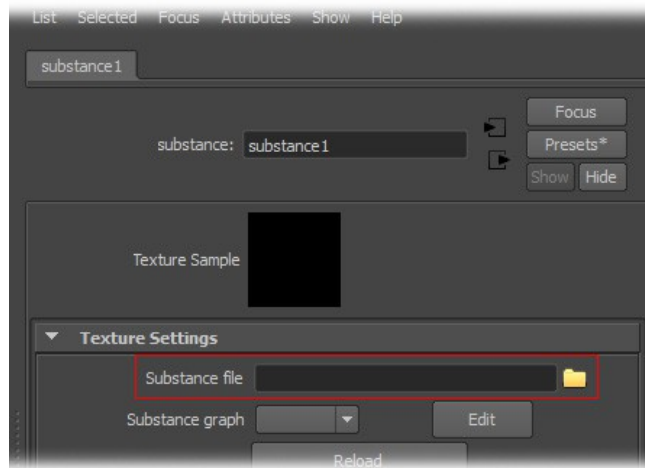
3. You can now create a file node, load your bitmap texture and plug it as an input to your Bitmap2Material node by either dragging and dropping your input image to the "Bitmap Diffuse" input in the Attribute Editor,


Or in the Node Editor, you will need to left click on your Input image node's output and wire the connection to the "Bitmap Diffuse" input of your B2M substance node, as shown below:
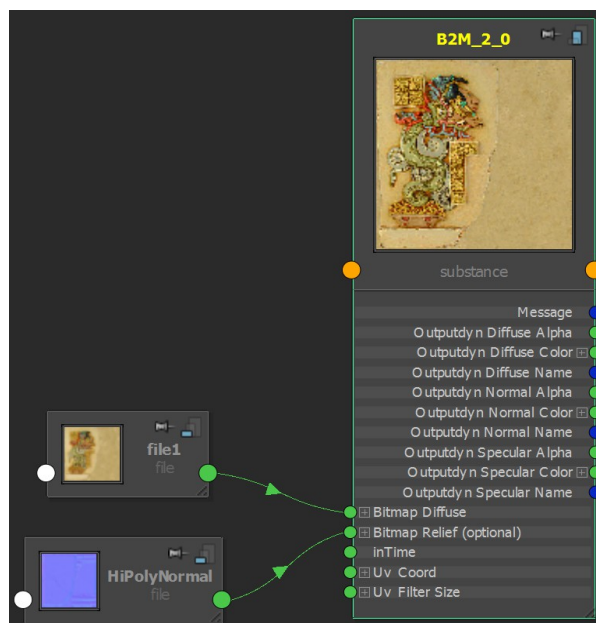
"Bitmap Relief (optional)" and "Bitmap Details (optional)" inputs are not required. You can use them to have your height map or normal map as input for the first one and adding details to your height and normal maps for the second one (more details can be read in the "Parameters Guide" section, on page 15).

4. You can now create your shader network by either choosing the desired outputs in the TreeView,
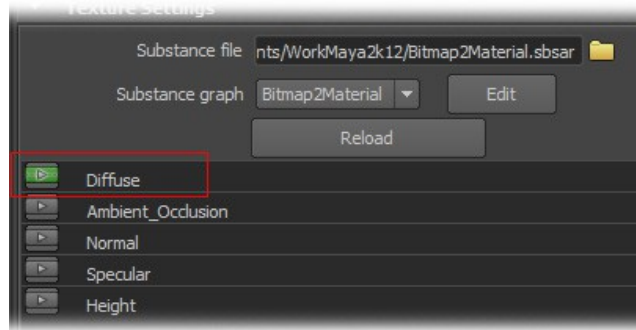

or by hitting the "Create shader network" button in the Attribute Editor to quickly create a basic material with Diffuse, Specular and Normal maps.
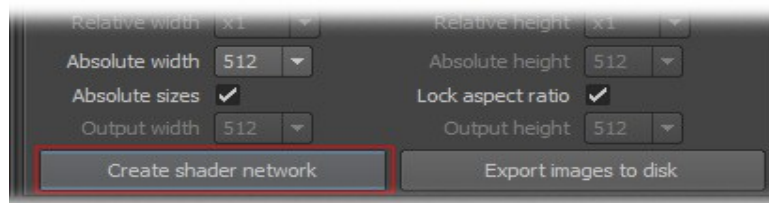

5. The Substance parameters allow you to fine tune the results. Report to page 15 for a description of each parameter.

6. Once you are satisfied with the results, you can either bake your outputs to bitmap files by clicking on the "Export images to disk" button, or by embedding the Substance with your mesh in a .FBX file if your engine supports it.
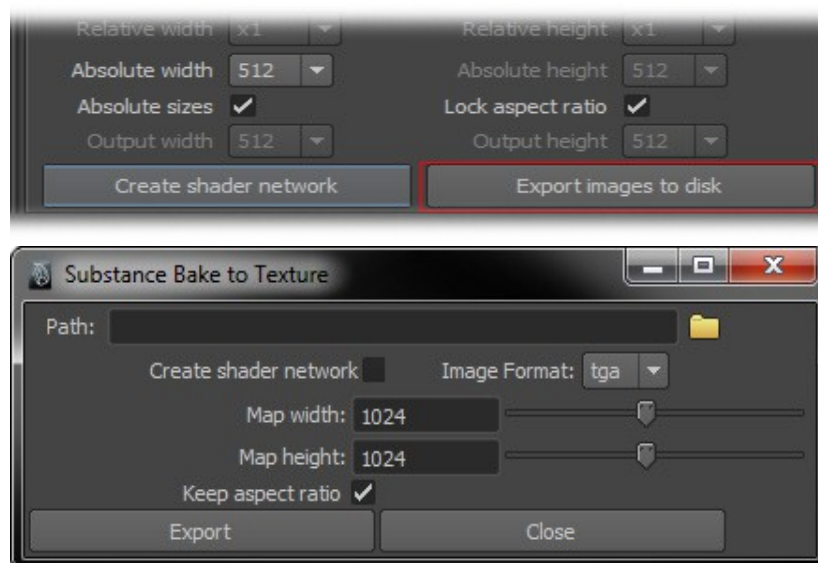
Note: You can also check the "Create shader network" function, when defining a directory path the plug-in will automatically bake all the outputs and recreate the same shader network within Node Editor or Hypershade.
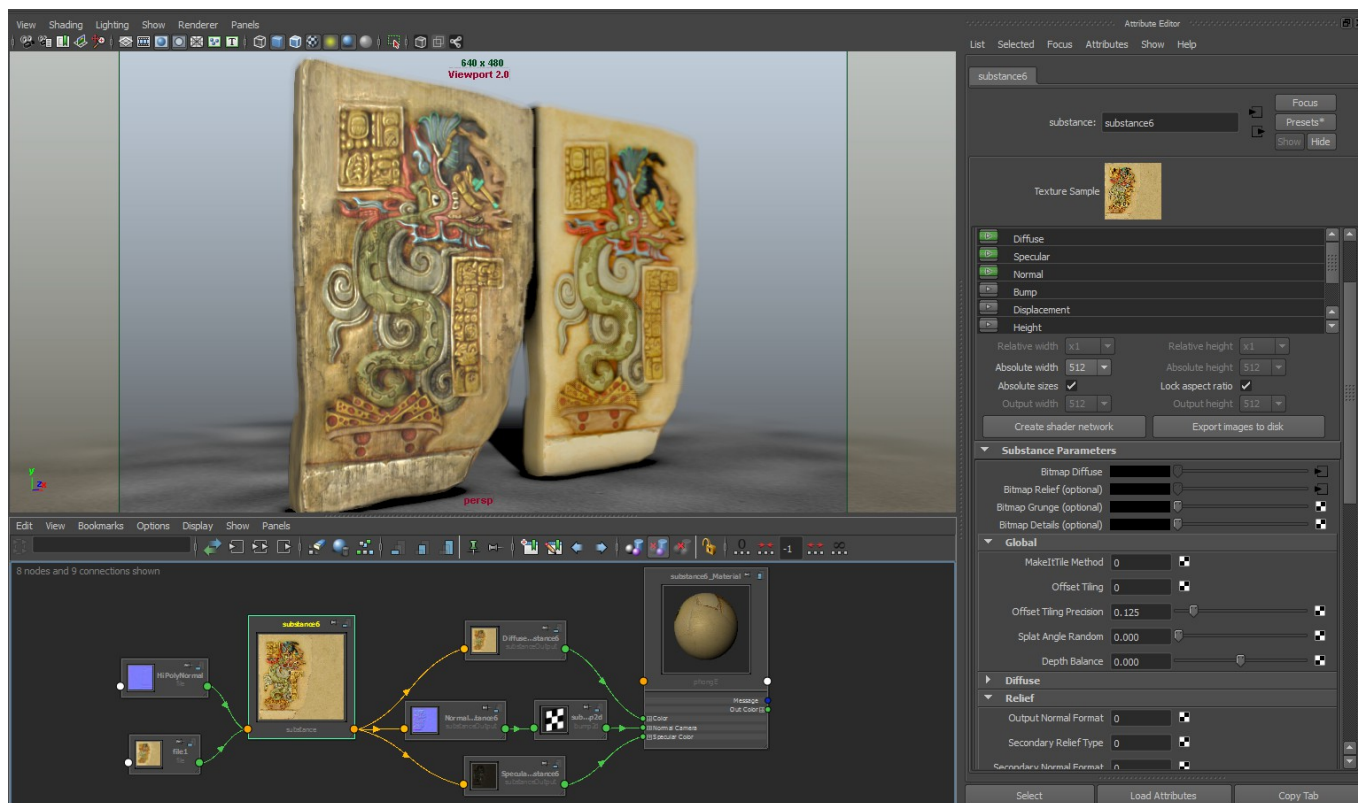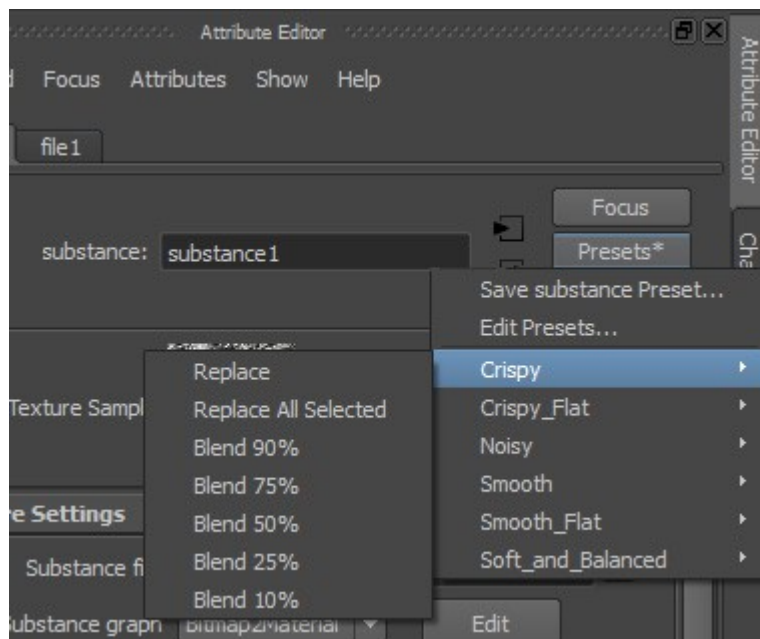
Presets:

1. You can load in Maya Substance Presets that were created in the Substance Player. By default the Bitmap2Material filter ships with six presets files that you can copy to Maya's "attrPresets" directory:
- on Windows(x86): "\Documents\maya\2012\presets\attrPresets\substance"
- on Windows(x64): "\Documents\maya\2012\presets\attrPresets\substance"
- on MAC OS X: "/USERNAME/Library/Preferences/Autodesk/maya/2012-x64/presets/attrPresets/substance "
- on Linux: "/home/USERNAME/maya/2012-x64/presets/attrPresets/substance"

Note: If the "substance" folder is not present, it means that you have still not created a Substance preset in Maya. You will need to create this folder manually.

2. In order to load your preset file, select the Substance node and click on "Presets" within Attribute Editor. The preset files should now be displayed as follow:

Like any other shading node in Maya, you can apply the preset values to your current Substance node by clicking on "Replace" or "Blend" this values with the desired percentage.

2.2 Autodesk 3ds Max

Notes:
- 3ds Max 2012 users need to use the "Bitmap2Material_2.0_NoGrunge" version of the filter.
- It is recommended to use the new Slate Material Editor since Substance input are not supported by the Compact Material Editor.
- You can hide the intermediary outputs of the substance by setting "Hide Single Map Output Selectors" to true in the Options > Preferences menu.
- In the Global Substance Settings rollout in 3ds Max, the Preview Resolution setting is currently unsupported by the B2M and has no effect on the resolution.
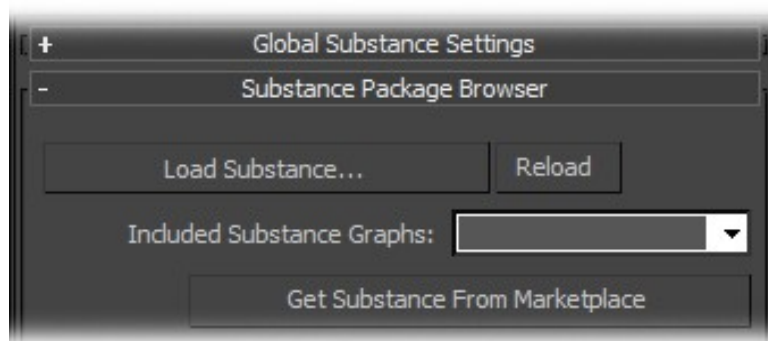
Workflow:

1. The Substance node is located in the Map browser under the "Standard" group.

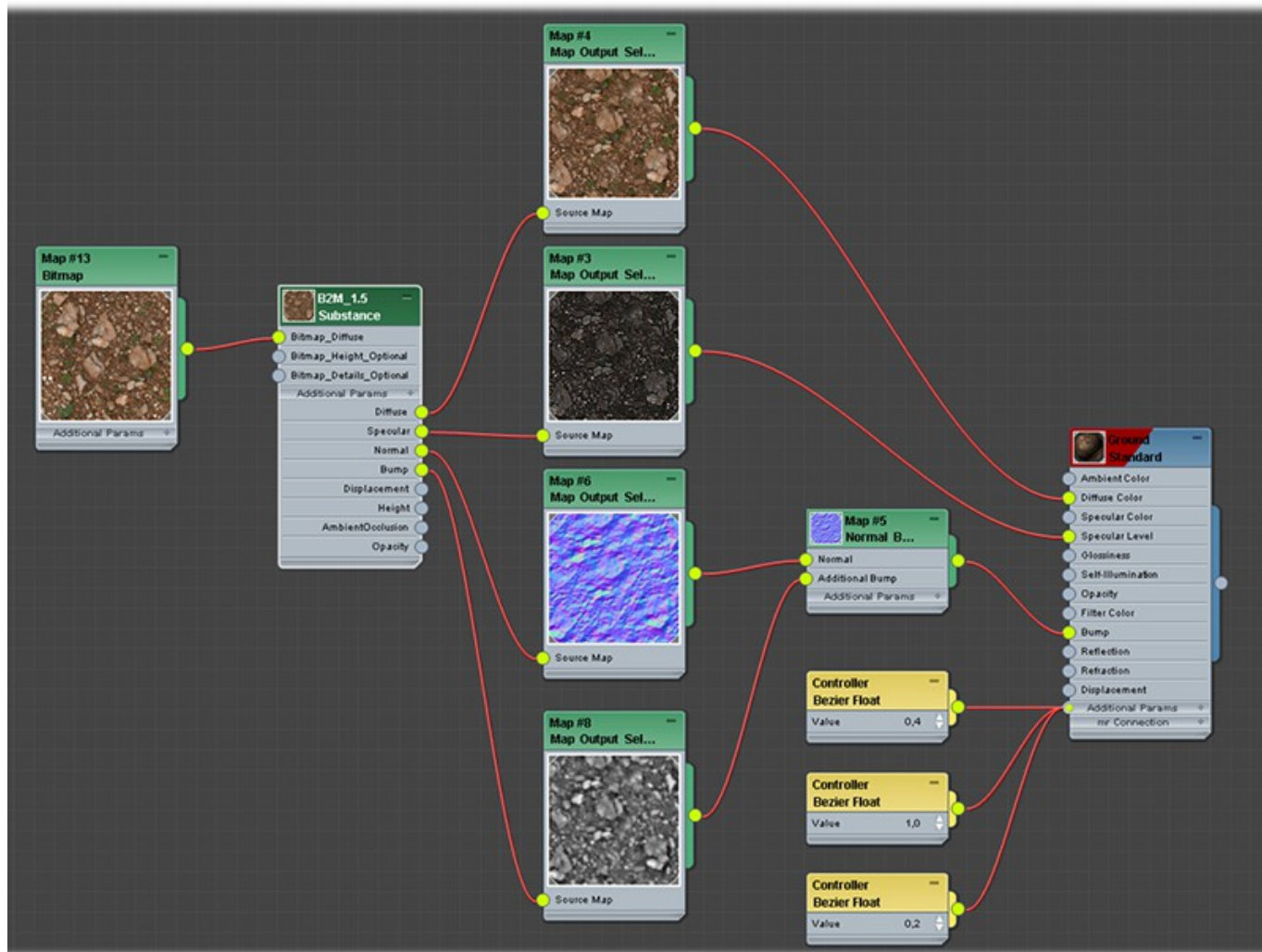2. Drag and drop it in the Slate canvas and double click on your new node.

3. Click on the "Load Substance..." button and browse to your Bitmap2Material.sbsar file.

4. You can now plug your bitmap in the **"Bitmap_Diffuse"** input of the substance and plug all needed outputs in your material inputs.


The "Bitmap Relief(optional)" input is not required. You can use it to have your height map or normal map as an input (more details in the "Parameters Guide" section, on page 15).

The "Bitmap Details(optional)" input is not required. You can use it to add details to your height and normal maps (more details in the "Parameters Guide" section, page 15).

5. The Substance parameters allow you to fine tune the results. Report to page 15 for a description of each parameter.
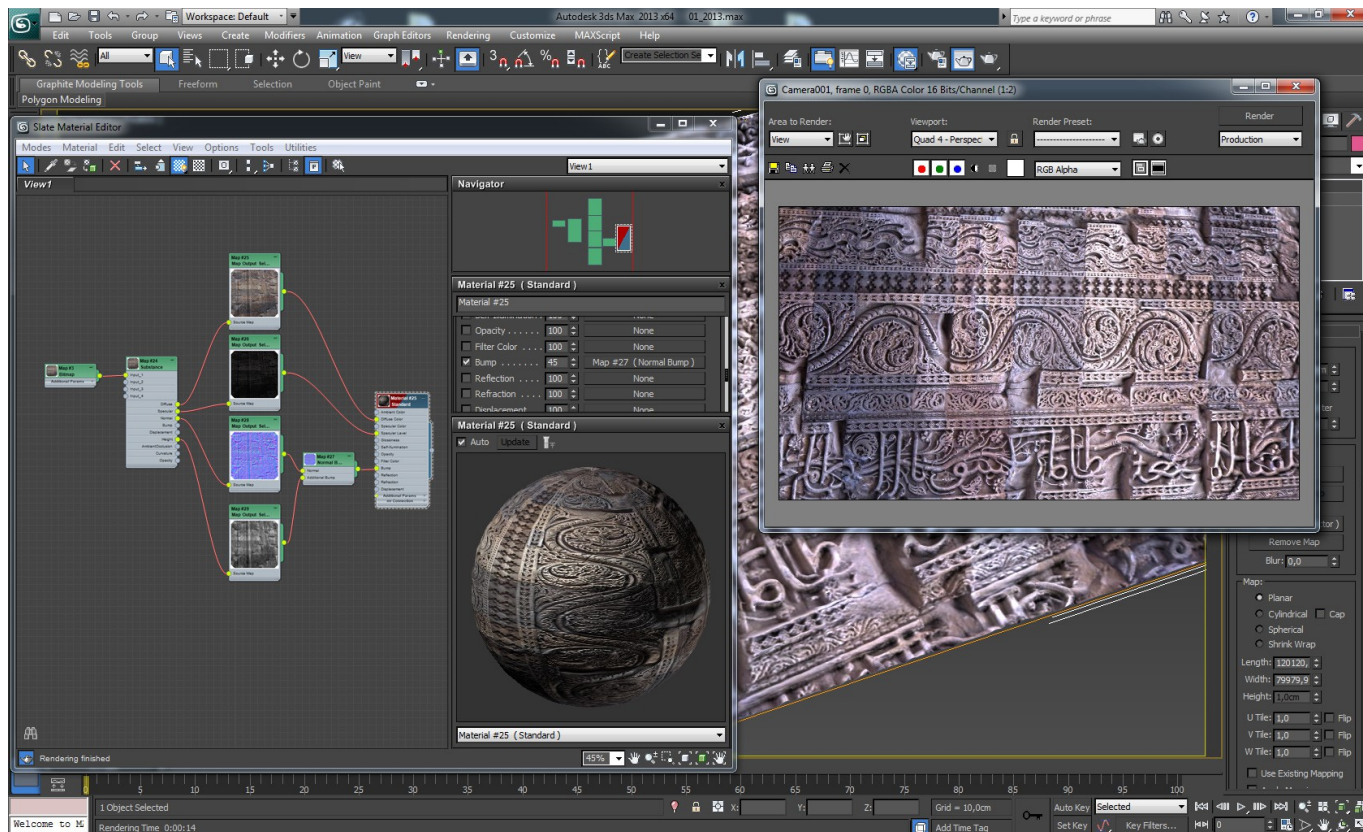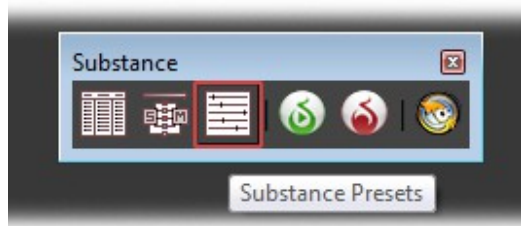

6. Once you are satisfied with the results, you can either render your outputs through the "Render Map" feature in 3ds max or embed the Substance with your mesh in a .FBX file if your engine supports it.
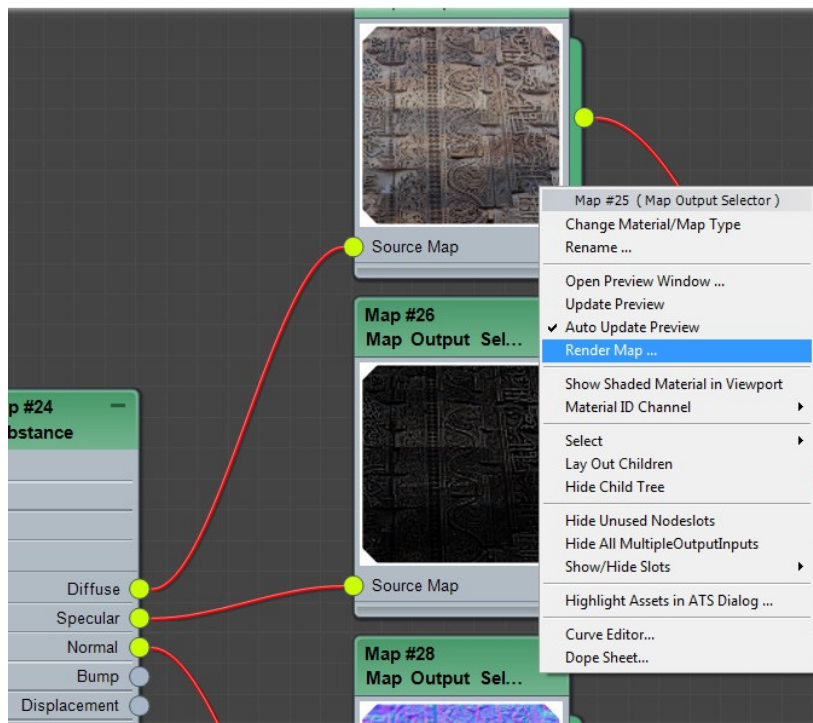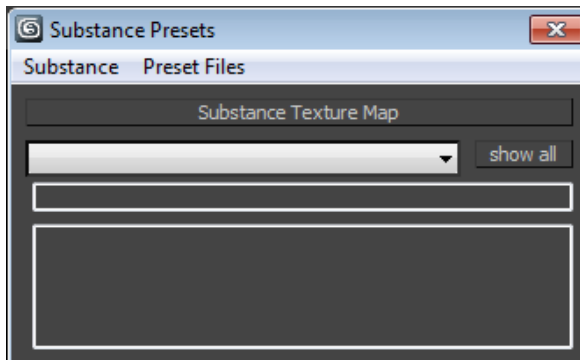

Presets:
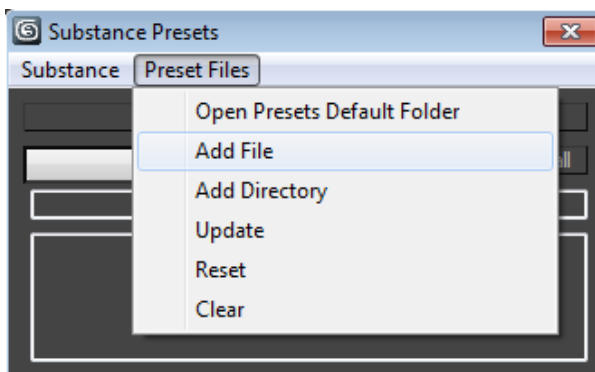
1. You can load presets in 3ds Max 2012 through the Substance Bonus Tools included with the 3ds Max installer or available on our website.
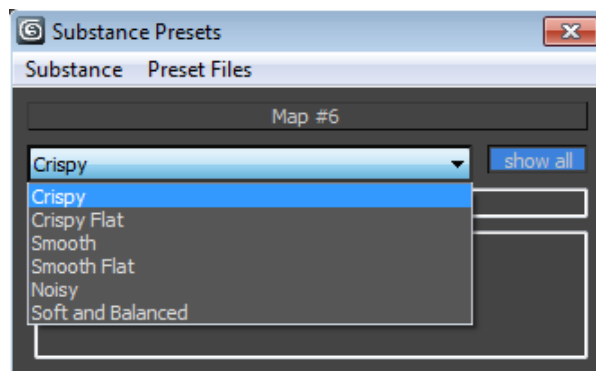
2. Start by selecting your B2M Substance by clicking on the Substance Texture Map button.

3. Then use the "Preset Files" menu to go to your preset file.

4. Click on "show all" and you will be able to choose and apply any preset to your Substance.

2.3 Substance Player

Note:

- The Player allows you to save "presets" that you can use in any Substance-enabled application.

Workflow:

1. Drag and drop your .sbsar file in the player or click on File > Open... and browse for your Bitmap2Material.sbsar file.
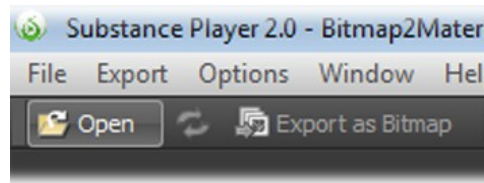
2. Drag and drop your source Bitmap in the 2D View (and choose "Load in "Bitmap Diffuse" tweak) or find the "Bitmap Diffuse" parameter at the bottom of the parameters panel and browse for your texture.

3. You can easily preview multiple outputs at once by splitting the 2d View through the top right menu.

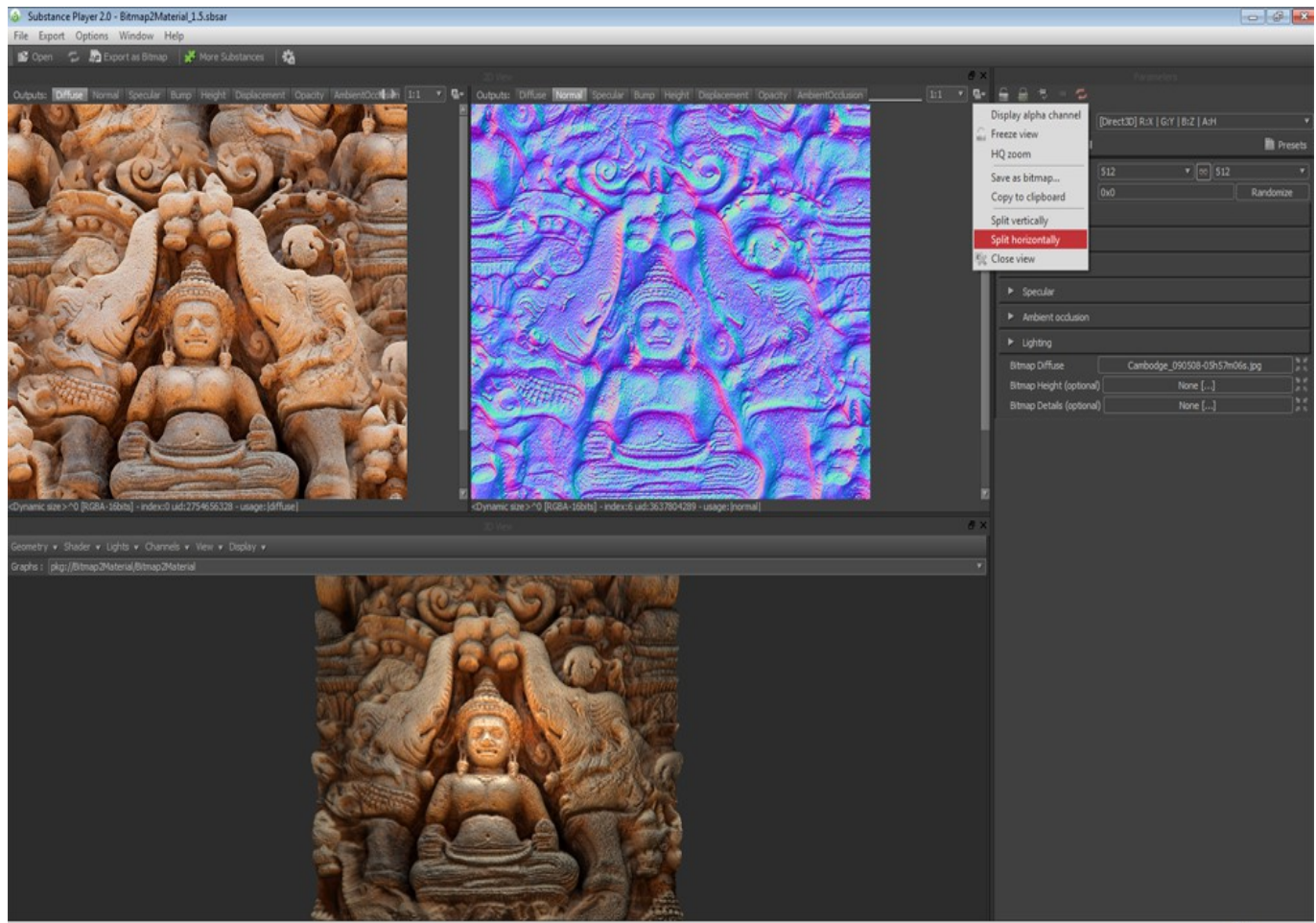4. You can then render all your textures at once in any format through the Export menu. Choose a naming pattern, select the outputs you want to save and hit "Export as Bitmap".
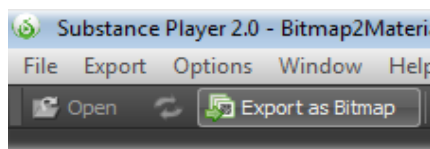
Presets:

1. In the player, you can create, load and modify preset files. To add your own presets or modify those shipped with the Bitmap2Material filter, open the file using the Load File button. It will display a list of all the available presets.
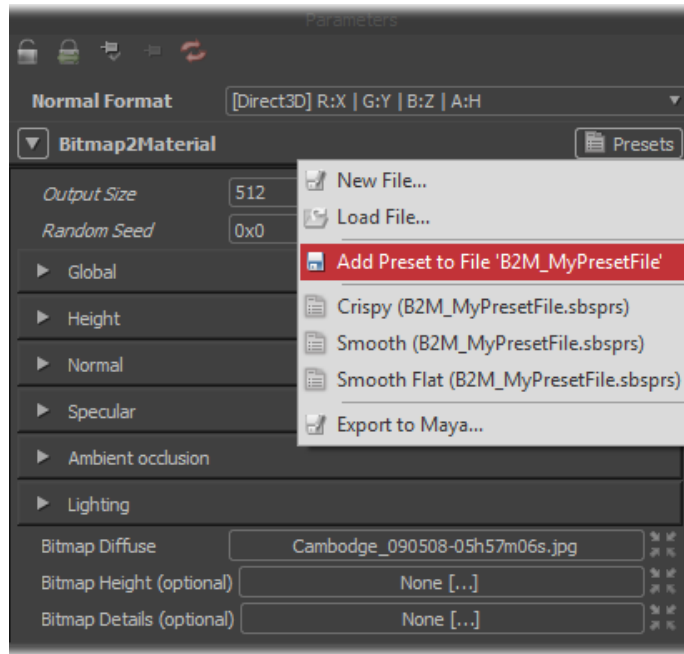
2. Click on "Add Preset to File ..." to open the presets dialog. Here you can save new preset, delete or overwrite existing ones. Just click on an item, write its name and description (if needed) and click Save.
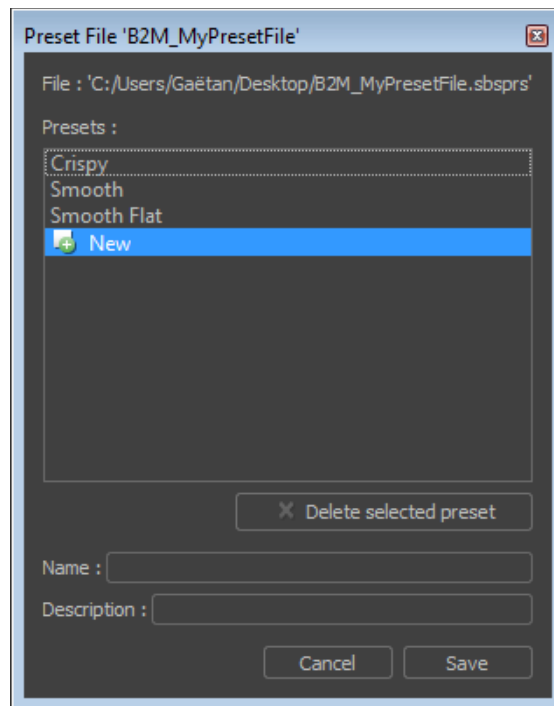
2.4 Unity

High-end games:
The Bitmap2Material filter is used in the same way as a standard Unity material.
It actually adds parameters on top of existing shaders and automatically plugs its outputs to the shader texture slots.
You will find a list of all available Substance parameters at the end of this PDF.

Mobile games:
Unity 4.1 introduces a new Substance Engine optimized for mobile devices. The Bitmap2Material package now ships with a secondary filter, designed for mobile platforms.

Choose your shader

Setup the Substance parameters

Drag and drop your Bimap input here

The outputs are automatically generated

Choose which Output you want to be used as the alpha channel.
(For example if your shader gets its specular from the diffuse Alpha channel)

Set the resolution of the outputs

B2M Mobile comes with the following features:
- Generates Normal, Specular and Height maps from a single Diffuse image.
- Automatic seamless tiling feature.
- High quality Normal and Height maps generation thanks to our custom "Shape recognition" tool.
- Low frequencies standardization for both Height and Normal maps.
- Highlight and shadow cancellation algorithm.
- Baked lighting feature that simulates a complete material on a single Diffuse texture.
- Detail switching from normal to height map thanks to the "Depth Balance" parameter.
- Colorimetric parameters for Diffuse texture such as Hue, Saturation, Sharpen, Contrast, etc...
- Dynamic resolution from 256 to 2048.
- 10 times faster than regular B2M.

2.5 Unreal Engine3/UDK Users

The Bitmap2Material filter is used in the same way as any Substance file inside UDK.
When import B2M in UDK, all available outputs alongside two nodes called "Substance Instance Factory" and "Substance Graph Instance" will be displayed in the Content Browser as follow:
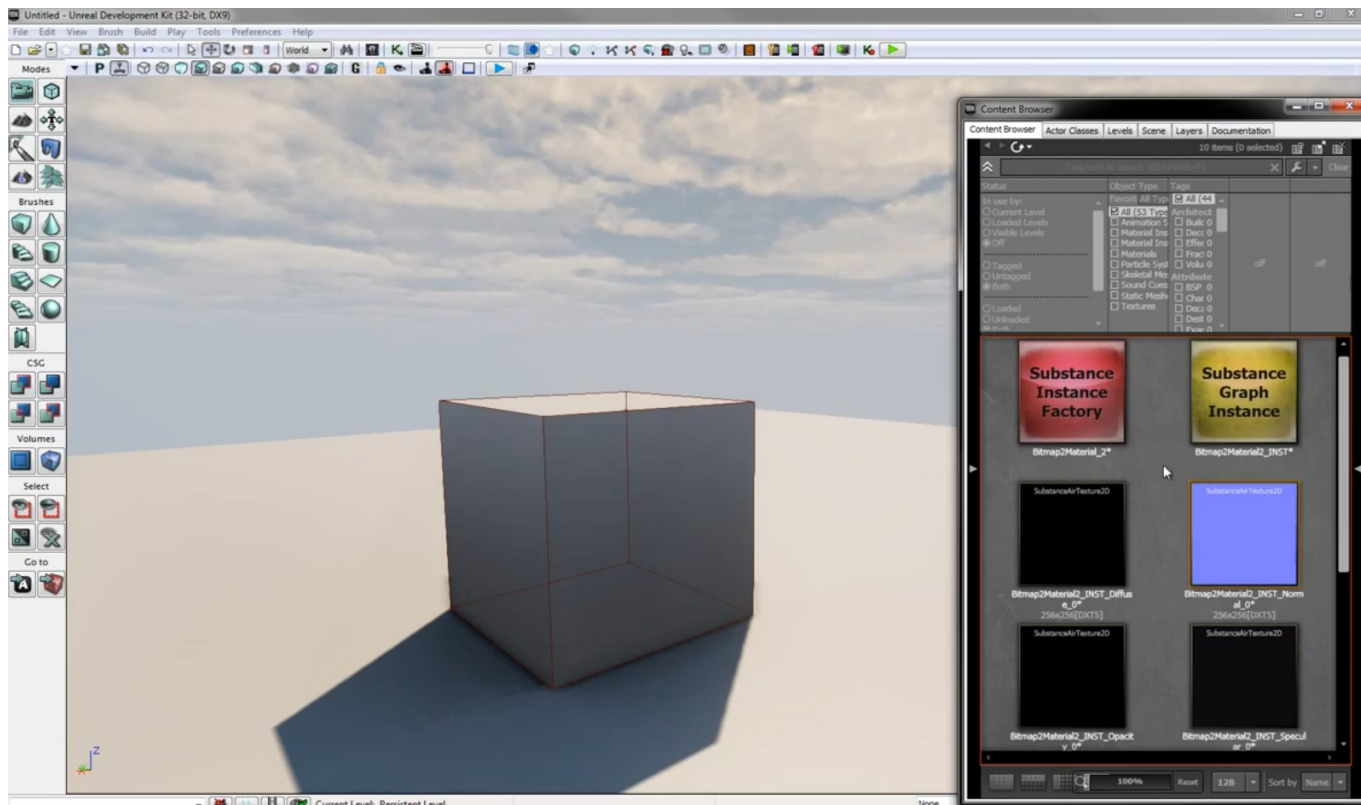
Double-click on the "Substance Graph Instance" node (yellow node) and a new window will pop-up displaying the input images slots and different parameters in order to customize your material.
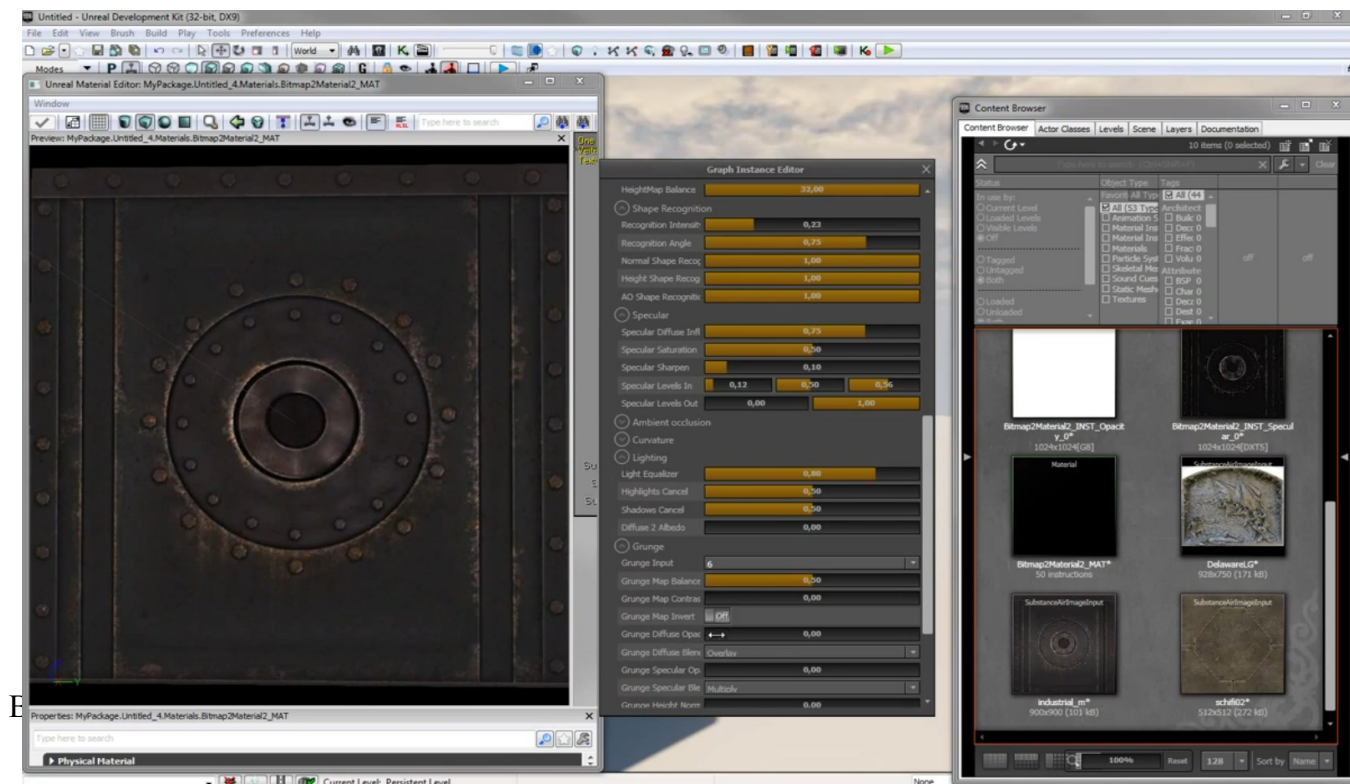
3. Parameters Guide

Global:

Random Seed
Randomizes the position of the patches when using the **Splat** tiling method.

MakeItTile Method
Makes the texture tile seamlessly and lets you choose between three different settings:
 - **No tiling**: the bitmap will stay as is.
 - **Offset**: the texture will tile seamlessly using an offset method, typically as you would do in other painting tools.
 - **Splat**: the texture will tile seamlessly by randomly splatting patches of the original texture.

Offset Tiling
Sets the option of tiling if you are using the **Offset** tiling method.

Offset Tiling Precision
When Offet tiling method is set, one will be able to in increase/decrease the accuracy of each Tile borders.

Splat Angle Random
Randomizes the angle of each texture patch if you are using the Splat tiling method.

Depth Balance
Warps the texture inside or outside the height map bumps.

Sharpen
Sharpens the diffuse output.

Color Neutralize
Corrects the diffuse color to achieve a more neutral tint.

Hue

Tweak the hue of the diffuse texture.
Saturation

Tweak Saturation of the diffuse texture.

Brightness
Tweak the lightness of the diffuse texture.

Contrast
Allows you to adjust the contrast of the diffuse texture.

Relief:

Secondary Relief Type
Sets whether the secondary input is a Height or a Normal map.

Secondary Relief Blending
Allows you to choose the blending mode for the secondary input. Interpolate replaces the original, Add combines the two.

Secondary Relief Intensity
Intensity of the secondary relief map blending.

Normal Strength
Controls the strength of the normal output.

Fine Smoothing
Slightly smooths the normal and height maps while keeping the medium and large details sharp. It is also pretty good at removing noise.

Medium smoothing
Smooths the normal and height maps while keeping small frequency details.

Large Smoothing
Strongly smooths the normal and height maps to strengthen the lower frequency details.

Pinch Fine Intensity
Sharpens the edges of high frequency details.

Pinch Medium Intensity
Sharpens the edges of medium frequency details.

Pinch Large Intensity
Sharpens the edges of low frequency details.

Normal Sharpen
Sharpens the normal map and height map.

Normal Soften
Blurs the normal map and height map.

Output Normal Format
Allows you to switch between OpenGL and DirectX normal formats for the final normal map output.

Secondary Normal Format
Allows you to switch between OpenGL and DirectX normal formats for the normal map supplied by the user.

HeightMap Balance
Balance data from Height map to Displacement and Normal/Bump maps in function of your tessellation rate.
0 means "all data in displacement map (no normal/bump mapping)".
32 means "all data in normal/bump maps (no displacement mapping)".
Height map always contains all data.

Shape Recognition:

Recognition intensity
Creates low frequency shapes on top of the existing normal map and adds a lot more depth to it. This will only affect the normal output.

Recognition angle
Sets the dominant angle driving the Shape Recognition effect. Use an angle facing the lighting direction on your texture for better results.

Specular

Specular Diffuse Influence
Sets how the diffuse color and luminosity affects the specular output.

Specular Saturation
Controls the saturation of the specular output.

Specular Sharpen
Sharpens the specular output.

Specular Levels In & Out
Controls the specular map levels. The 3 first values correspond to the min, mid and max of the "in" range. The 2 last correspond to the min and max of the "out" range.

Ambient occlusion:

AO Multiply
Blends the Ambient Occlusion output with tin the Diffuse output.

AO Spread
Sets the spread distance of the ambient occlusion.

AO Light Strength
Sets a virtual light that transforms AO into shadows from a directional light.

AO Light Distance
Sets the distance of the virtual light.

AO Light Angle
Sets the angle where the virtual light comes from.

AO Levels
Allows you ton control the in and out levels of the Ambient Occlusion map.

Lighting

Light Equalizer
Equalize the low frequency luminosity changes across the texture.

Highlights Cancel
Softens the highlights on the diffuse map.

Shadow Cancel
Increases the brightness of the dark shadows on the diffuse map.

Grunge

Grunge Input
Allows one to choose between a set of 15 Grunge maps or to plug its own texture.

Grunge Diffuse Opacity
Allows you to control the percentage of blending between the Diffuse output and the Grunge map.

Grunge Diffuse Blend Mode
Sets the blending mode between the diffuse output and the grunge input.

Grunge Shadows in Diffuse
Makes an overlay of shadows based on the Grunge map on top of the diffuse output.

Grunge Adaptive Shape
Allows one to warp the Grunge Map through the generated Height Map in order to match additional details added by the Material.

Detail

Details Input Intensity
Sets the power of details input to add high frequencies on height and normal maps.

Details Input Tiling
Sharpens the edges on height, bump, displacement and normal maps.

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