PIDI - GAME DEVELOPMENT FRAMEWORK™

BY IRREVERENT SOFTWARE™

PIDI:
ADVANCED SKIN SHADER™ 2

LITE EDITION. USER MANUAL

Index

PIDI – Advanced Skin Shader 2
Introduction

PIDI : Advanced Skin Shader 2 is the latest version of our skin rendering solution for Unity 2017 and above.

With unparalleled realism and advanced features such as real-time translucency, subsurface scattering, dynamic wrinkles through both region and GPU tension maps, support for LWRP and Universal RP as well as compatibility all kinds of devices from mobile to high-end desktop, PIDI :Advanced Skin Shader 2 is the asset you need to take your characters to a new level of realism

In this documentation you will find a general description of all the different features of this asset, a small setup guide and some performance tips to help you add reflections to your scenes in no time

If you have any questions, suggestions or need support, contact us at support@irreverent-software.com

PIDI Advanced Skin Shader 2, Standard vs Lite

PIDI : Advanced Skin Shader 2 is available in two different editions which may adapt to all kinds of teams and budgets. A Lite edition with only the essential features is offered at a much lower price while the fully featured Standard edition is targeted to projects and developers that may need more advanced features out of this skin rendering system.

Below you can see a comparison table showing the full feature set of each edition. The Lite edition has an additional module that adds LWRP / Universal RP support in Unity 2019.2+ (this module is included in the Standard edition). To learn more about the specific limits and differences between the standard Unity rendering pipeline (also known as Built-in) and the new LWRP / Universal RP pipeline, please go to the corresponding section of the documentation.

Feature	Lite Edition	Standard Edition
Source Code Access	✓	✓
Forward rendering support	✓	✓
Deferred rendering support	✓	✓
Integrated overlay/decal FX	✓	✓
Dynamic wrinkles support	X	✓
Simple Tessellation support	X	✓
“Stylized Skin” shaders	X	✓
“Cartoon Skin” shaders	X	Coming Q1 2020
LWRP / Universal RP support	Sold separately	✓
Mobile ready variants	Sold separately	✓

Both Lite and Standard / Team editions grant you access to our support services (via email and the Unity forums) as well as to free updates for this tool during the whole 2.x cycle which covers versions 2.0 through 2.9 of PIDI Advanced Skin Shader 2

LWRP / Universal RP vs Built in Forward vs Built in Deferred

The SRP feature (LWRP/URP) is a new rendering pipeline introduced in Unity 2018.1 and currently in development. It has been marked as stable in Unity 2019 but it still receives frequent updates, feature changes, bug fixes etc.

Because of its “in-development” nature, compatibility-breaking bugs and serious performance issues can be expected while using this tool alongside LWRP, which will be solved as the rendering pipeline itself becomes more stable and usable.

Furthermore, some limitations in the way lighting passes are handled in deferred mode within the Built-in Standard renderer change the way the shader will work between Forward and Deferred

Feature	LWRP / Universal RP	Built-in Forward	Built-in Deferred
Real-time translucency	✓	✓	**Up to 4 lights**
Subsurface Scattering	✓	✓	**Up to 4 lights**
Tension map (GPU) wrinkles	✓	✓	✓
Region map (CPU) wrinkles	**X**	✓	✓
Shadowed Translucency	✓	✓	**X**
Two UV wrapped decals	✓	✓	✓

Please remember that SRP features are NOT included with the Lite edition and that the SRP provided in the Add on sold separately on the store does NOT add the dynamic wrinkles features, it only makes the same functions found on the Lite Edition available on the SRP Pipelines.

Quick Start Guide

While this guide and the documentation itself have been written with the full version of the asset in mind, most of the concepts and workflows described can be used directly on the Lite version as well. Features exclusive to the Standard version are marked as such.

Installation

In this quick guide we will go through the whole process of using PIDI : Advanced Skin Shader 2, from installing the software into your project to adding it to a scene.

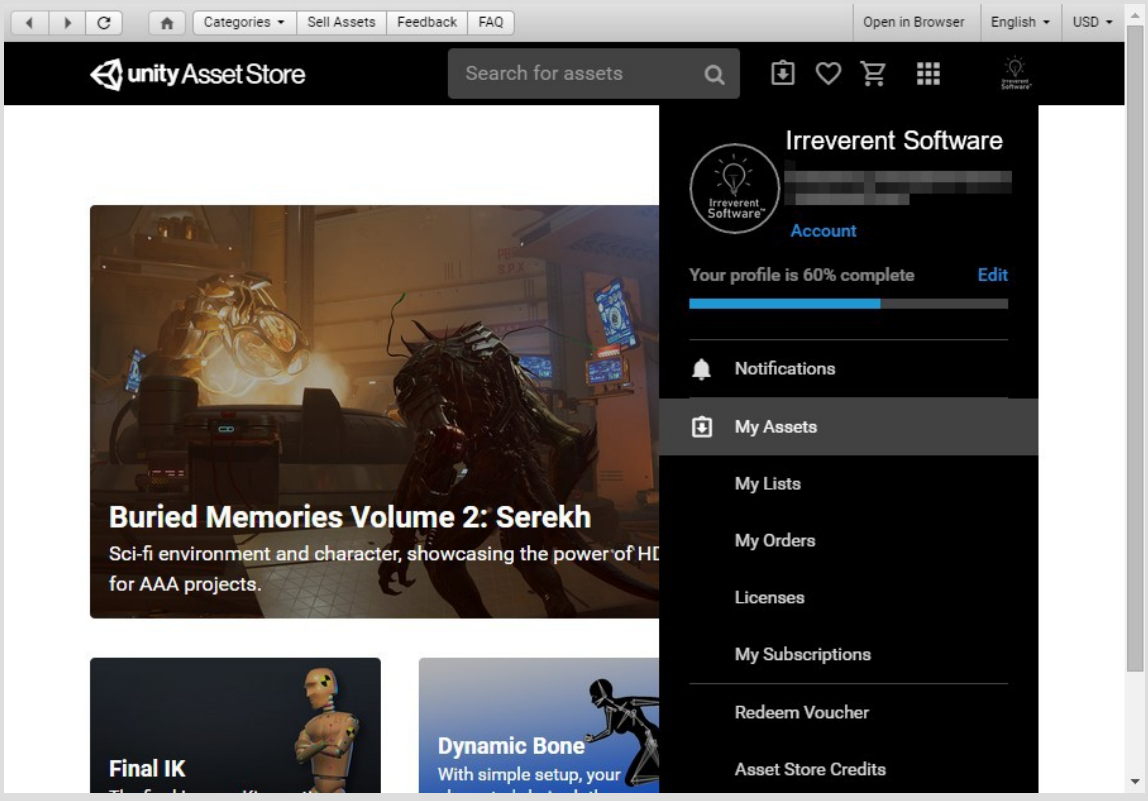
As a first step, please ensure that your project fully meets the requirements below :

- It is being developed with Unity 2017.1+
- If it uses LWRP, make sure it is using a compatible version

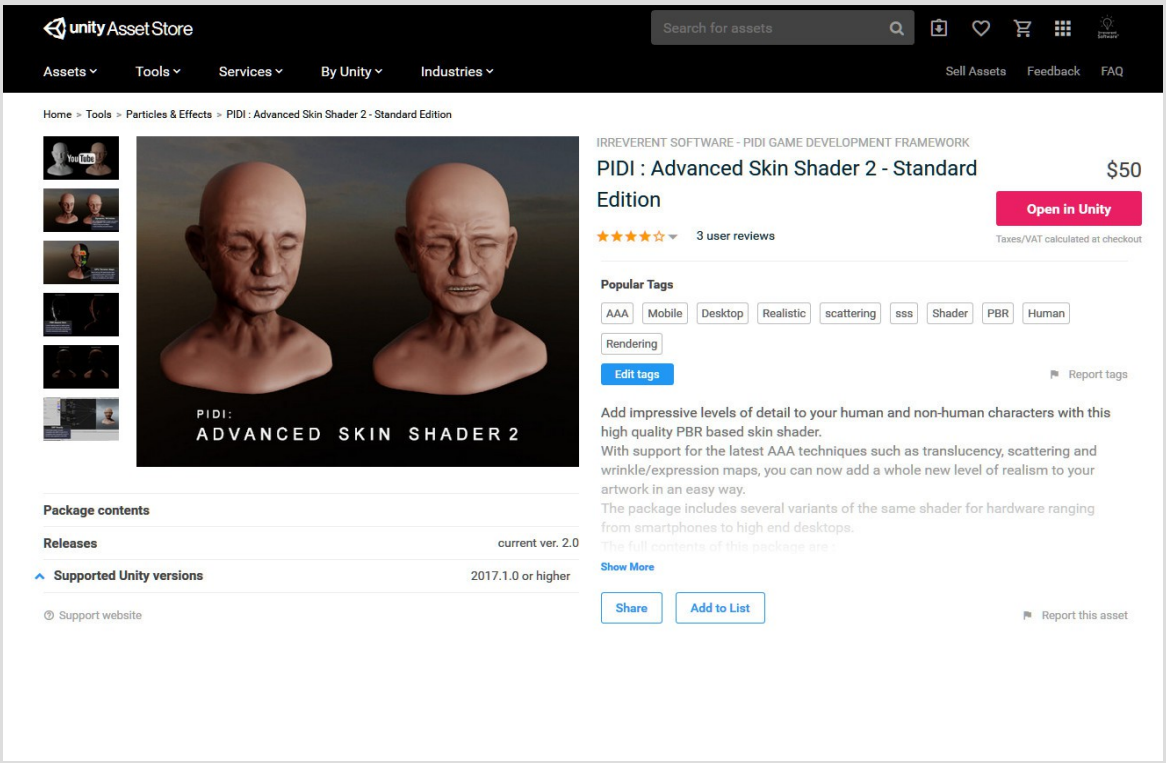
While PIDI : Advanced Skin Shader 2 has been designed to be integrated to any project at any stage of development with little to no setup required, there are additional steps to follow if you are using SRP (Lightweight or Universal).

Standard Pipeline Projects

For projects working with the Standard Pipeline there is little to no setup required. If this is a first time installation you just need to head to the Asset Store and find this asset either under the section “My Assets” or by a normal search in the store itself.



If you have bought the asset, a Download / Import / Update button will show, depending on if you have never downloaded the asset before, you have downloaded it and it is in cache already or there is a new version available for download, respectively.

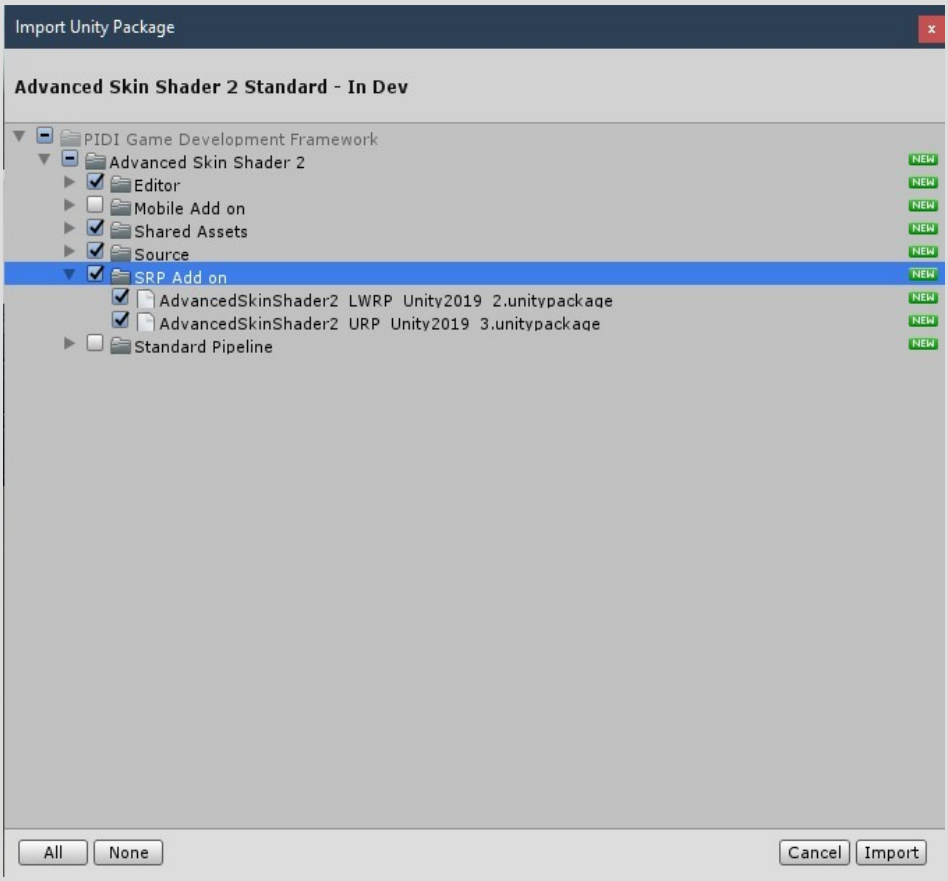


Once the import dialog appears, just import all the contents of the asset as usual. To verify that the asset was imported without any errors try to open one of the demo scenes. If they work without issues, the package has been imported correctly. If you see any graphical errors you must re-import the asset. If the issues persist even with a brand new and empty project, please contact us at our support email

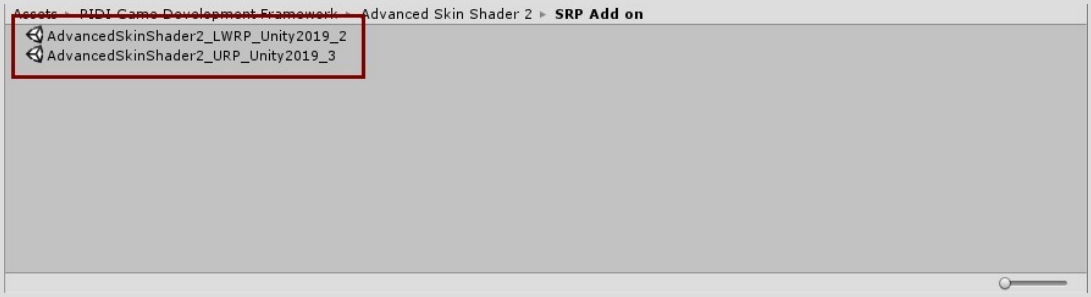
LWRP / Universal RP Projects

If you are using the Standard Edition or have purchased the SRP Add-on for the Lite Edition you must follow additional steps before using this asset in a LWRP / URP compatible project.

In the last step described above, once you see the import dialog while adding this asset to your project, DO NOT import the Standard Pipeline folder nor the Mobile Add on folder to your project. Importing this folder would cause errors due to the shaders and materials included in it being incompatible with LWRP / URP.



Instead, once the tool has been fully imported, unpack the package that matches the Unity version you are using. Please remember to update your SRP version to the latest release before using our shaders, and to open them with ShaderGraph and press the Save Asset button in the Graph Editor to ensure they upgrade automatically to the SRP version you are using.



While we do our best to keep up to date with LWRP releases there may be times when Unity updates their pipelines and adds or removes functionality from them (and in most cases breaking the compatibility of LWRP shaders) before we can issue the corresponding update. If your version of LWRP does not load the shaders appropriately or the demo scenes inside the LWRP Add on folder show pink materials please be patient, as we will issue the corresponding patch usually within 1-2 days of a new LWRP release or contact us to let us know the details of the error to our support email.

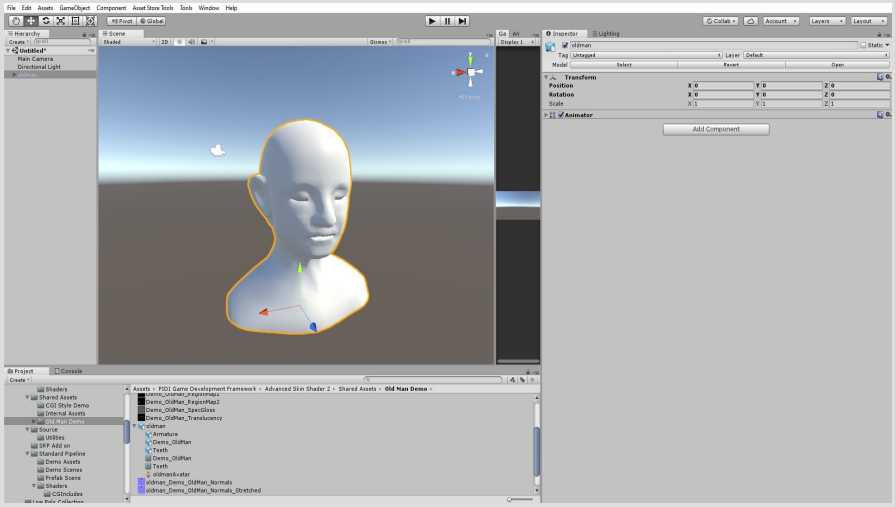
Warning : Please remember to make a backup of your project before upgrading or installing any tool or asset. While we do our best to ensure that our software is free of errors and easy to use, we are not responsible for any loss of data, corrupted files or projects produced during the installation or use of this software.

Setting up the skin shader on a character model

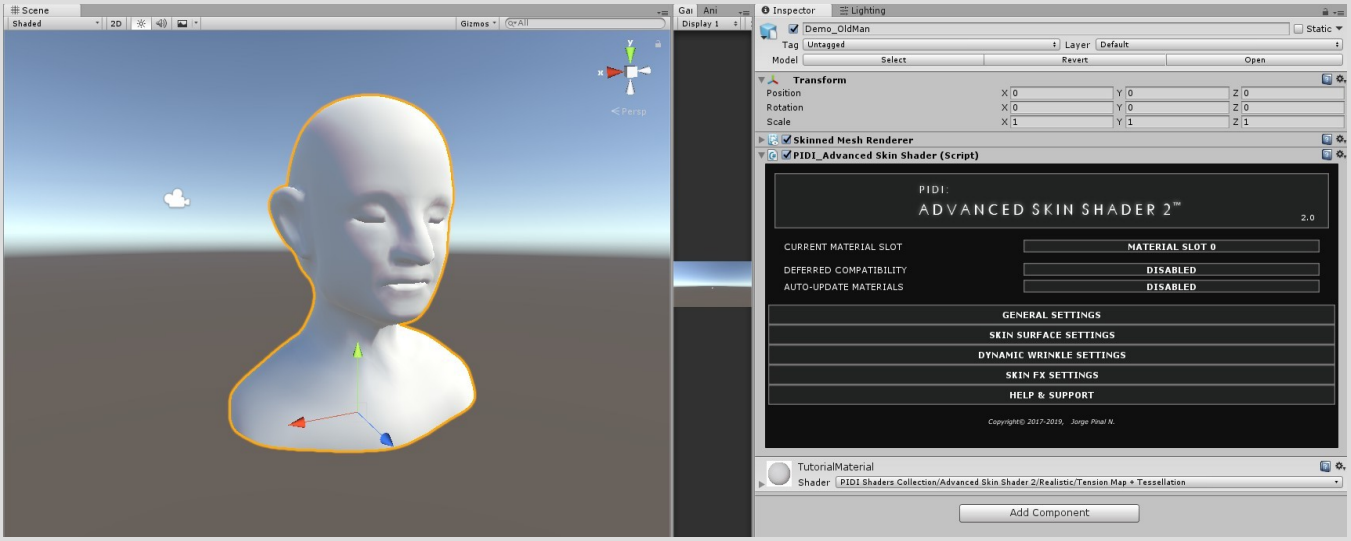
Adding the skin shader to a character model requires several steps. The Advanced Skin Shader is not a simple material nor can be simply dragged and dropped into an existing character due to the many additional features it has that do not exist on normal Unity materials.

In this short tutorial we will guide you through the whole process of adding the skin shader to a model and set up its basic properties. More advanced topics and features will be covered in the next sections.

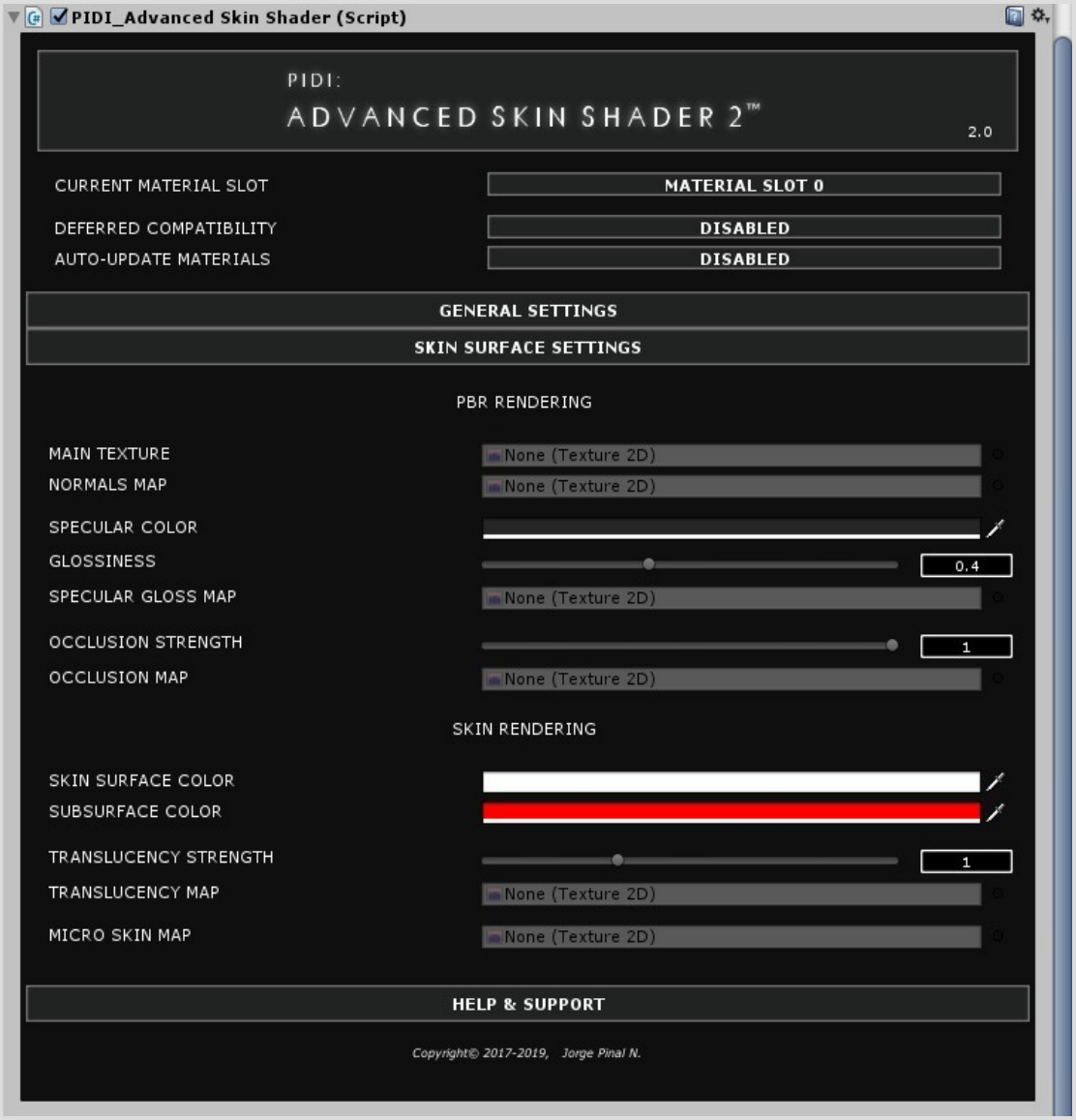
In an empty scene, add the Old Man model included with the asset and place it in the center of the scene in position 0,0,0 and rotation 0,0,0. This setup is important to ensure that the mesh is set up correctly for the initial workflow. Make sure that your scene is running in Forward Mode. We will cover the set up for deferred in a later section.



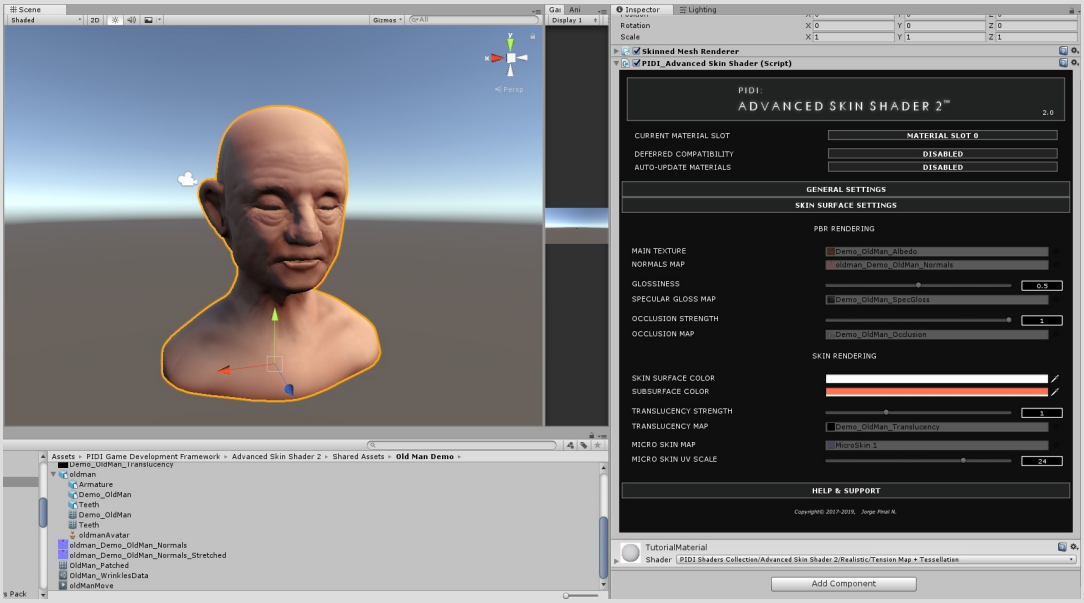
Create a new material and assign the Advanced Skin Shader/Realistic/Regions Map + Tessellation shader to it. Once this is done, drag and drop this material to the model. As you will be able to see, the material does not have any exposed property available, as all of them are managed internally by the AdvancedSkinShader script. Add this script to your model, next to the Skinned Mesh Renderer component now.



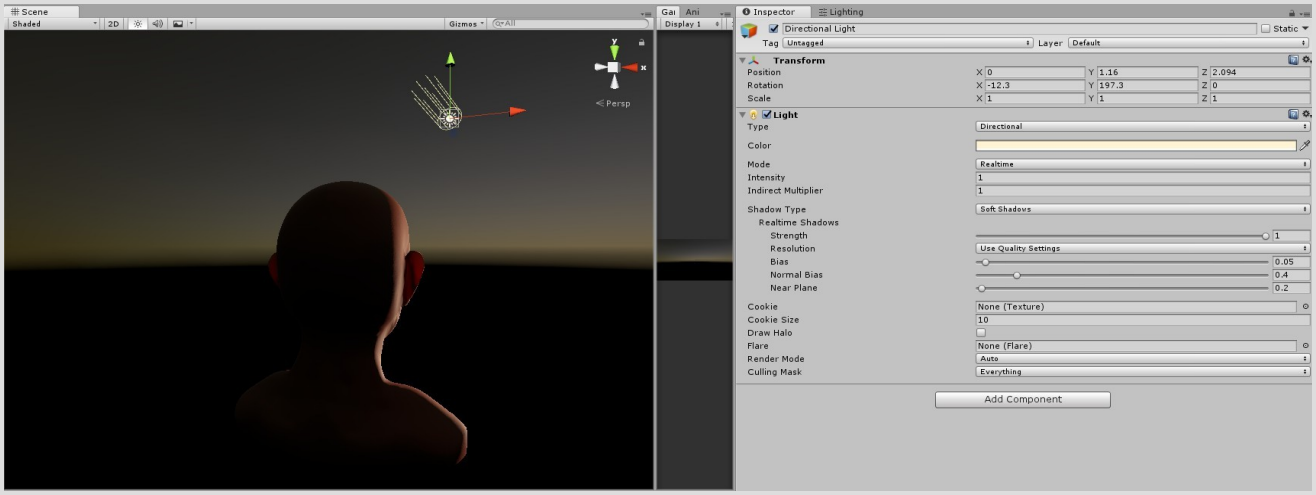
Open the SKIN SURFACE SETTINGS tab on the Advanced Skin Shader 2 UI. There, you can find settings for all the available properties of the material. They match standard PBR based properties, including a Main Texture, a normal map, specular / gloss map, an occlusion map and two additional textures, a translucency map and a micro skin details map (which is provided with the asset)



Assign each one of the corresponding textures to the different slots of the SKIN SURFACE SETTINGS Tab. Take into account that the glossiness factor is multiplied by the MicroSkin texture's blue channel, which will dim the gloss of the surface. The translucency map is a simple grayscale texture that contains a representation of the depth of the mesh and to define how much light should go through each section. The scattering color defines the color within the mesh, that will tint the light that goes through it.



There is no additional setup required for the translucency and scattering to begin working in Forward, since the shader is designed to work out of the box in most cases.



In the next sections of this manual we will cover the different settings that must be configured in order to work with deferred shading and the Advanced Skin Shader, how to add dynamic wrinkles support to the characters as well as the advantages and disadvantages of each one of the two different methods provided for dynamic wrinkles. We will also cover the decals / overlays system, its limitations and capabilities, as well as how to use this shader within a workflow that depends on prefabs.

Advanced Set up Topics

Getting high quality results with PIDI : Advanced Skin Shader 2 is very easy and requires little set up, as we have seen. It can be done with any model, in a matter of minutes, and without needing any additional artistic knowledge. However, that is only the most basic setup that the asset offers and for users with a proper 3D art pipeline and more experience.

This section of the manual assumes that you have a more advanced knowledge about Unity and how it works, about 3D modeling and texture creation among other abilities. While it will not cover how to actually create 3D models or a step by step on how to generate the necessary maps for this asset it will give you instead the list of requirements that your 3D art and texture maps must meet in order to use the more advanced features.

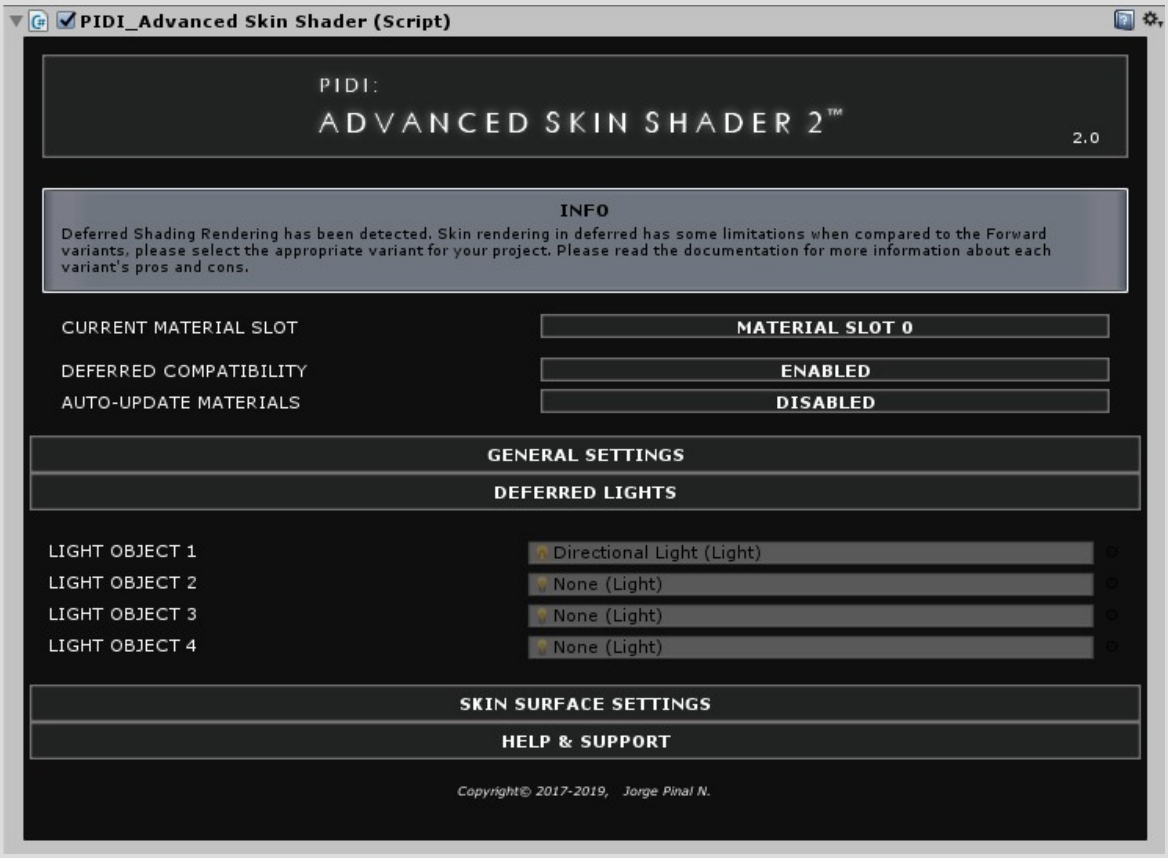
Deferred Setup

Deferred shading in Unity is extremely useful since it allows you to render a huge amount of lights without additional passes on each object. However, to do this, all control over the lighting portion of a shader is removed and handled instead by the Deferred Shading shader. This makes it impossible to add new features such as scattering or translucency to any deferred shader without modifying or replacing entirely the internal Deferred Shading code used by Unity.

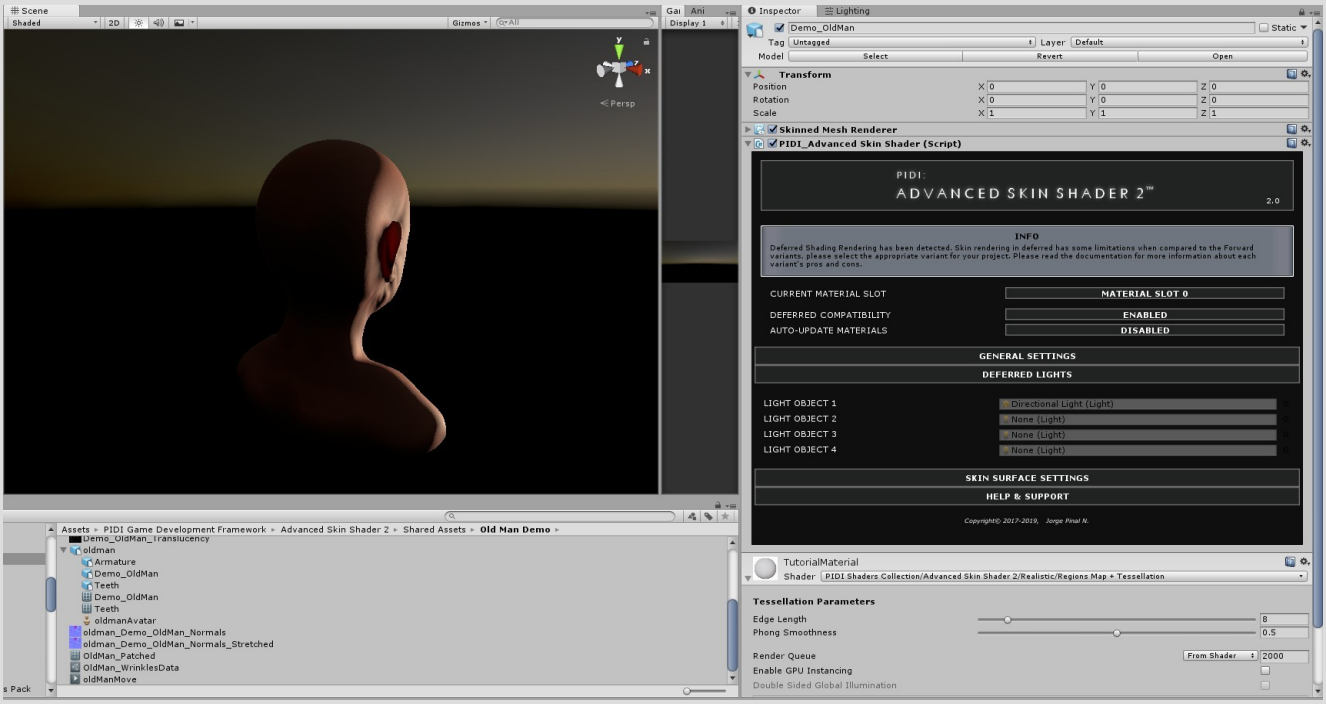
In order to avoid this and to make our Advanced Skin Shader work with any deferred shading system we decided to provide the missing lighting information manually. This allows the shader to work seamlessly with Deferred Shading while keeping the features mostly intact, but with the drawback of the scattering and translucency being limited to just four specific lights and the translucency itself not being affected by shadows.

These limitations, while small, still have to be considered. The shader does a good job at simulating the shadowing created by shadows over the translucency but this is not as accurate as real shadowing in Forward mode. The scattering is also highly accurate but its mixing with the rest of the lighting is not as soft and accurate as the one in Forward mode. Despite all this, for games using Deferred Shading mode, the Advanced Skin Shader still provides all the features and high quality with minimal setup being required.

Please ensure that the Auto-update materials setting is set to enabled when working with a Deferred setup, otherwise the lights' features, position, color etc won't be updated on the shader itself.

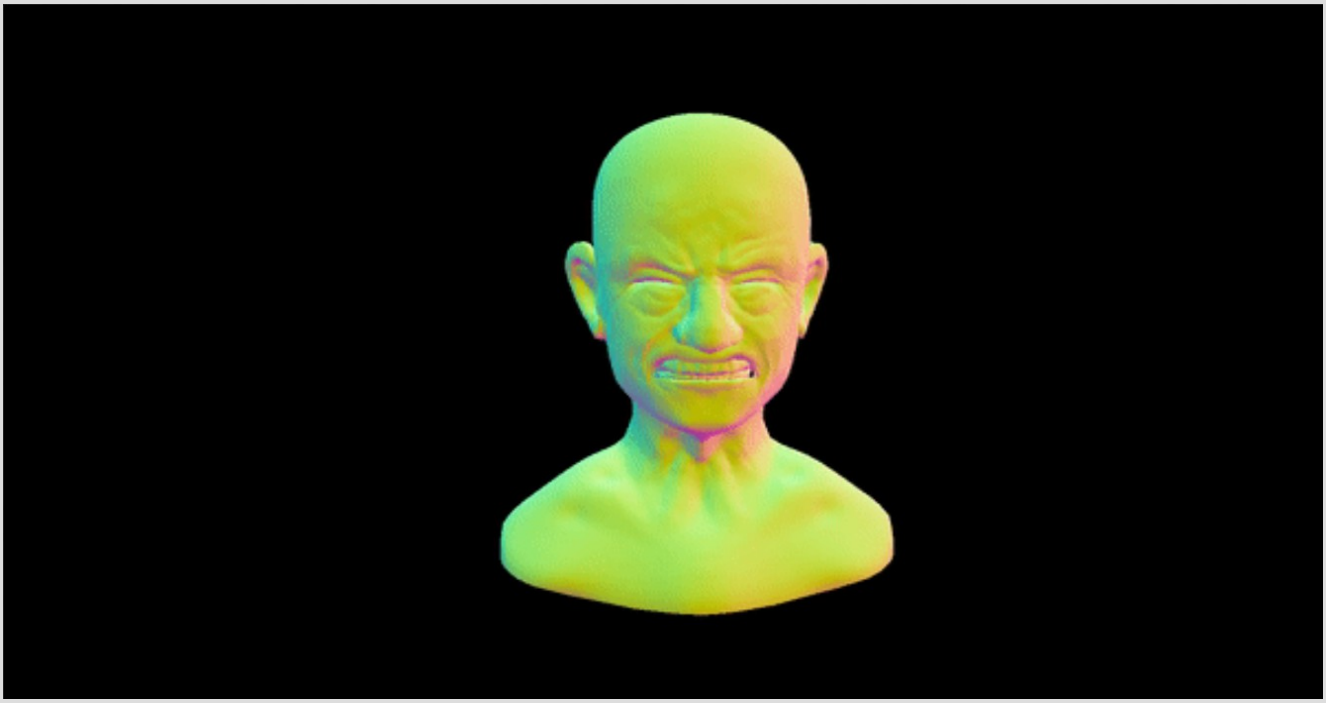


To start, set the **DEFERRED COMPATIBILITY** mode to Enabled. This will create an additional tab called **DEFERRED LIGHTS,** in which you can assign the four lights that will have effect over the scattering and translucency. Assign the lights that you want to affect the skin shader to that list. In our case, we will add the Directional light used in the previous scene to display translucency.

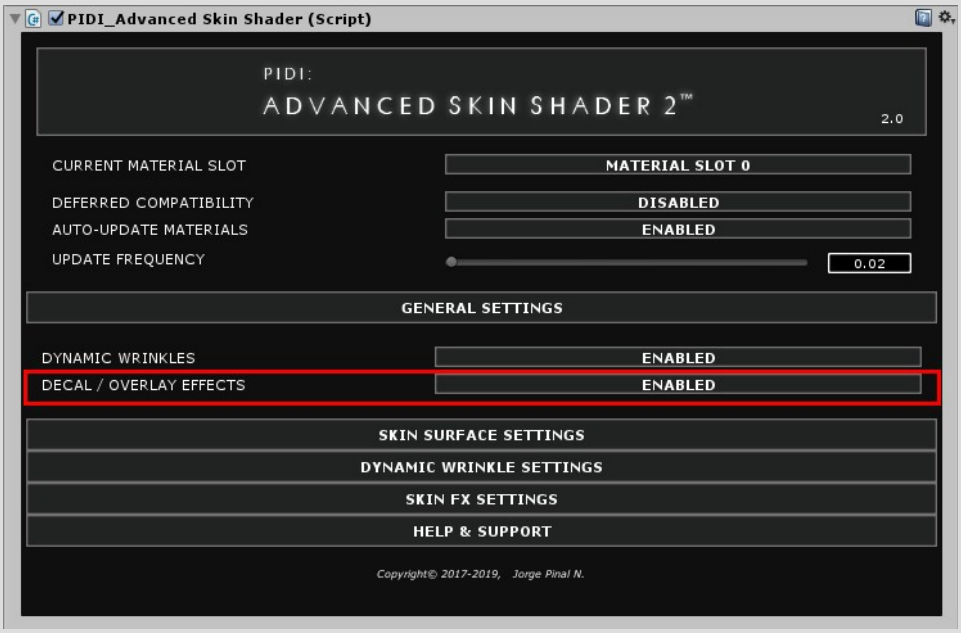


And as you can see, there is little to no difference between the quality of the end results once the deferred shading settings have been properly set up. Be aware that materials cannot be just switched between both renderings without any changes, since the final color and gloss may vary slightly between both rendering modes. Keep this in mind and remember to set up your materials accordingly.

The picture below shows the shader working properly in deferred mode (as seen by setting the scene view to display the deferred normals of the scene) and with all features performing as expected, including the dynamic wrinkles through tension maps

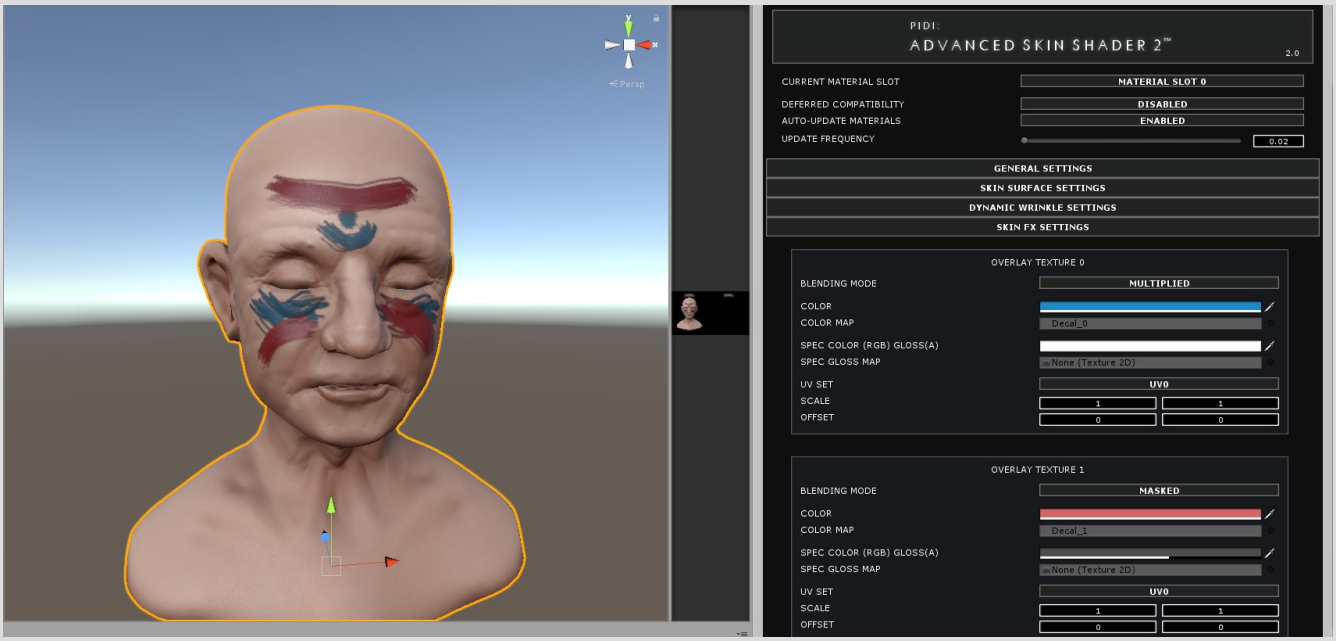


Texture Overlay FX



Adding overlay or simple decal textures to the skin shaders is very easy. Simply go to the GENERAL SETTINGS tab and set the Decal / Overlay Effects setting to true. This will add a new tab called SKIN FX SETTINGS.

In this tab, you can assign up to two different color maps to be used as overlays each one to be mixed in their own unique way with three blending modes : Masked, Additive and Multiplied. Each one of these two decals can have their own color, specularity / gloss maps and be displayed either on the UV0 or UV1 coordinates channel.



These decals allow you to easily and efficiently add effects such as sweat, wounds, tattoos, war paint etc to your characters while having full control over how it mixes with the skin under them and all their PBR properties. They are influenced by scattering, translucency and wrinkles as the rest of the skin and are available in all platforms.

Final Notes

Please keep in mind that while this shader has been thoroughly tested on many devices, Unity versions and with many different rendering setups to ensure stability and the highest quality on all its features, the performance on different devices as well as when using newer Unity features such as SRP rendering may vary.

This asset does not support any Beta Unity versions nor Experimental features officially. While many of them might be compatible with the asset, errors and bugs are to be expected when using this tool with experimental or beta Unity features.

If you have any doubt about this product or how to use it, please contact us at support@irreverent-software.com and we will get back to you to work and solve your doubts as soon as possible.

Thank you very much for purchasing this asset from PIDI – Game Development Framework. I hope that it will help you make amazing games!