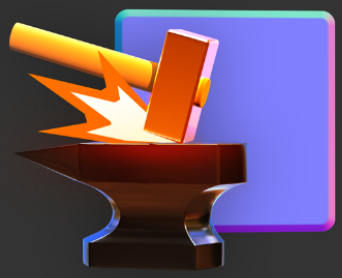


SURFORGE

TEXTURING AT LIGHTSPEED

USER GUIDE

CONTENTS

Overview

Surforge is an editor extension that enables you to easily make quality 3d rendered PBR textures from scratch directly in Unity, with an extremely productive and intuitive workflow. The exported maps are fully compatible with Unity 5 Standard Shader, looking exactly the same as while you working on them.

It's a modeling toolset, kitbash library, map render, and material composer. All in one, everything you need to create great textures.

The main purpose of this software is ensuring efficiency. Designed to speed up the process of obtaining finished results, Surforge saves you time and resources, which is particularly beneficial for indie projects. Surforge allows obtaining a large amount of texture content lightning fast.

System requirements

Unity 5.1 or higher (Personal or Pro), Shader model 3.0 Directx 11 (OpenGL Core on MacOSX) compatible GPU required to run Surforge. You also need at least 8gb ram to render 4096 resolution maps.

Exported results (which are standard sets of textures) can be used in a wide range, including mobile, depending on the shaders with which they will be used. Surfroge well optimized to run fine on modern systems, however, it is GPU based, so powerful video card is desirable.

Please note, that Surforge does not work on Intel HD 4000 mobile, and similar GPUs with shared memory. It works perfectly on GeForce GTX 660 Ti, Intel i5 3.40Ghz, 16GB ram.

Tested on really old system, GeForce GTX 275 Intel Core 2 Duo 2.40Gh, 8Gb ram. It was fully functional, including 4k maps render and real-time material tweaking, but overall was rather slow for comfort work.

Installation

It is better to import Surforge into a clean new project. It was designed to run on Directx 11, and it's recommended over Directx 9 (On MacOSX use default OpenGL Core).

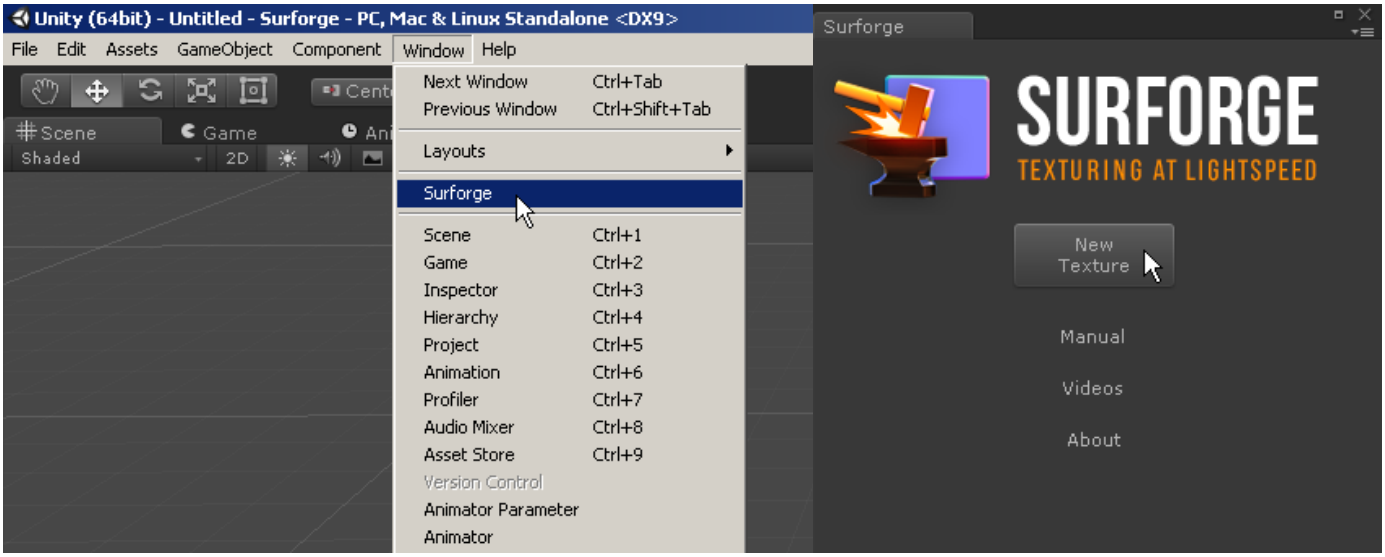
After package imported, press Window - Surforge to start.

Note: After pressing “New texture” button:

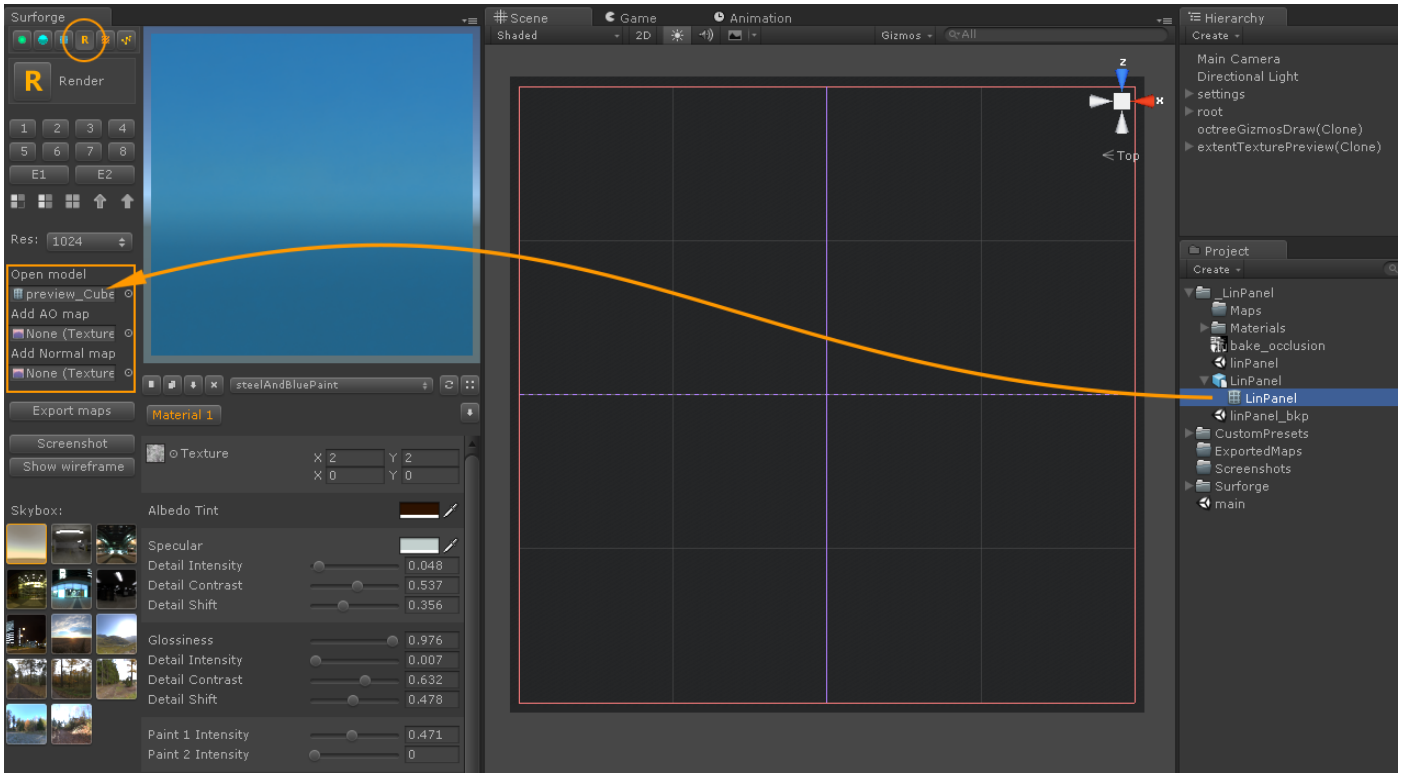
- Surforge will hide Unity standard viewport grid (for not to interact with Surforge grid). It reverts when you close Surforge window. If it was not returned (for example due to the crush), just open and close Surforge window.
- Surforge will change current project’s Shadow Cascade settings, required to render ambient occlusion.
- Surforge will create its Settings object in the scene, to store information about the texture, on which you will work.

Workflow

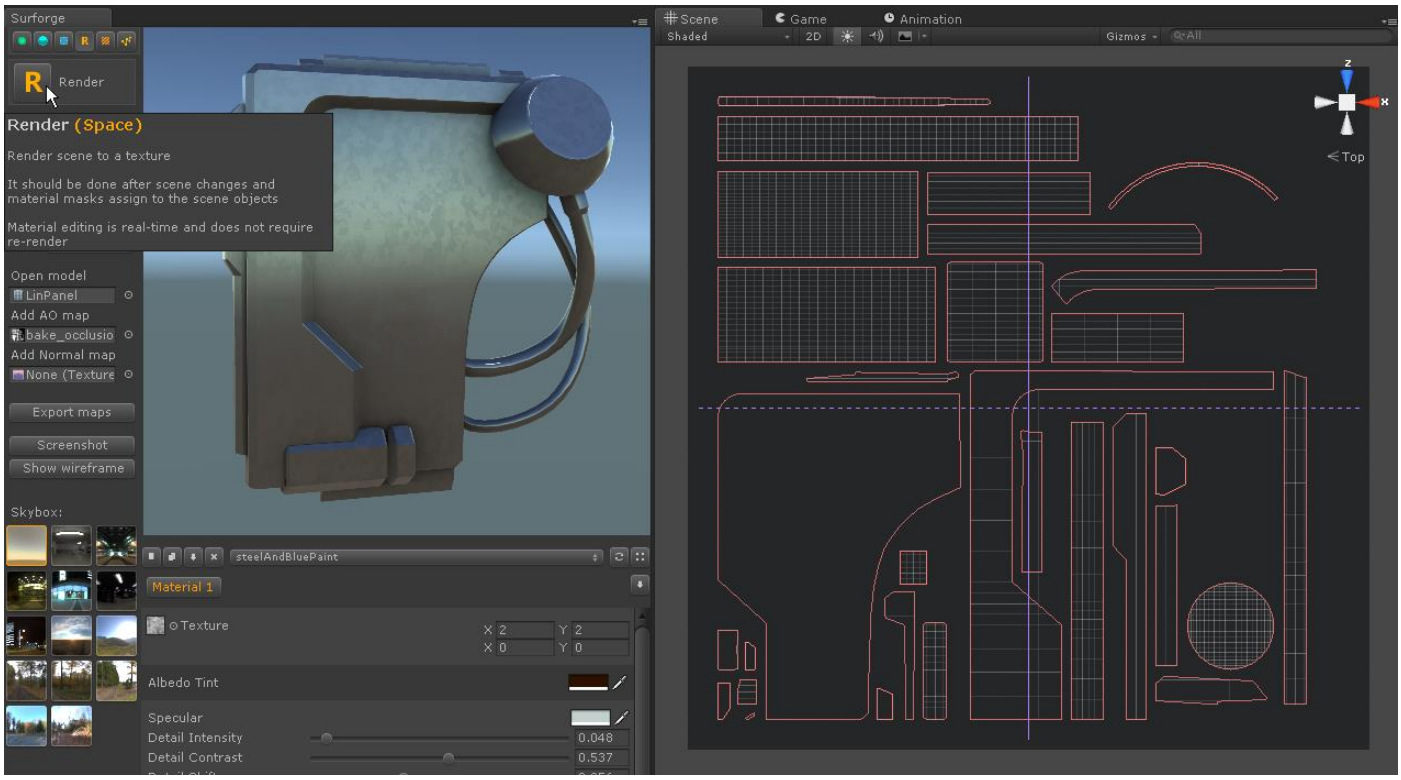
1. Create new Unity Scene, open Surforge window and press “New texture”.



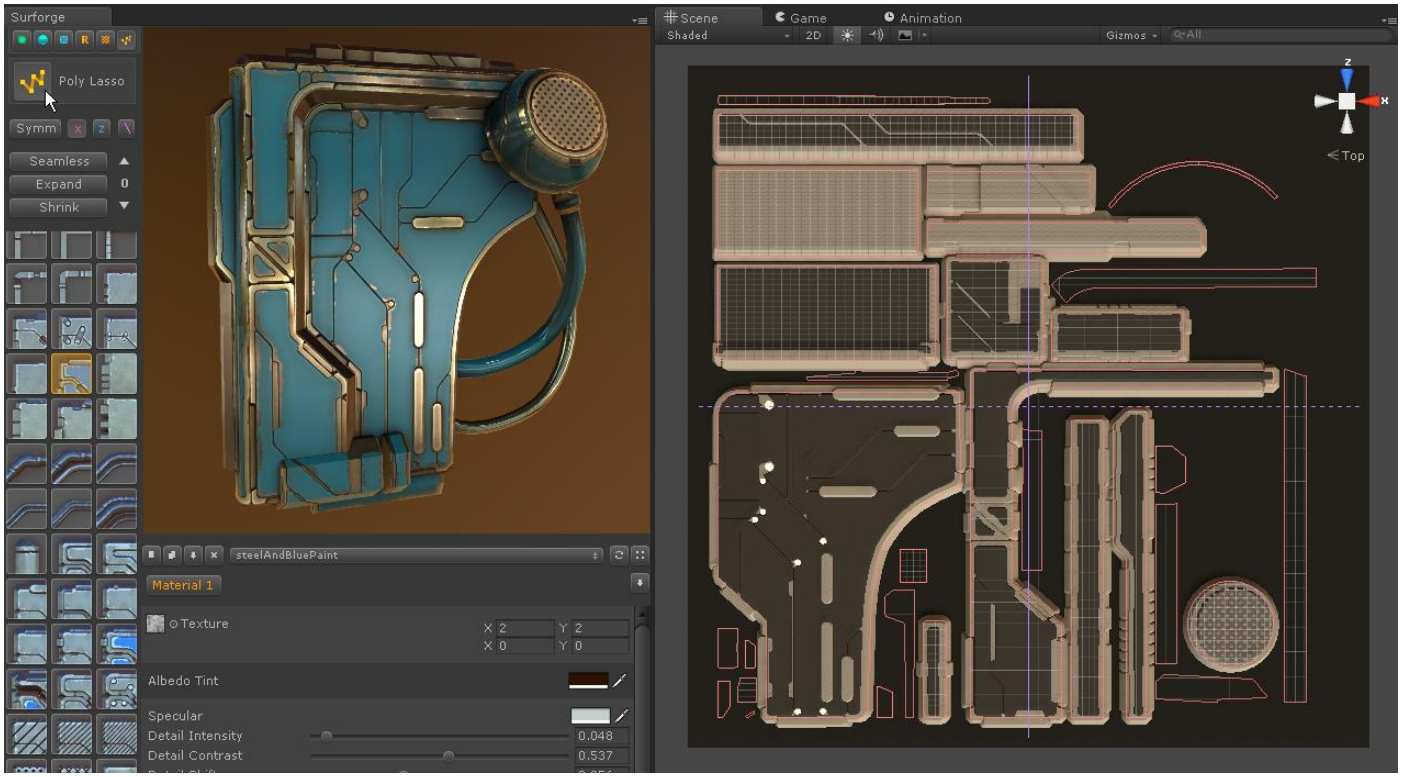
Drag and drop your model into the corresponding field. Along with texture preview, model UVs will be used for some amazing features such as UV island based symmetry and snapping. If the model has baked ambient occlusion or normal maps, drag and drop them, to use along with Surforge as a base. If you want to create just square texture, left the fields empty.



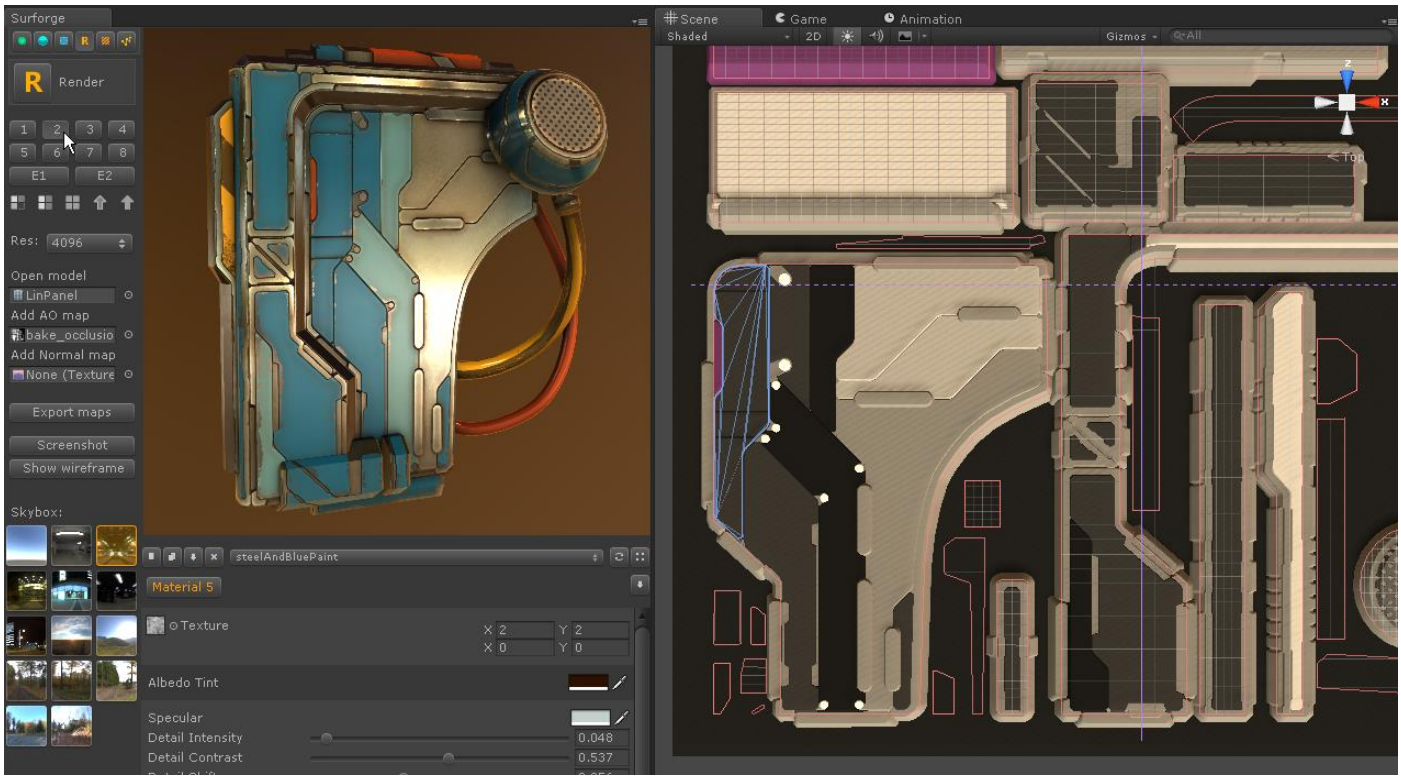
2. Click Render button or press Space key to render the texture. 1024 resolution (selected by default and used for working preview) render is almost instant (takes about a second on modern GPU). You may want to use it anytime you need to update Texture Preview after you changed scene geometry or assign material masks.



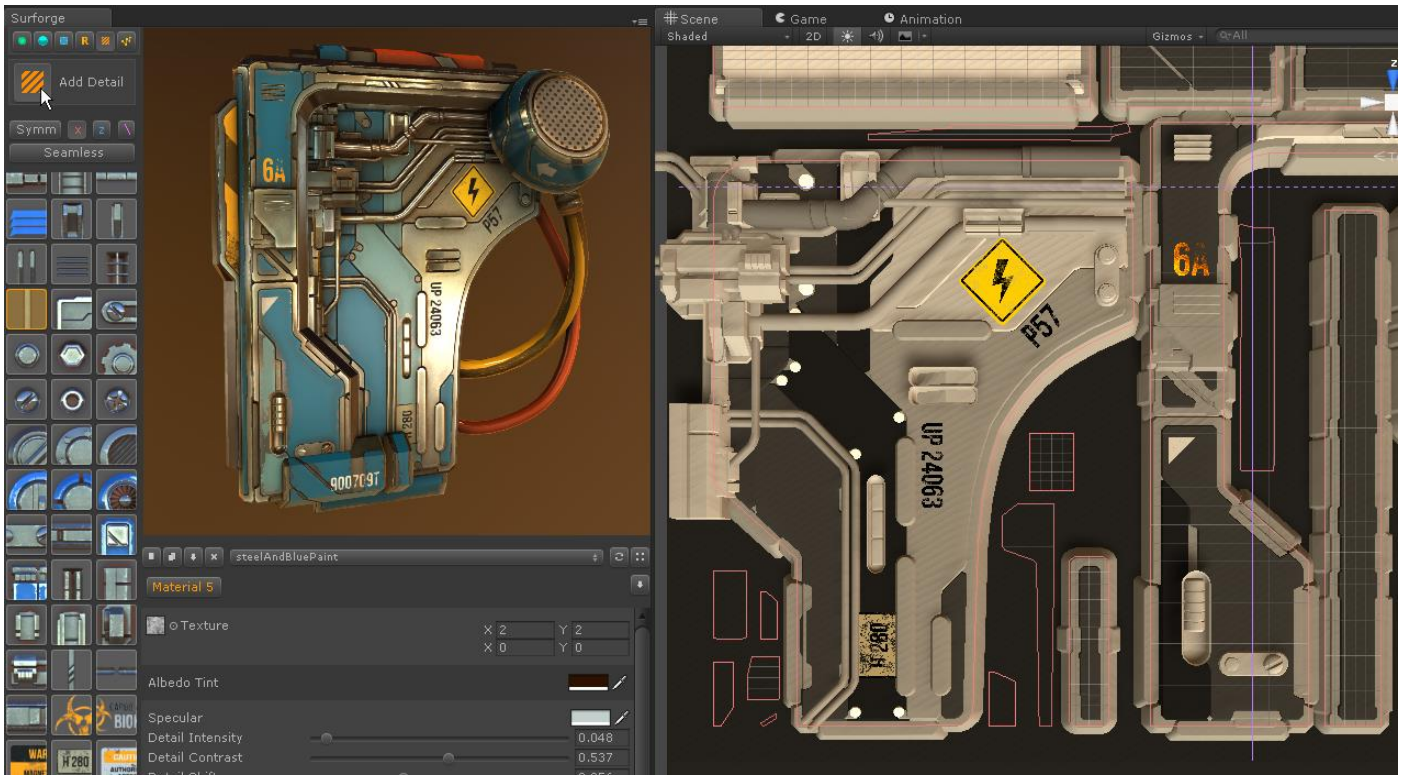
3. Create texture base with Poly Lasso tool, using UV island fill, construct by points, split and shrink/expand features. Try various poly lasso profiles, copy/paste, and transforms. You could also change already created poly lasso objects appearance by selecting them and choosing profiles while Poly Lasso tool is inactive.



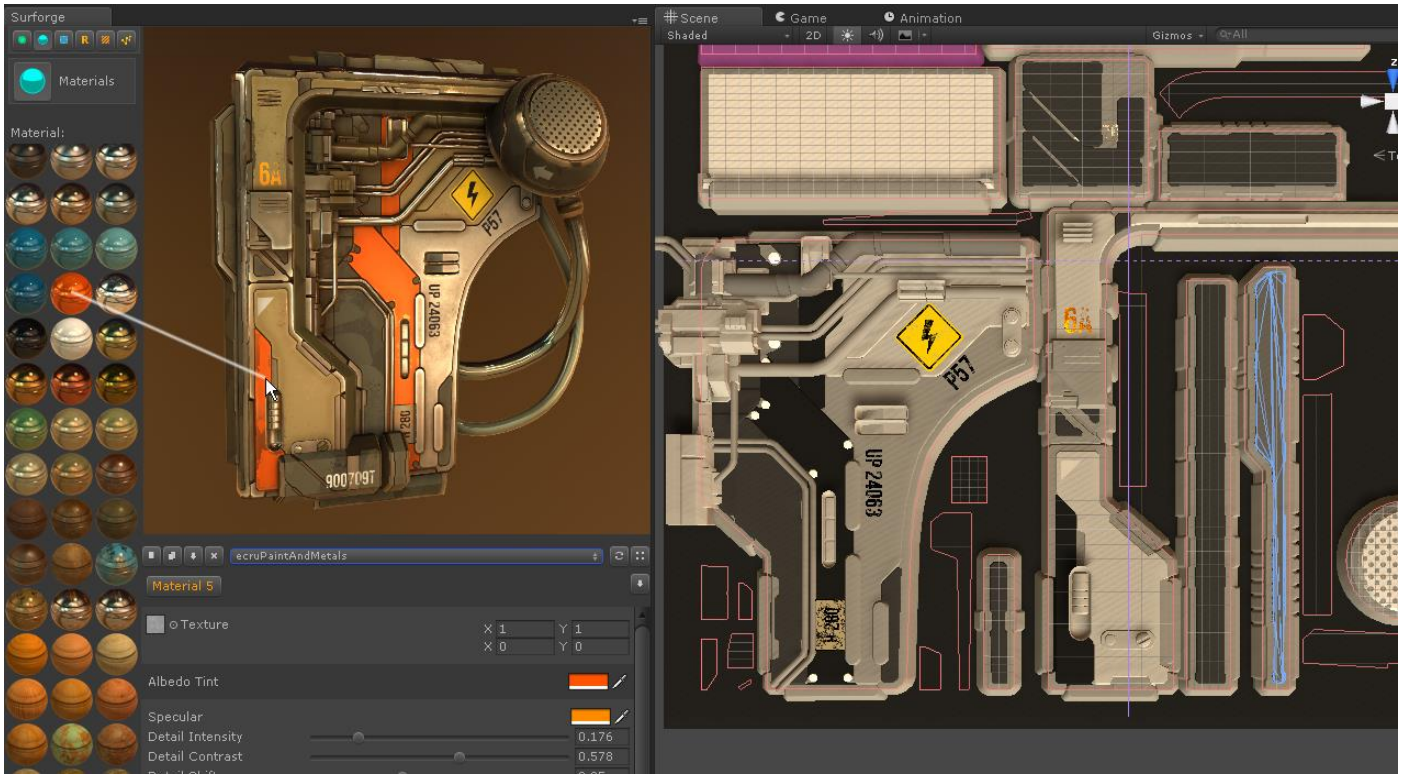
4. Assign material and emission masks to objects, by selecting them and pressing numeric hotkeys. 1-8 stands for masks, and 9, 0 for emission masks. Objects with the same mask will have the same material assigned, similar to Material ID map (which Surforge creates on the fly during the render).



5. Detail you texture with Add Detail tool, using rich kitbash library. Add features, labels and titles to make your texture look interesting.

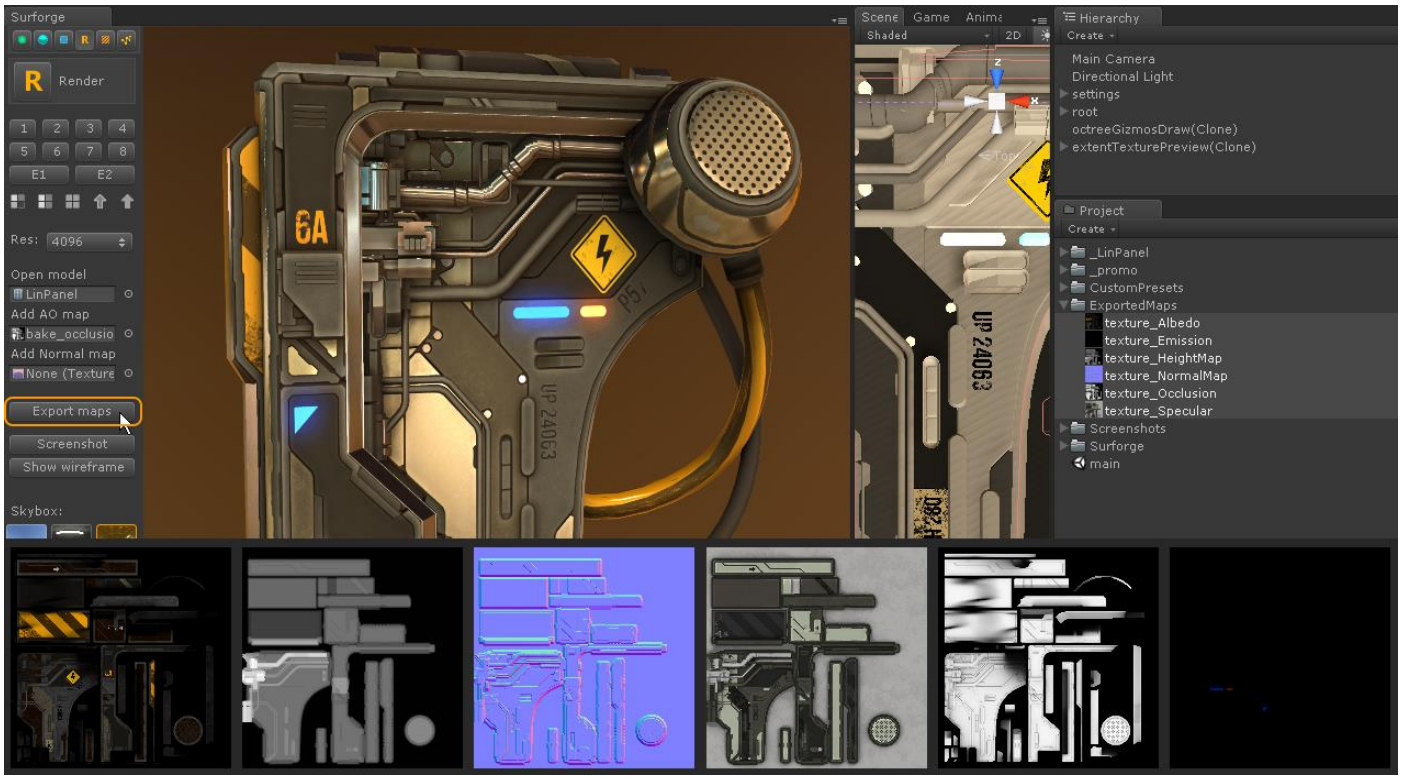


6. Now true magic begins. Drag-and-drop materials to the corresponding areas of the texture preview to get instant, real-time, highlighted while dragging update of your texture. No re-render needed, no time wasted.



Use predefined material sets, shuffle and swap materials, tweak every material aspect. Adjust global settings for all materials in set for the final polish: Levels, Hue/Saturation, global Specular and Glossiness. Use your own maps for albedo, paint layers and specular/glossiness features extraction to get your own materials. Combine them in material sets and save for future use. Everything realtime.

7. Render texture in high resolution (several seconds for 4096 texture on modern GPU) and press export. Albedo, Normal, Ambient Occlusion, Specular(Glossiness on alpha channel), Height and Emission maps will be saved.



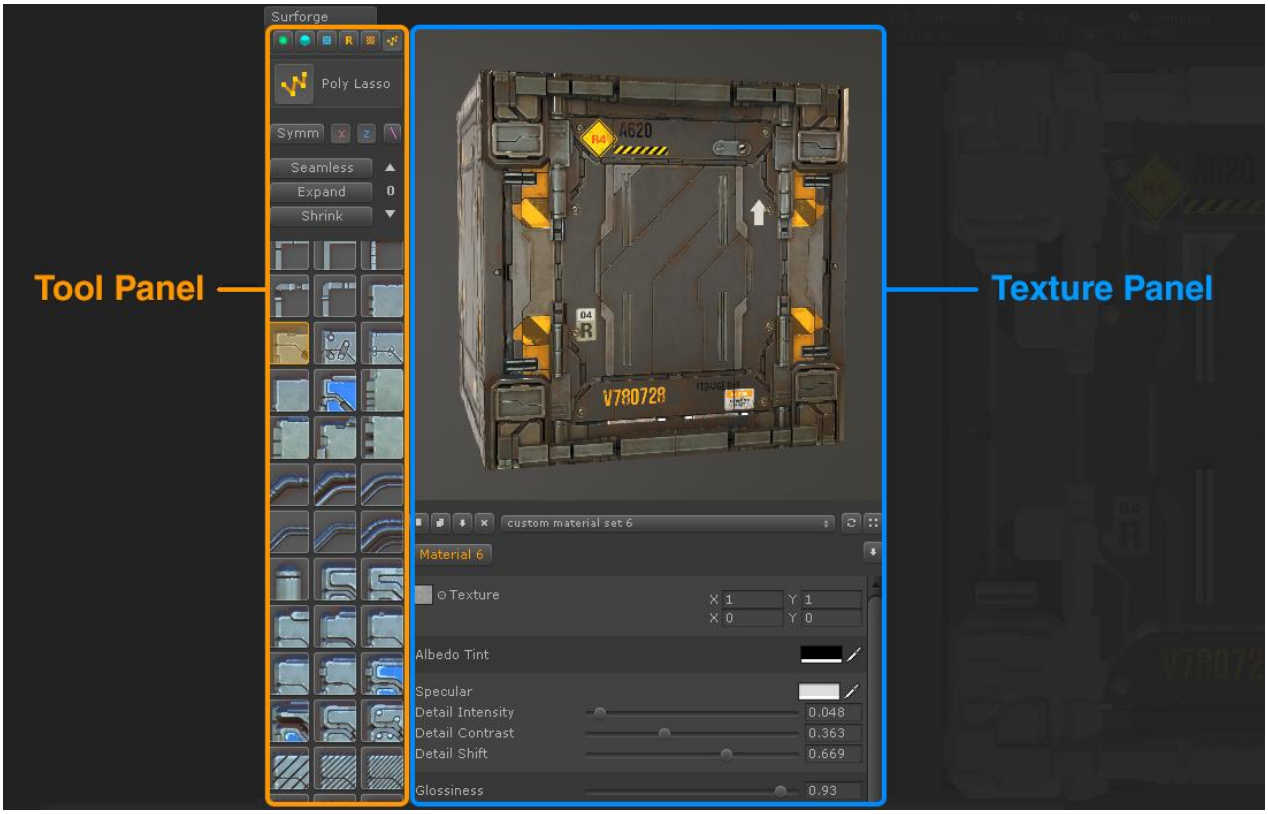
Drag them to Unity Standard shader (specular setup) fields to get exactly the same result as in Texture Preview.

8. Save your Unity scene for future use. All texture work will be saved with the scene, including changes in every material set (you could have different texture variants saved in one scene).

Interface

When opening Surforge window on the new scene (without Surforge Settings object in the scene), it displays welcome screen with “New Texture” button. After pressing it, Surforge will setup the scene for texturing, and displays main UI.

Surforge interface consists of 2 main areas: Tool panel and Texture panel.

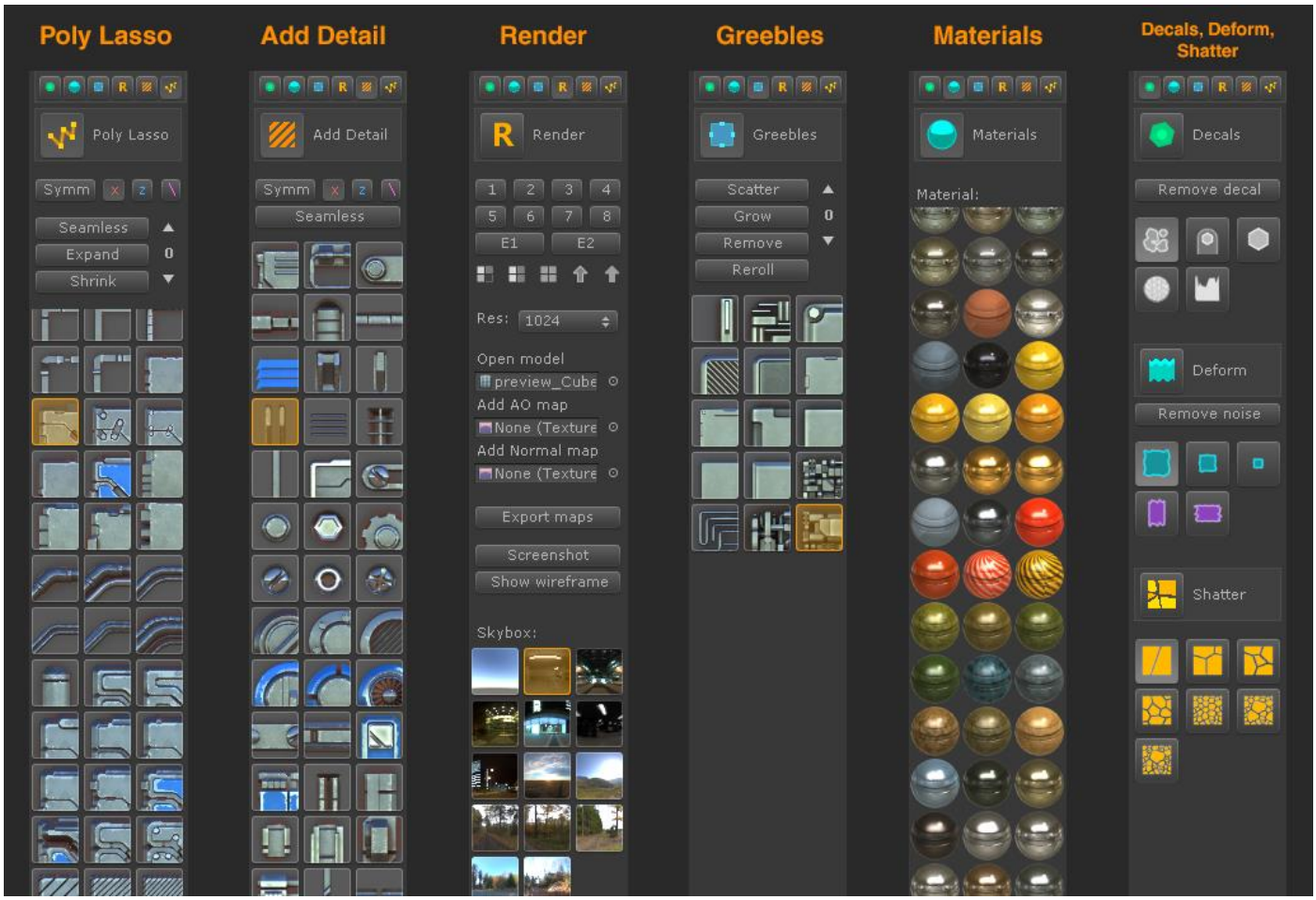


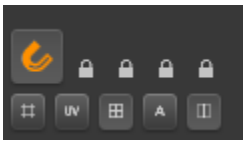
Tool Panel

There 6 main tools, which content displayed on the Tool panel, selected with corresponding tab buttons.

1. **Poly Lasso**. The main geometry modeling tool, for making panels of various types and creating the base of your textures.
2. **Add Detail**. Texture detailing tool, actually a rich model and label kitbash library.
3. **Render**. Render and model preview settings, material mask operations, export, skybox selection.
4. **Greebles**. Somewhat tricky, but incredibly powerful voxel-based micro detailing tool. It allows filling rectangular shaped areas with tons of randomly scattered tiny details. Perfect for sci-fi, also can be used for “pixel art style” grid based textures.
5. **Materials**. List of materials for drag-and-drop to the texture preview.

6. **Decals, Deform, Shatter**. Utility tools for using with Poly Lasso objects. Handy for some special effects, such as mosaic, randomly shaped stone blocks and additional detail scattered on poly lasso objects edges.



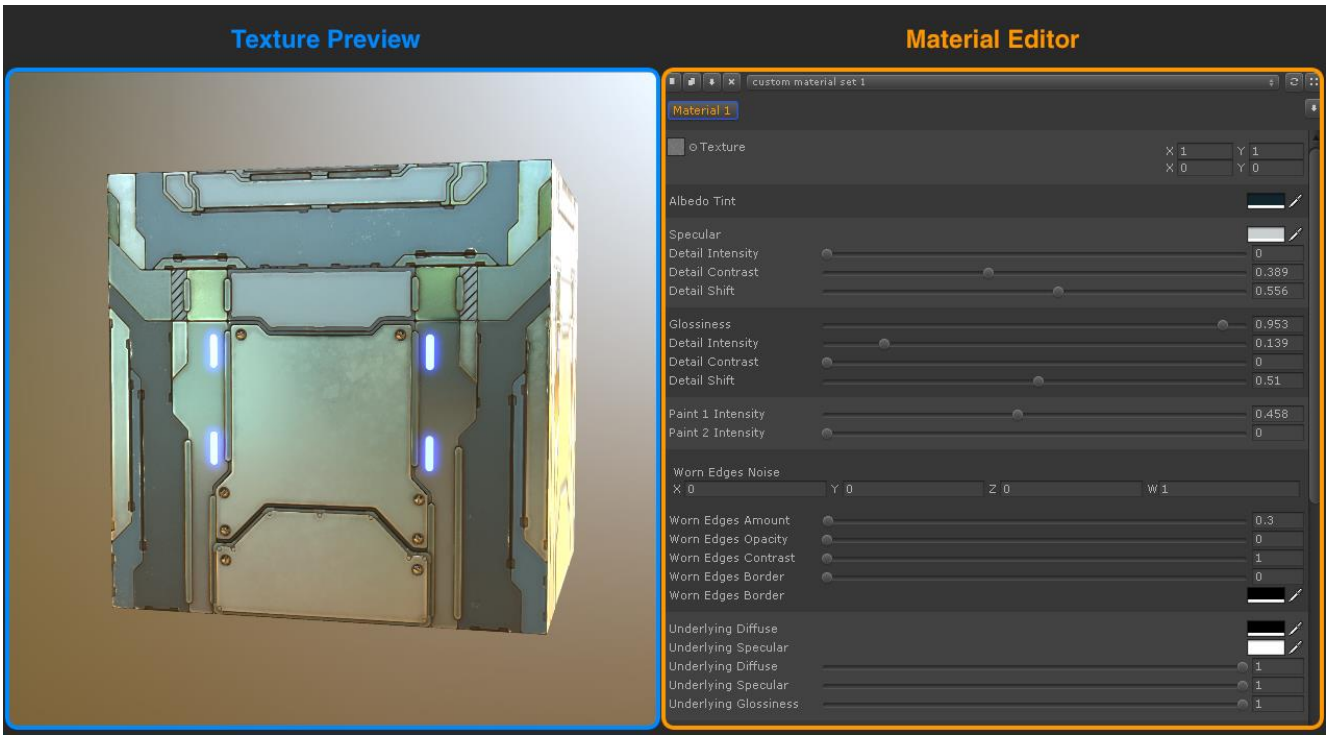


The tiny area under the Tool Panel is for the grid modes toggle and snapping settings for Poly Lasso tool.

Texture panel

Consists of 2 areas: Texture Preview and Material Editor. This panel is always active, regardless of the currently selected tool.

1. **Texture preview**. Used for previewing your texture on selected model, fast switching between materials in the set, materials drag-and-drop, copy/pasting and swapping materials.
2. **Material Editor**. Switch between materials in the set and tweak any material aspects here, such as specular/glossiness, worn edges, paint layers, dirt, etc. The drop down menu used for switching between different material sets, that allows to work on different color schemes at the same time, or quickly find suitable predefined material set for future editing.



Tools

Poly Lasso Tool

Poly Lasso is the primary Surforge geometry modeling tool. It creates 3d extruded panels, similar to loft or profiled extrude in 3d modeling software, but much more advanced. Poly Lasso tool based on shape (list of points) and a profile (the rules how shape transformed to geometry).

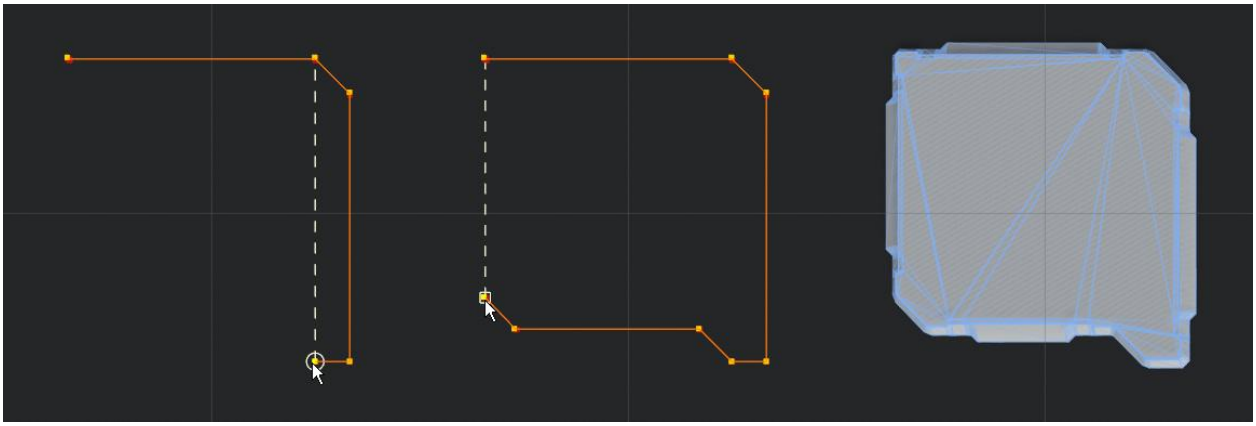
All Poly Lasso objects created by this tool are stored in the scene as a shape+profile set, and the mesh created on the fly, when needed. For example, if you split Poly Lasso object in two halves, both object inherit parent properties, but get the new shape, and the mesh will be reconstructed. It makes Poly Lasso objects extremely flexible, allowing to change its profile at any time and shrink/expand them for getting outline effects, so important in texturing.

Surforge comes with rich set of Poly Lasso profiles. Some of them are simple, other more advanced, including child profiles and smart behavior such as edge length and corner based mesh construction. Besides, you are free to use Unity standard transform tools with them, moving, rotating and uniform scaling. They will remain interactive, ready for splitting and profile changing.

Poly Lasso tool actions

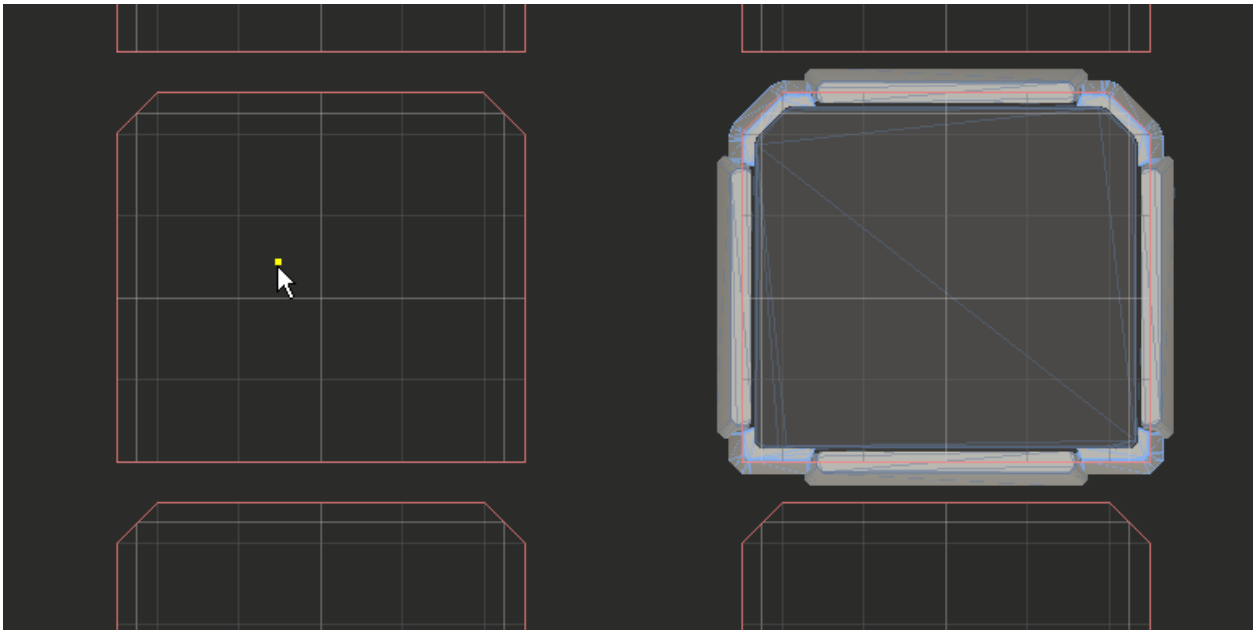
1. **Create shape point by point** (**Left Click**: Set points, **Double Click** or **Enter** after set points: Finish shape).

Basic Poly Lasso tool operation. Best used with 45-degree constraint (Hold Shift) and Snapping (active by default and can be changed with snap settings panel). By default, it tries to snap to everything: shapes of already created Poly Lasso objects, grid, UVs, which makes it flexible and convenient to use.



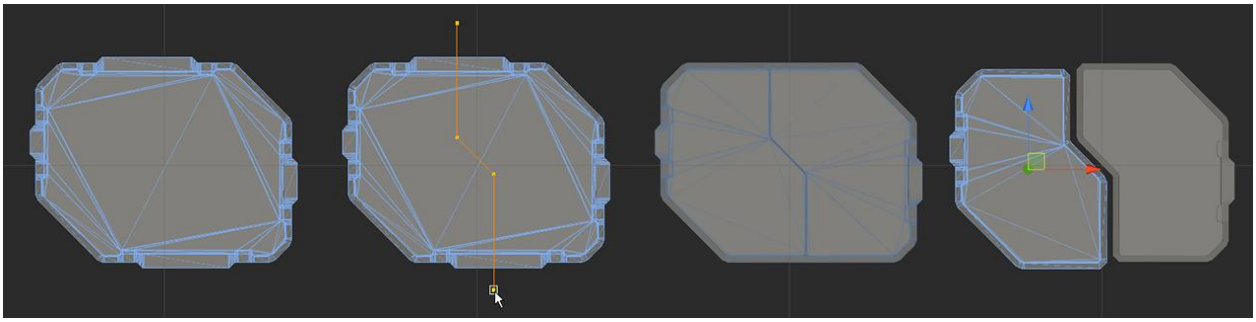
2. **Fill UV island or background** (**Double Click**).

A time saver tool for creating Poly Lasso objects, that perfectly fit UV islands. Great to use together with shrink/expand, for getting outline effects. Most of the Poly Lasso profiles designed to protrude and slope down outside the shape, creating edge padding. If it overlaps to the neighbour empty UV island, you may want to fill it too, to get perfect padding in between.

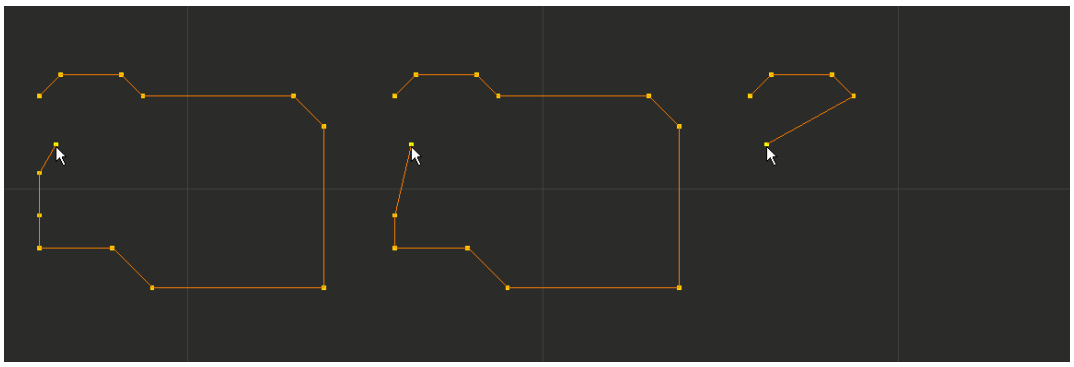


3. **Split selected Poly Lasso objects with current shape** (**Ctrl + Left Click**).

Split selected Poly Lasso objects into parts. Can be used with symmetry, multiple objects and self-crossing. Please note, as Surforge does not use shapes with holes, splitting shape must cross object's border or be snapped to it.

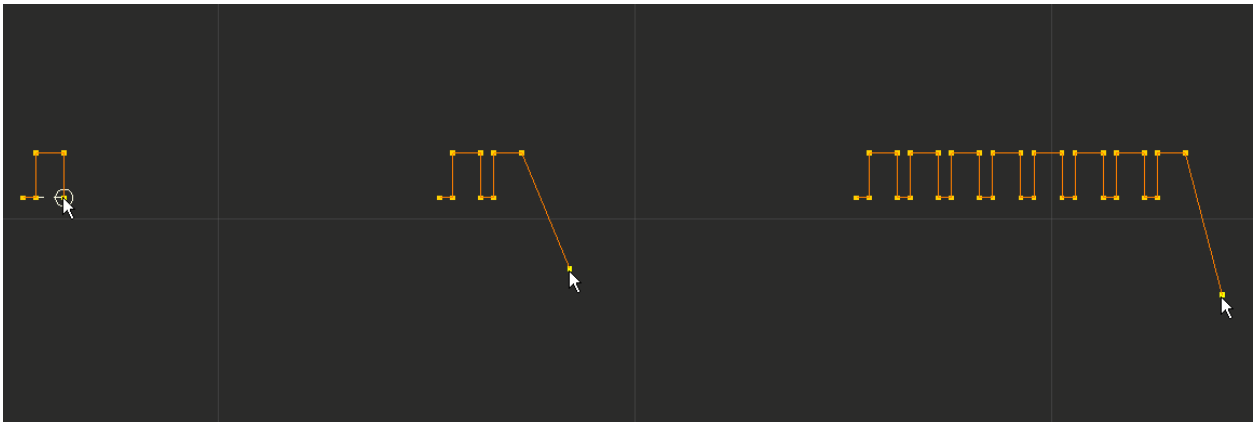


4. **Remove last point** (**Backspace**).



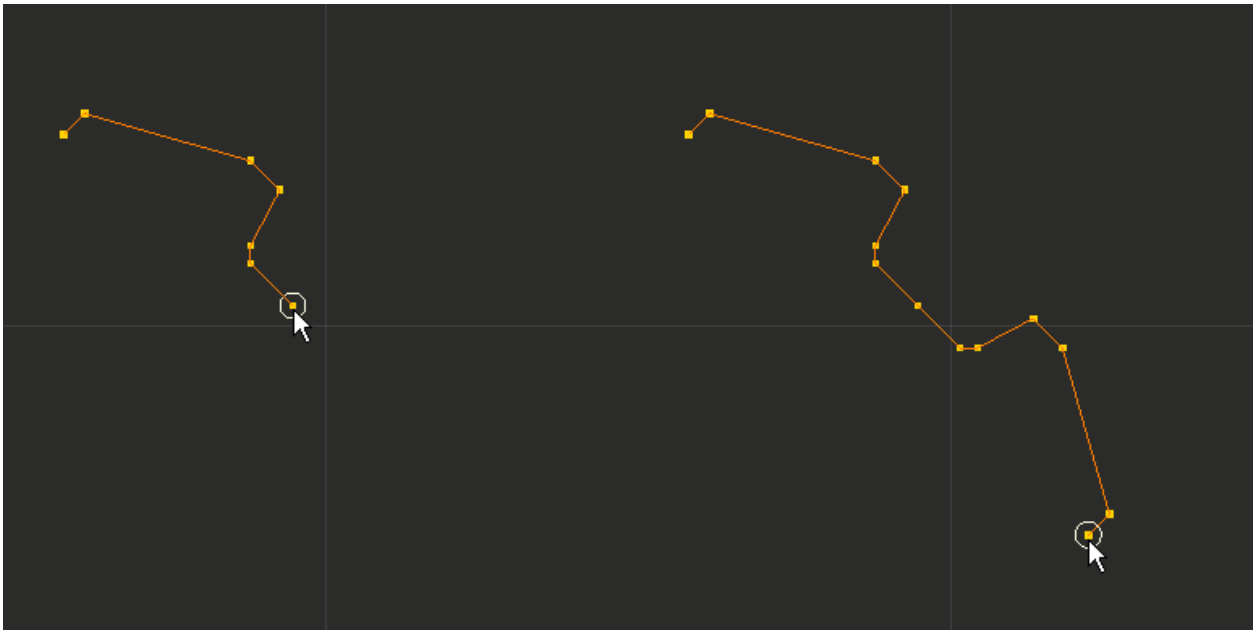
5. **Repeat shape points left to right** (**Numpad 5**).

Use to create shapes with a repeating pattern. Can create such shapes as gears, when using in Warp mode (read in detail below).



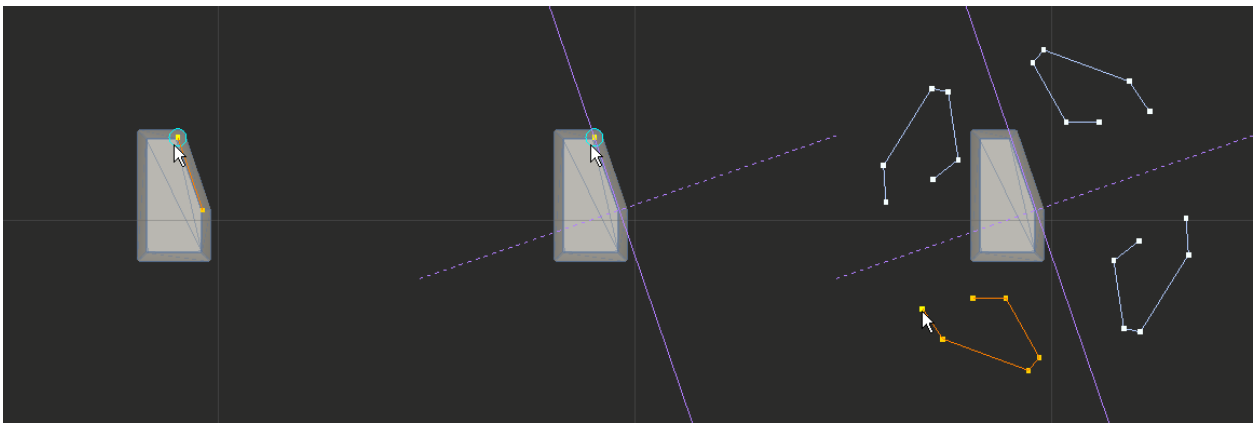
6. **Continue shape with symmetry about the last point in the numpad key direction** (**Numpad Keys**).

A symmetry on the shape creating stage. Numpad key (numpad arrow: Numpad4 for left, Numpad2 for down, etc.) sets the direction and new points added to the shape, after the last created point. Can be used in diagonal directions too.



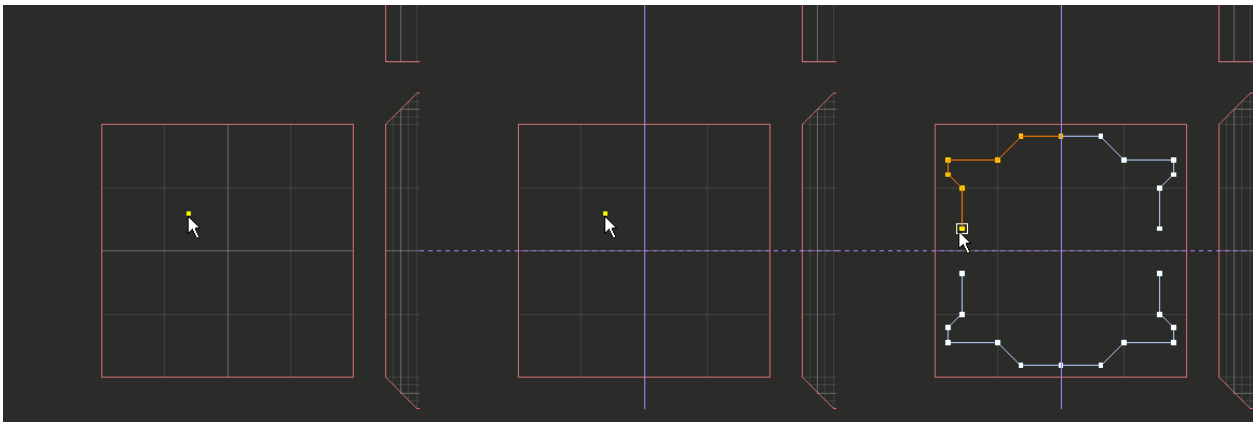
7. **Set symmetry axes** (**Left Click,** move mouse a bit, **Right Click**).

Set symmetry axes to use with Poly Lasso and Add Detail tool. Symmetry controls are above Poly Lasso profiles list (Hotkey S for toggle). You can set symmetry center (where you Left Click) and symmetry axes align (Right Click).



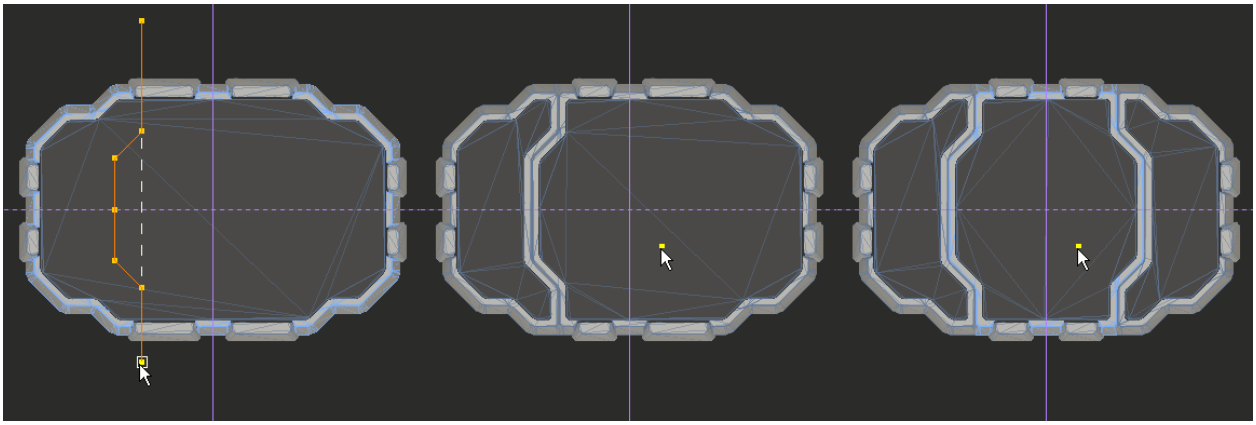
8. **Set symmetry center to UV island** (**Shift + Right Click**).

This enables the fast use of UV island based symmetry. Symmetry axes will be texture aligned, not UV island aligned (for randomly oriented UV islands you can set symmetry axes manually).



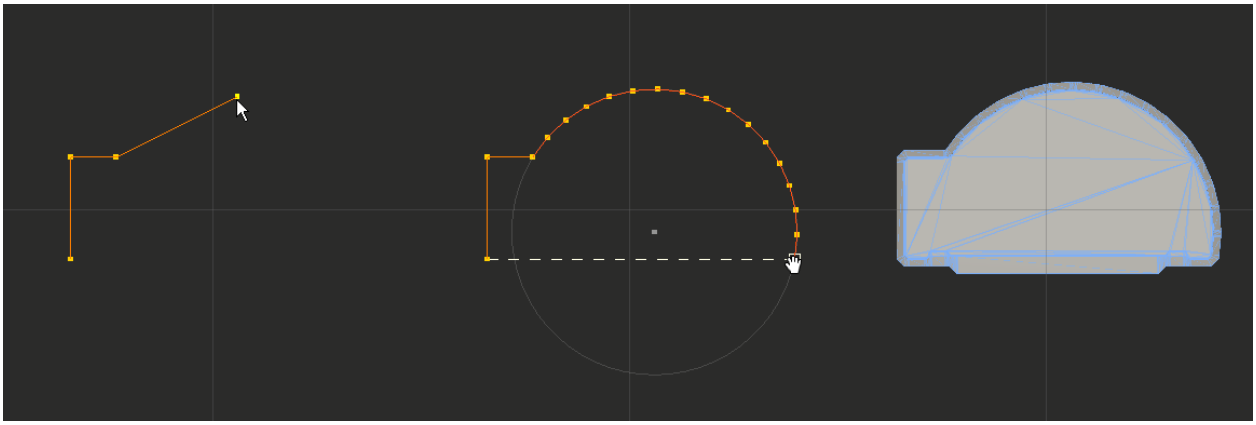
9. **Mirror last shape action over the solid line** (**Right Click**) **or the dotted line** (**Ctrl + Right Click**).

Use for fast access to symmetry (without toggling symmetry on and changing its controls). This will mirror last created shape or repeat the last split over corresponding symmetry line. Can be very handy after some practice together with setting symmetry axes on the fly.

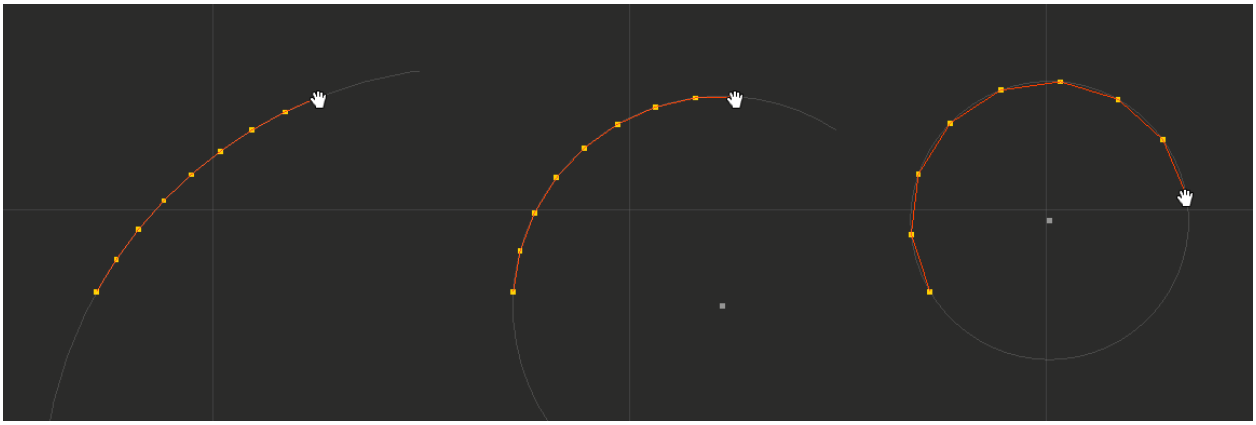


10. **Reset symmetry axes** (**Ctrl + Shift + Right Click**).
11. **Arc mode toggle** (**Ctrl + Middle Click**).

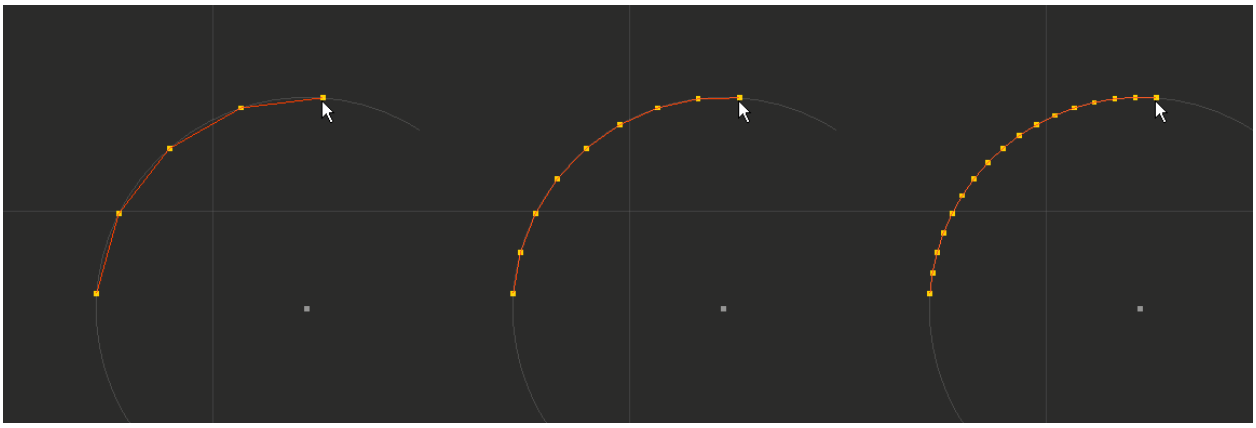
Arc tool integrated into Poly Lasso tool, for easily combine hard and rounded elements in one shape. Toggle arc mode, to transform last shape segment into an adjustable arc. Turning this mode off remembers last arc settings.



12. **Arc curvature change** (**Ctrl + Scroll**).



13. **Arc points density change** (**Ctrl + Alt + Scroll**).

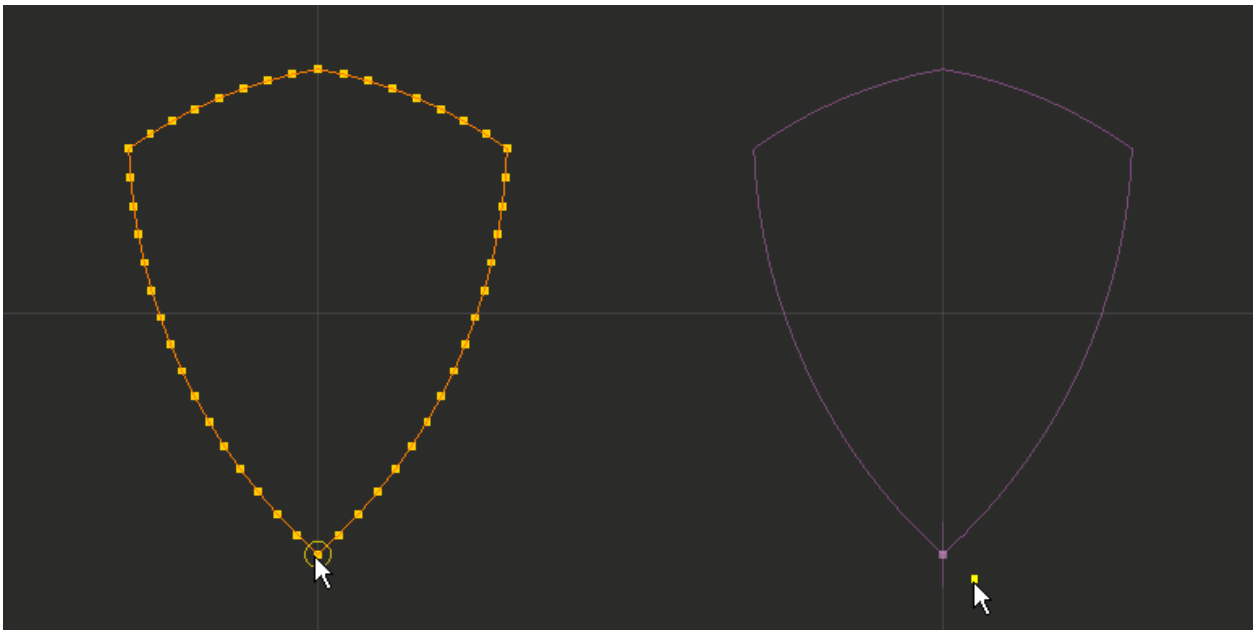


14. **Set arc curvature to 1/4 of a circle** (**Ctrl + Alt + Middle Click**).

The default arc curvature, to which you may want to revert. Also, can be used for creating circles or half-circle shapes.

15. **Set warp shape** (**Alt + Shift + Right Click**).

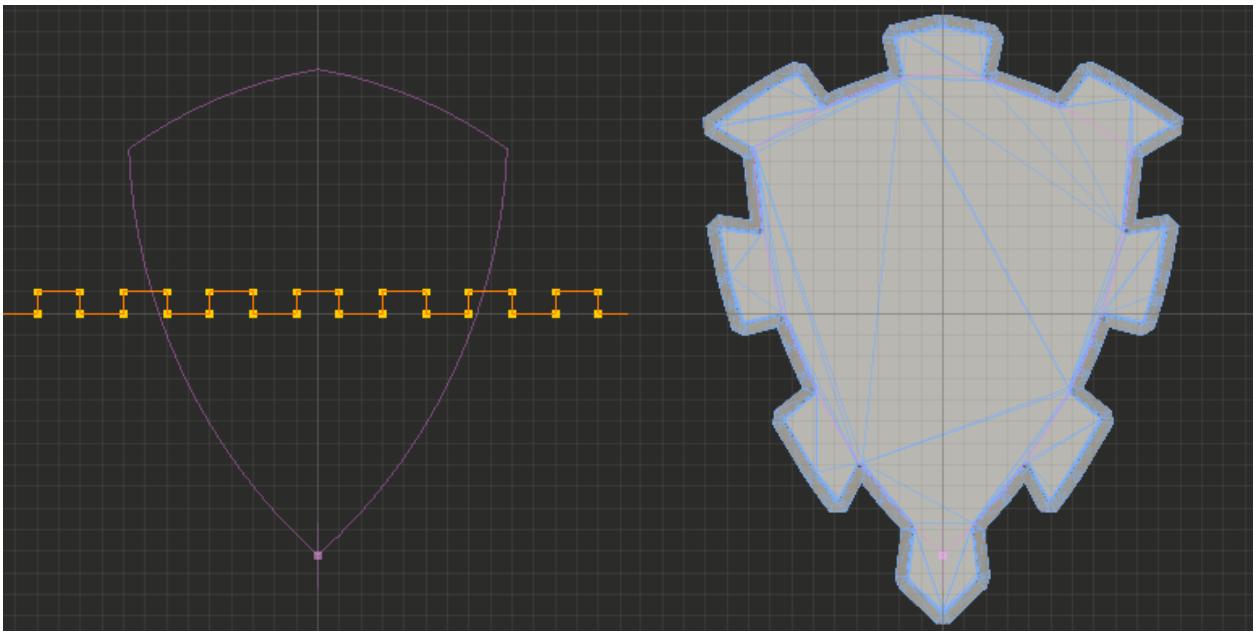
Sets up the Warp Shape for future use, from the active shape or selected Poly Lasso object. Warp Shape is like a freeform curved coordinate axes. Handy for some tricks like arranging or bending objects around other objects, creating gears from a circle and a jagged line and curved split. The best method for bending ornaments along edges of fantasy models.



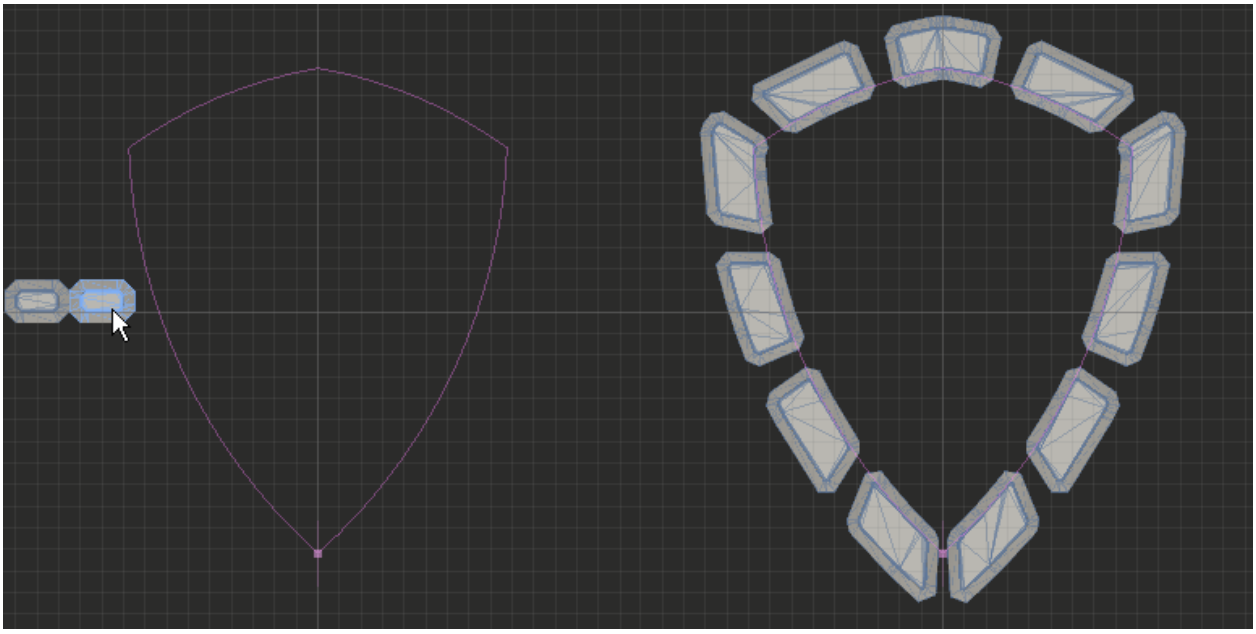
16. **Reset warp shape** (**Ctrl + Alt + Shift + Right Click**).
17. **Warp selected / Create warped shape / Repeated warp** (**Alt + Shift + Left Click**).

Perform a Poly Lasso object warp, with previously set warp shape. While Poly Lasso tool active, it will create new object, as if active shape horizontal (x) coordinate bended over warp shape, and vertical (y)

is offsetted relative to it. If shape intersects texture edges it will be scaled to match warp shape. With Poly Lasso tool inactive, it can warp already created selected Poly Lasso objects.

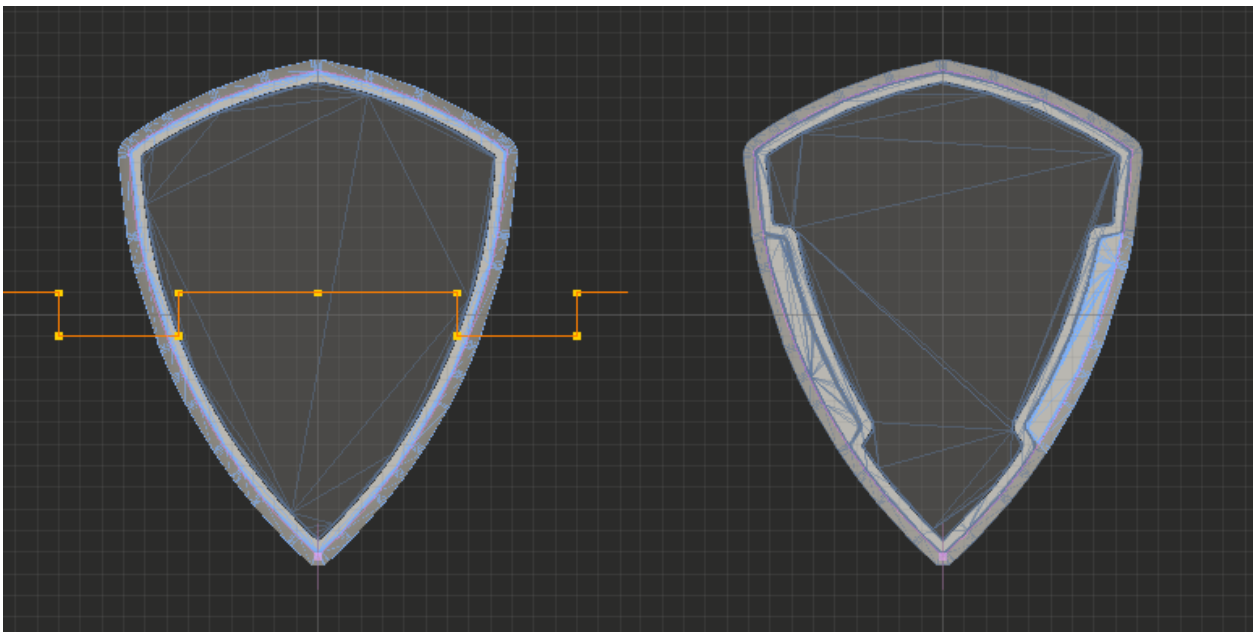


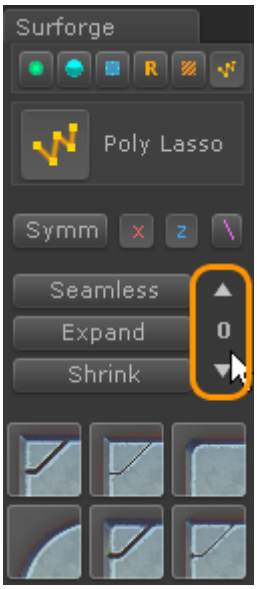
If two similar Poly Lasso objects selected, they will be repeated seamlessly over the warp shape (slightly scaled to match warp shape length entirely).



18. **Warped split** (**Ctrl + Alt + Shift + Left Click**).

As above, but splits selected Poly Lasso objects with a warped shape.





Construction plane

Poly Lasso tool and Greebles tool uses construction plane to define vertical position of objects you are creating. It allows creating multi-layered, 3d looking textures. You can quickly move it up and down with fixed step with a group of controls on the top of the tool panel. You could also move existing objects on the scene with Unity transform tools at any time.

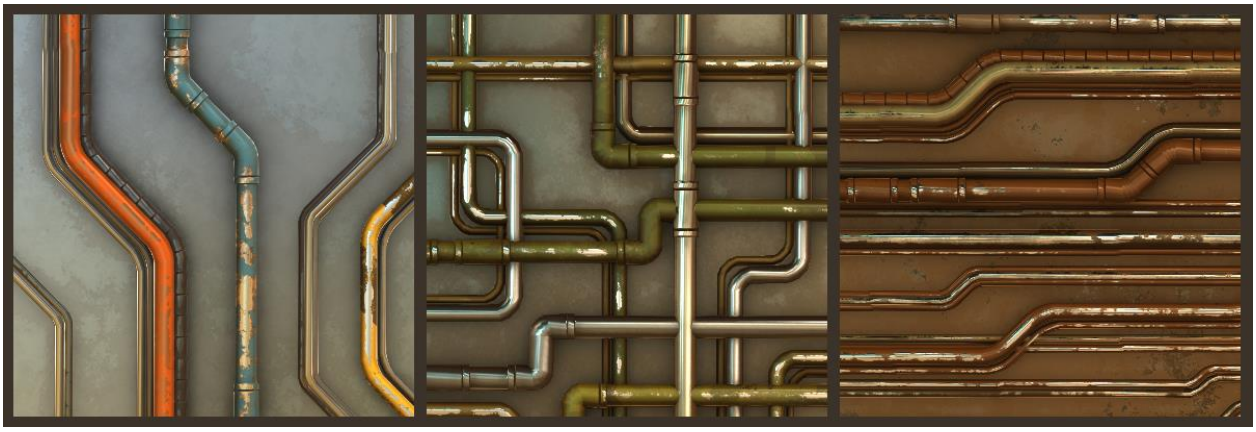
Poly Lasso profiles

When tool panel is in Poly Lasso mode, you can see the scrollable list of profile icons. With Poly Lasso tool active (hotkey A) you choose a profile for the next Poly Lasso objects you going to create. With tool inactive, clicking profile icons will change profile for currently selected existing Poly Lasso objects.

Create Poly Lasso objects, cut off the details with Split (Ctrl + Left Click), and change result pieces profiles. Try different profiles, combine it with moving objects up and down (Up Arrow, Down Arrow), copy/paste and shrink/expand (Left Arrow, Right Arrow) for getting limitless unique texture elements.

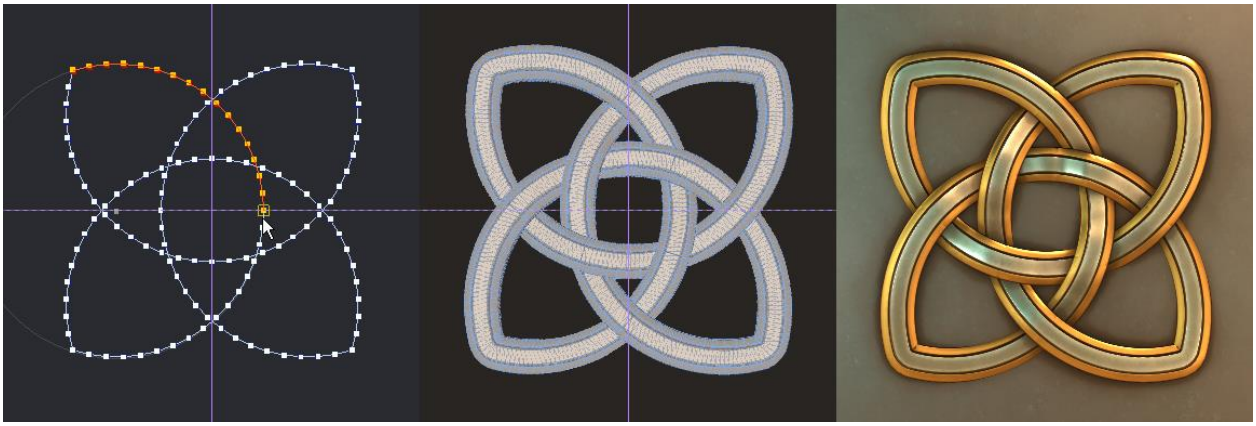
Profiles behave differently, depending on the type:

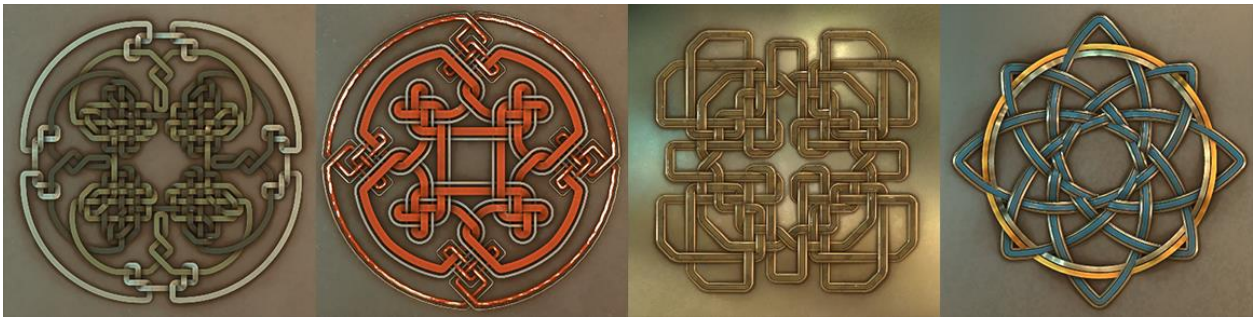
1. **Simple profiles**. A profiled extrude, sloping down on shape edge. All profiles designed to form a nice gap on the border (slight inside offset on the top and outside at the bottom). So when you split Poly Lasso object into halves, you instantly get a nice-looking gap in between.
2. **Floater profiles**. The inside-out extruded shapes. When you place it over the top of other objects, Surforge will render their normals as a negative, forming a deepening.
3. **Closed loft profiles**. A ring-shaped objects, with space inside. Designed for creating outlines and moldings.
4. **Open loft profiles**. Tubes and cables of various types, perfect for sci-fi and technical textures.



5. **Smart profiles**. Profiles with mesh detail reacting on edge length and corners.

6. **Convex hull profiles**. Form a convex hull mesh around its shape, as if is wrapped in a stretched fabric. Such profiles ignore shape horizontal insets but in result have better height volume. Used for volumetric stones, bricks, and gems.
7. **Celtic ornament profiles**. Special kind of closed loft profiles, that allows shape self-crossing and automatically form overlaps, braiding them in the Celtic ornament. Great for detailing fantasy textures.





Also, profiles can have chamfered or rounded edges, child Poly Lasso follower objects, own normal and ambient occlusion textures and built-in noise.

You could also create custom profile assets (described in detail in the relevant section).

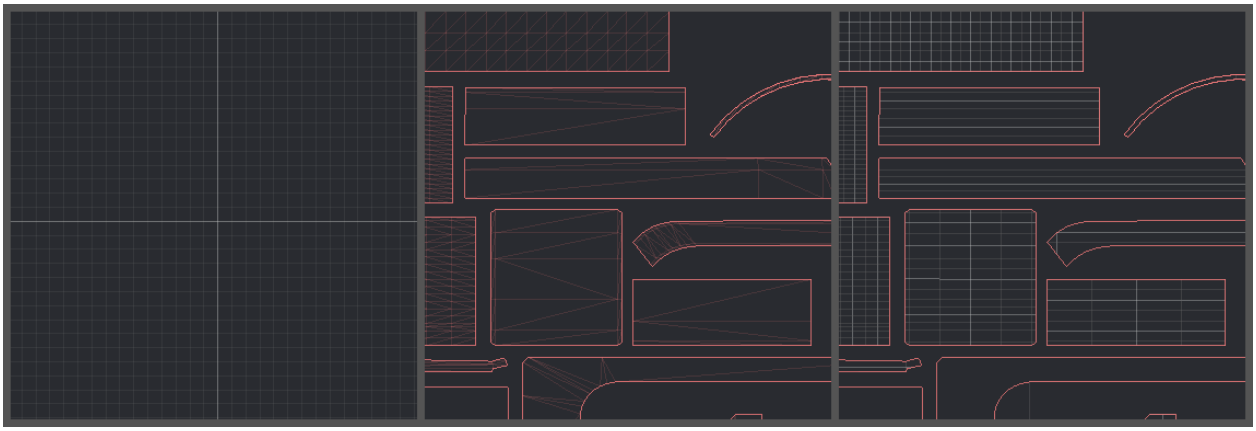
Grids

There are different grid and UVs display modes in Surforge. You can adjust it with the group of controls at the bottom of tool panel.

1. **Show grid**. This button toggles dense regular grid, hidden by default.
2. **Show UVs**. Show UVs of the currently previewing model, allowing to snap, reference, double click fill UV islands and use UV based symmetry. This mode and UV Grid mode are mutually exclusive.
3. **Show UV Grid**.

Surforge presents unique UV Grid feature (this mode is set by default). When you load a model to the texture preview, Surforge tries to construct separate grid lines for every UV island. Result grid lines will be shown instead of UV polygons lines, along with UV island borders. This is very handy for simple models with quality made symmetrical, horizontally aligned UVs - architectural objects or game level elements for example.

If UV island is complex shaped, probably no grid lines will be added to it. For models with complex and random oriented UVs just use regular UV mode instead (which is also very handy). Also please note, that UV Grid creation and UV Grid snapping can be slow for meshes with high polycount and complex UVs, use regular UV mode for such meshes.



There two more buttons on this panel:

1. **Show Actions** (off by default). With this mode on, Surforge will print the name and hotkeys of last used tool. This made basically for video lessons recording, also useful for mastering hotkeys.
2. **Show/Hide symmetry axes** toggle turned on by default.

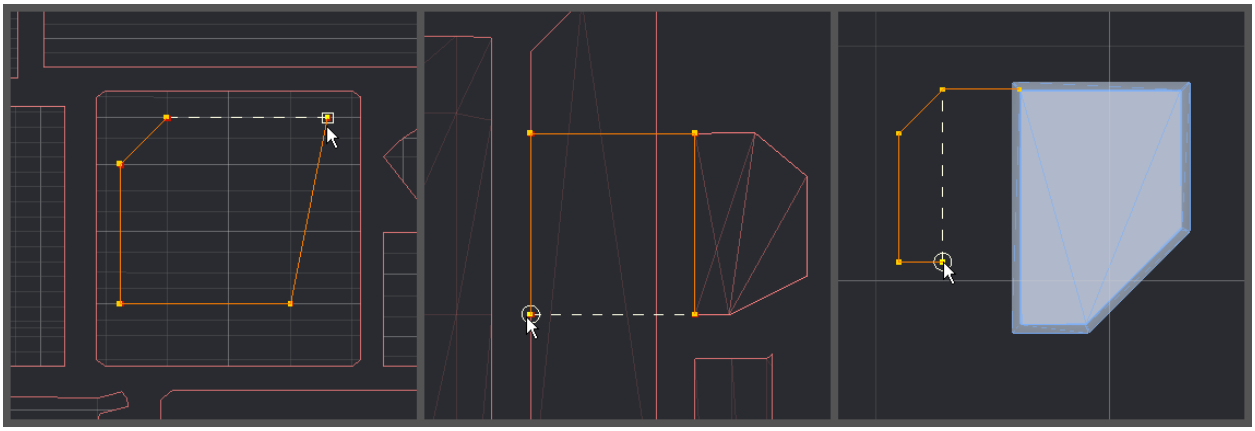
Snapping

Surforge has a powerful snapping, used with Poly Lasso tool. You can adjust it with the group of controls, at the bottom of tool panel. By default, all snap options active.

1. **Turn snapping on/off**, on by default.
2. **Snap to grid**. The mode for snapping to the dense grid, hidden by default. The grid you can see by default is the UV Grid.
3. **Snap to UVs**. This enables snapping to UV points and poly lines when regular UVs displayed, or to UV Grid lines, points and border lines while in UV Grid mode (by default). The difference is that in UV Grid mode there is no snapping to UV poly lines, UV Grid lines used instead.

Please note, UV snapping can be slow for high polycount meshes with complex UVs, you may want to turn it off for such meshes.

4. **Snap to objects**. Enables snapping to the points and lines of existing Poly Lasso objects shapes. It is also snaps to the points of Poly Lasso objects seamless instances.
5. **Snap to active shape**. Enables snapping to the shape you creating at the moment. This will react on current shape's right angles and opposite points.



Symmetry

Symmetry works with Poly Lasso and Add Detail Tool, enables easily create symmetrical textures. You can toggle it with “S” hotkey and set up with symmetry controls on the top of the tool panel while Poly Lasso or Add Detail tools active.

You can use x, y and diagonal modes or mix them together.

Symmetry axes are displayed by the violet solid and dotted lines. You can toggle symmetry axes display on/off with grid controls group, at the bottom of tool panel.

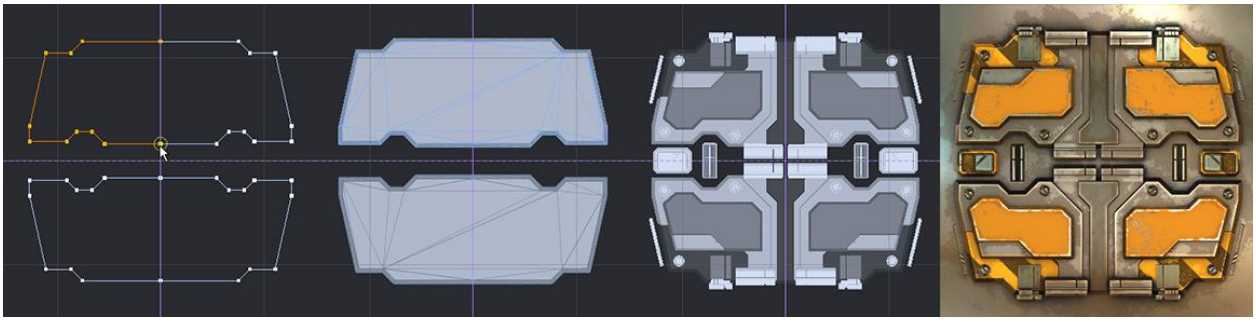
Symmetry axes are set to center of the texture by default.

You can set symmetry axes manually (Left Click, move mouse a bit, Right Click) while in Poly Lasso mode. Symmetry center set where you Left Click and symmetry axes align set with the Right Click.

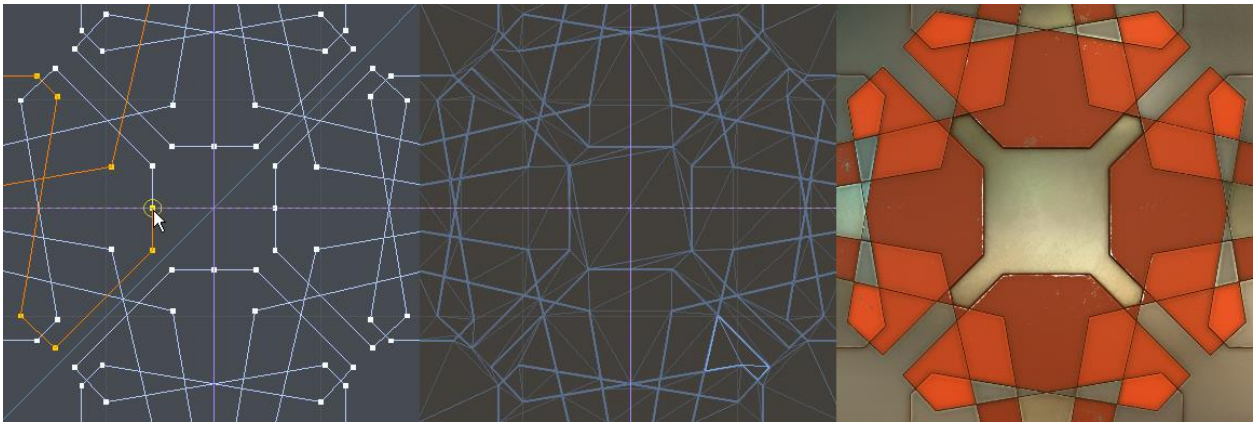
Set symmetry center to UV island (Shift + Right Click) in Poly Lasso and Add Detail tool modes. This enables fast use of UV island based symmetry. Symmetry axes will be texture aligned, not UV island aligned (for random oriented UV islands you can set symmetry axes manually).

Reset symmetry axes with (Ctrl + Shift + Right Click).

With Poly Lasso tool you can create as separate symmetrical objects (when master shape and shapes from symmetry separated). It also joins master and symmetry shape parts into one symmetrical object, if their endpoints match.



It is possible to Split multiple objects with symmetrical split shapes in Poly Lasso mode, (for example for complex symmetrical ornaments, decorative tiles and mosaics). But please keep in mind, that Splitting, being CPU intensive operation itself, with multiple objects and symmetry could lead to slow down and rarely some split errors. Also undoing complex split operations can be slow.



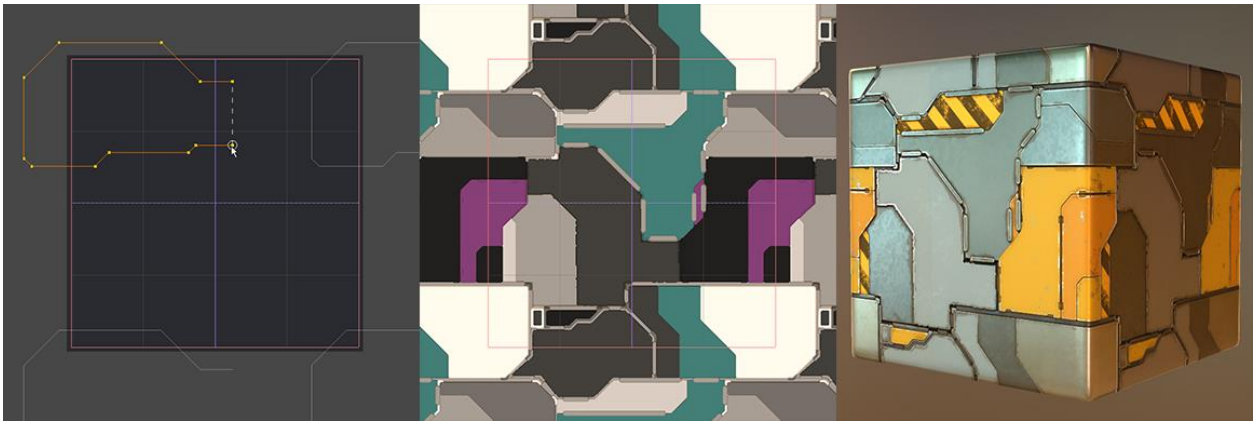
While in Poly Lasso mode, you could also use Mirror last shape action over solid line (Right Click) or dotted line (Ctrl + Right Click).

Use it for fast access to symmetry (without toggling symmetry on and changing its controls). This will mirror last created shape or repeat last split over corresponding symmetry line. Can be very handy after some practice together with setting symmetry axes on the fly.

Seamless mode

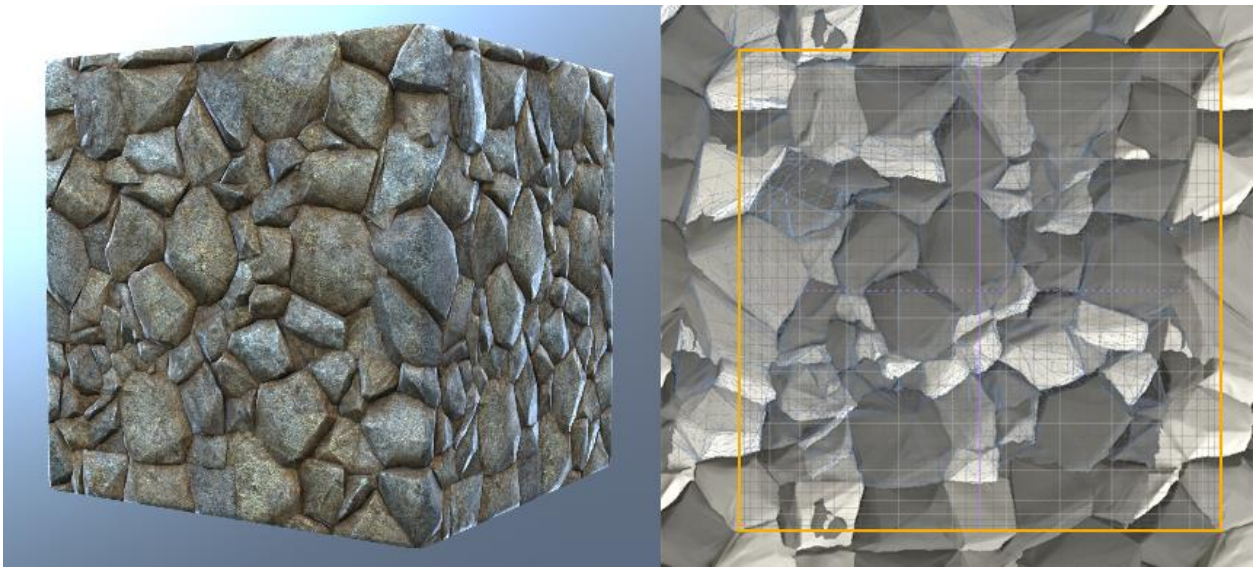
Besides 3d model texturing, you could easy create seamless square textures with Surforge, commonly used in level design.

Seamless mode works with Poly Lasso and Add Detail tool. With Seamless mode turned on, Surforge will create matching instances of all objects you create, duplicated around your texture space on the fly. The instances are connected with its master objects, updating their shapes, transforms, material masks at realtime. This enables very advanced seamless 3d mixing, allows you create stunning seamless 3d textures.



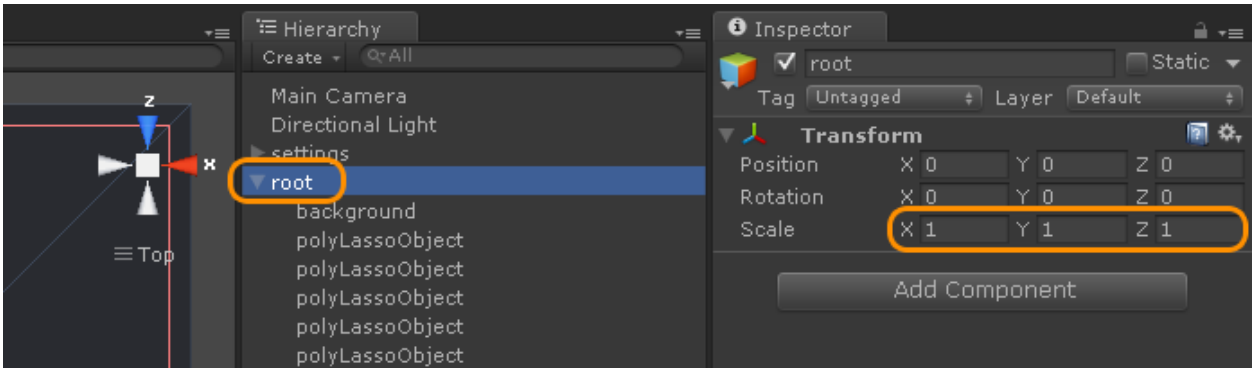
Surforge designed for the most accurate matching between master objects and instances, but rarely objects may desynchronize (Surforge not traversing complete children tree in depth in realtime for

optimal performance). It can be easily fixed with toggling Seamless mode off and on, and it's recommended before final render.



Root object and global texture scale

Poly Lasso object profiles features size set by default for best match most common game development tasks - low poly meshes with medium sized UV islands and separate rectangular textures. For complex meshes with a large surface area and small UV islands you may want to change your global texture scale, to make Poly Lasso objects features better match your model scale.



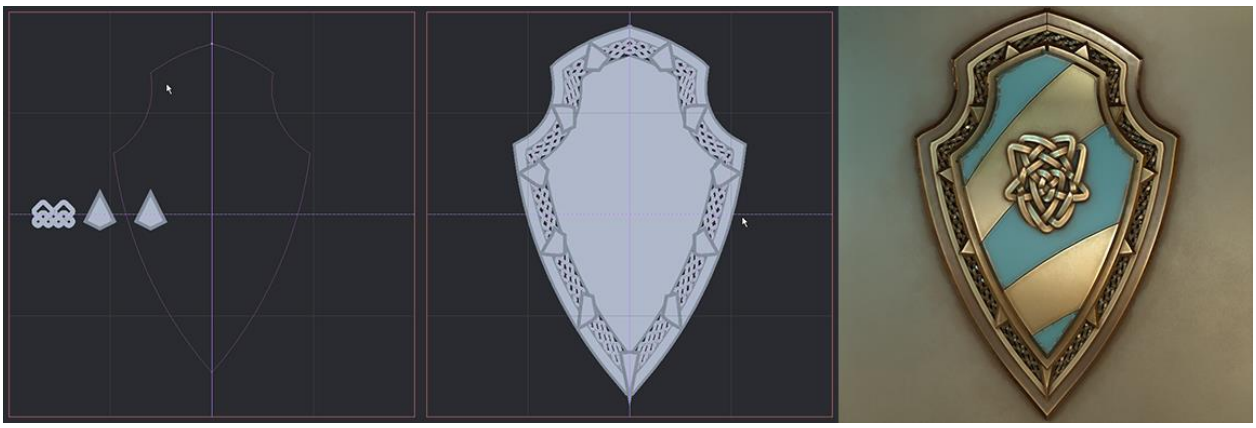
It can be easily made with uniform scaling of the Root object with Unity inspector or standard scale tool. Root object is a parent object for all Surforge created geometry, and most of Surforge tools handles it scale correctly (with the exception of Warping operations at the moment, will be improved in future versions).

You could also change Root size anytime while working on texture, together with all existing child objects. Poly Lasso objects will remain interactive, continue to handle splitting and shrink/expand correctly. This can be handy for working on extreme fine or large details.

Warping

While using Poly Lasso tool, it is possible, if desired, work with deformed coordinate space, with coordinate axes are bent around arbitrarily shape.

Warping operations used for deforming existing Poly Lasso objects, creating warped objects and arranging deformed instances of objects around other objects or desired shape. You could, for example, create a gear shaped object from a circle and a straight jagged line. Great for bending ornaments along edges of fantasy models.



How it works:

1. **Set the warp shape** (**Alt + Shift + Right Click**).

Sets up the Warp Shape for future use, from active shape or selected Poly Lasso object's. Purple shape will appear on the Scene View. It's now your horizontal (X) axis, while using Warping operations. The little perpendicular line shows the start/end point of your warped coordinate space. The vertical (Y) coordinates of the shape of the future warped object will be offsetted perpendicularly, relative to warp shape.

You could also reset warp shape (Ctrl + Alt + Shift + Right Click) at any moment or set another shape.

2. **Warp selected / Create warped shape / Repeated warp** (**Alt + Shift + Left Click**).

Perform a Poly Lasso object warp, with previously set warp shape. The action is context sensitive.

While Poly Lasso tool active, it will create a new object, using deformed coordinate system. So, if your warp shape is a circle, and your poly lasso shape is a line, you will get a circle. You will get a gear shaped object with a circle and jagged line.

If shape intersects one of texture edges in the horizontal direction, it will be scaled to match warp shape.

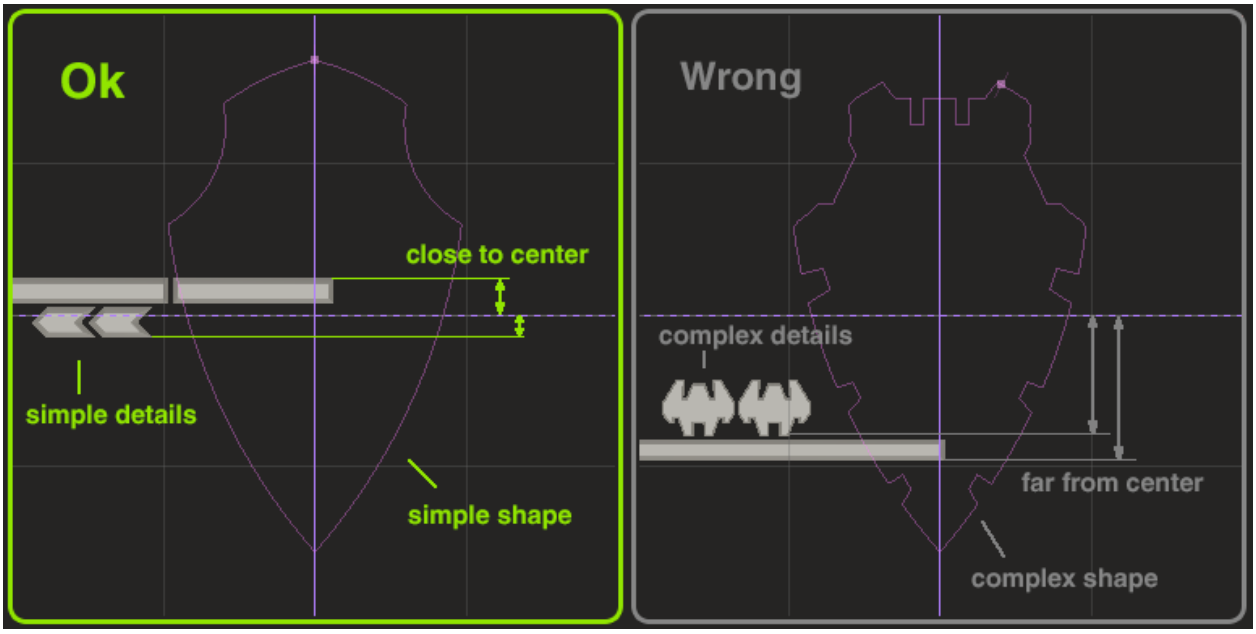
With Poly Lasso tool inactive, it can warp already created selected Poly Lasso objects.

If two similar Poly Lasso objects selected, they will be repeated seamlessly over the warp shape (slightly scaled to match warp shape length completely).

3. **Warped split** (**Ctrl + Alt + Shift + Left Click**).

As above, but splits selected Poly Lasso objects with a warped shape.

For the predictable and good results, arrange shapes, you are going to warp, near the horizontal (X) coordinate axis of your texture space. High distance between points of the shape, that you going to warp, and horizontal coordinate axis of texture space, will result in excessive offset, and probably improper warping.



Shapes, used for warping objects, may be located anywhere in the texture space, but should not be too extreme. It's good, for example, to warp ornaments along tear kite shield shaped object border, but not sharp rays star shaped object.

Add Detail tool

A texture detailing tool, with which you can easily add interesting features to your texture, making it more attractive. Actually this tool is a rich model and label kitbash library with simple and effective setting instruments. It supports symmetry and seamless modes.

Details and labels in the library are mesh based, so resolution-independent and can be scaled as much as needed. (Text titles have high resolution font and noise textures too).

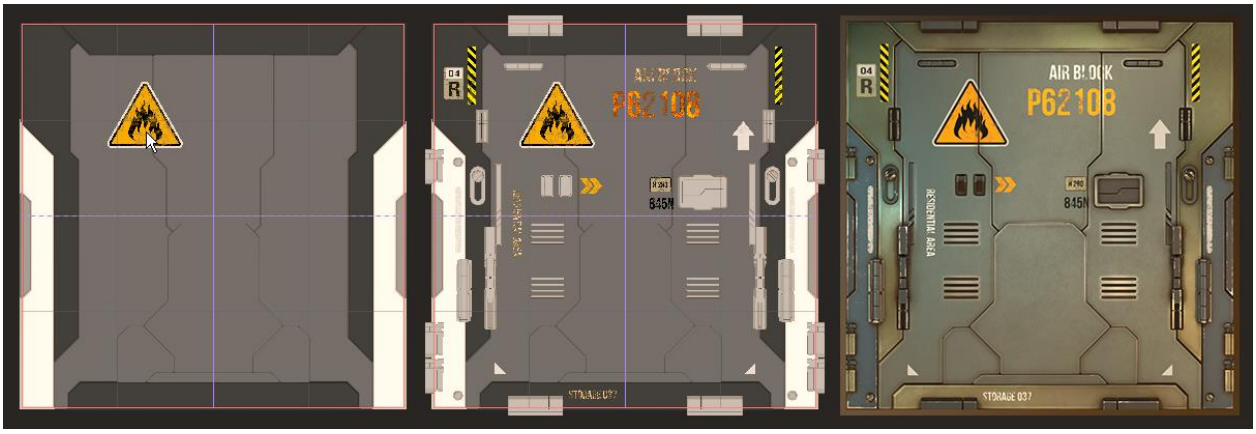
With detail tool active, simply choose the desired object from the scrollable list on the tool panel and set it to the Scene View. It works faster in Directx 9 mode, so it's recommended to use it over Directx 11.

You could also add custom Add Detail tool assets (described in detail in the relevant section).

Add Detail tool actions

1. **Set objects** (**Left Click**).

Sets the chosen object on the scene.



2. **Rotate** (**Left Button hold + drag**).

Rotates the object. The workflow is to rotate object before setting; it will not be set or keep position after rotating. While working on Surforge, different approaches were tested, and it is much more comfortable and fast than set, rotate and discover that the position does not fit.

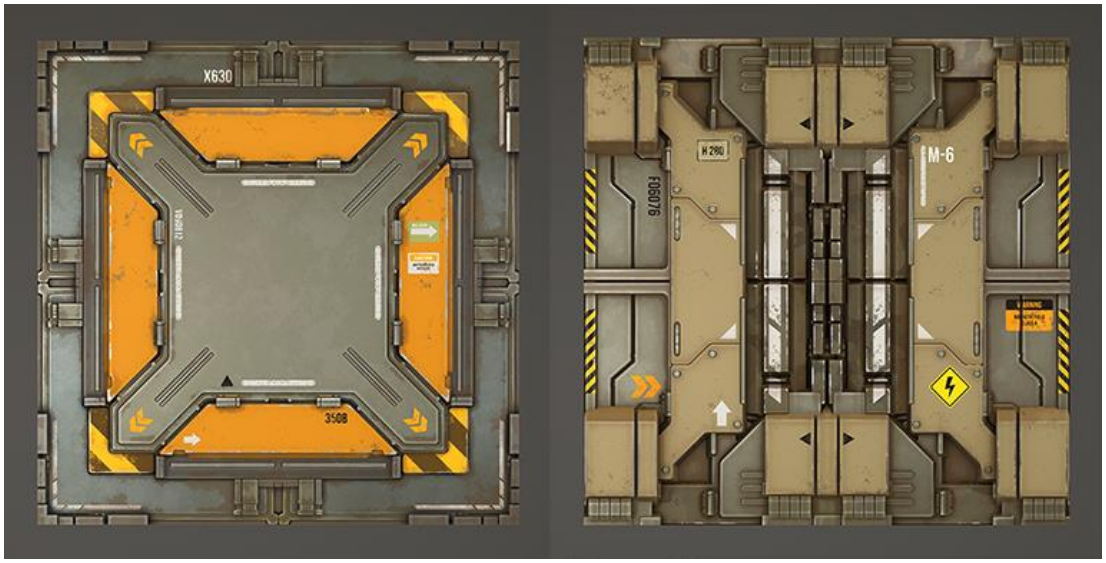
3. **Rotate and Scale** (**Left Button hold + Shift + drag**).

As above, but with scaling at the same time.

4. **Constraint Move, Rotate, Scale** (**Hold Ctrl**).
5. **Move object up and down**(**Up Arrow, Down Arrow**).
6. **Object scale increase/decrease** (**Right Arrow, Left Arrow**).
7. **Flip object or randomize text** (**Right Click**).

For objects with different variants, Right Click shuffle it. At the moment, only one asset in the library supports this - “simple rock”.

8. **Set symmetry center to UV island** (**Shift + Right Click**).
9. **Reset symmetry axes** (**Ctrl + Shift + Right Click**).



Label objects

Label objects is one of the Add Detail tool library object types. They have it's own built in mask for render, and separate specular/glossiness values. Label objects handle correctly underlying material's ambient occlusion, dirt and worn edges. For example, if a label set over the worn edge, the worn edge's underlying metal will be worn through the label too, as it should be.

Text title generator

When adding text titles to your sci-fi textures, you may want to generate its random text. Surforge save you time with a simple titles generator, removing the need of inventing and typing the title texts. Just randomize the title text with Right Button clicks, until you find something suitable. It tries to avoid the ridiculous phrases and generates random digit labels.

You can type in the text of course. Also, you can change text color and noise amount with Unity Inspector (as text titles based on Unity 3D Text object).

Render

In this mode, tool panel displays render and model preview settings, skybox controls, tools for material mask operations, screenshots taking controls and maps export.

You could render your texture with “Space” hotkey at any time without switching to this panel.

Material masks

Buttons with digits on the top of panel is for assigning material masks to selected objects and E1 and E2 buttons are for assigning emission masks. You can set material masks with numerical keys, without switching to Render panel.

Keys 1-8 stands for masks, and 9, 0 for emission masks. Objects with the same mask will have same material assigned, similar to Material ID map (which Surforge creates on the fly during the render).

Surforge handles eight material masks, two emission masks and separate render layer for labels. As Surforge material system is GPU based, this mask count is made for performance and rationality reasons. It allows to work with materials in realtime, and on the other hand, enough for the most complex texture designs.

Material mask and object tools

The controls group under the materials mask buttons used for some handy operations with material masks and vertical positions of the scene objects.

1. **Assign random Material Masks to selection**.

If no objects selected, it assigns random material masks to all objects, created with Poly Lasso and Add Detail tool. Great for making mosaic textures and finding suitable texture color design.

2. **Shift selection Material Masks.**

Shift is a slight material mask randomize: some objects get mask+1, some will not change. Great for adding some nice random to the texture color schemes. For example, you could add some errors to the mosaic texture, making it more interesting and realistic.

If no objects selected, shift material masks of all objects.

3. **Assign same Material Masks to similar objects**.

Commonly used after randomizing material masks, to make symmetrical details have the same material masks.

If no objects selected, assigns same material masks to all similar objects in the scene.

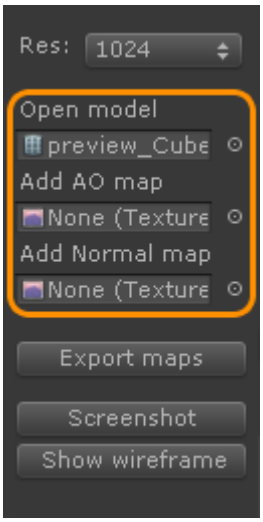
4. **Assign random vertical offset to selected PolyLasso objects**.

As above but randomizes the vertical position of the objects instead of masks. Ambient occlusion notably highlights the height of objects, so vertical offset changing is handy in some cases, stone block textures for example. Repeat several times for more notable effect if needed.

5. **Assign same vertical offset to similar PolyLasso objects**.

Render resolution

A dropdown menu for setting the resolution of the render. You can choose 1024, 2048 and 4096. While 1024 render is almost instant, 4096 takes several second to render on modern systems.



Model preview fields

Drag and drop your model here to use for the texture preview and show model's UVs on the texture workspace on the Unity Scene View. The model's UVs will be used for some amazing features such as UV island based symmetry and snapping. If the model has baked ambient occlusion or normal maps, drag and drop them to the corresponding fields, to use along with Surforge as a base. If you want to create just square texture, left the fields empty.

You could change this any time while working on your texture. If no model selected, Surforge will preview your texture on the cube.

Export maps

Albedo, Normal, Ambient Occlusion, Specular(Glossiness on alpha channel), Height and Emission maps will be saved. Drag them to Unity Standard shader fields to get exactly the same result as in Texture Preview. You could use **Ctrl + E** hotkey for it.

Screenshot taking controls

Button for capturing screenshots of the Texture Preview of your amazing works. It will be saved to Assets/Screenshots.

Show wireframe button creates the model copy with wireframe shader on the Texture Preview along with textured model (for screenshots). You can select in in hierarchy and move to the desired position. Also, this button toggles screenshot layouts.

Screenshots can be of 2 different layouts:

1. Textured model and wireframe model, with material probes on the bottom (Show wireframe is on).
2. Textured model with the maps preview at the side (Show wireframe is off).

Skybox selection

List of skyboxes for previewing your model.

Greebles tool

Greebles tool fills rectangular shaped areas with tons of randomly scattered tiny details. It is used mostly for sci-fi textures. For most other tasks, use Poly Lasso and Detail Tool instead.

Greebles tool is somewhat tricky, but incredibly powerful, and it allows you to get unique effects and stunning sci-fi texture elements.

Random greebles scattering idea is not new, and you must have seen such software, but Surforge's Greebles tool is much more advanced. The main feature of the Greebles tool is that greebles interact with each other.

The basic interaction between greebles is to avoid intersections with other nearby greebles. Some greeble sets behaves in smarter way, changing their appearance, forming borders and corners.

Greebles tool is voxel-based, so it tends to form rectangular patterns. The greebles itself are meshes, and they have (invisible on texture) voxels attached, to handle their collisions and logic.

Greebles respond to neighbor greeble objects and not react with Poly Lasso and Add Detail tool objects.

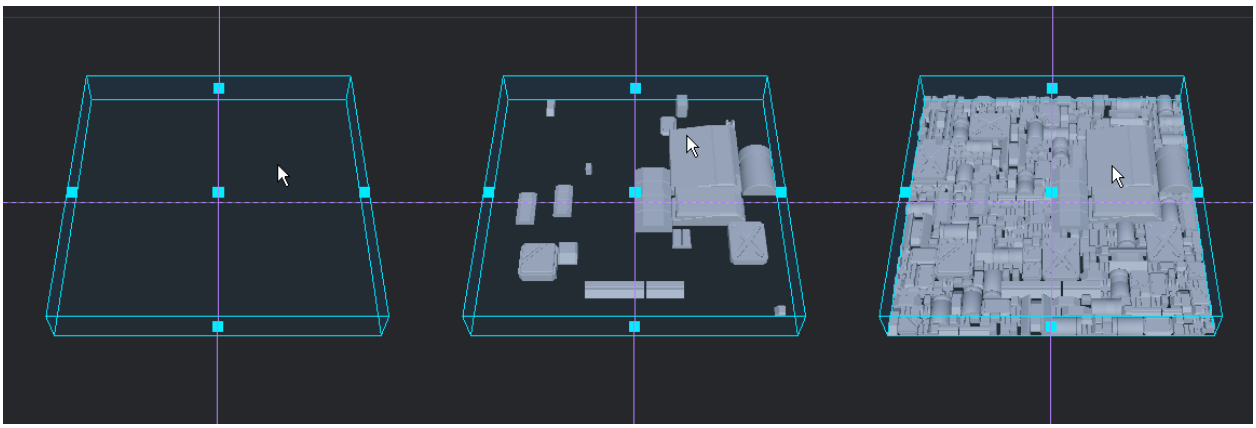
Greeble tool actions

1. **Change greebles region size** (**Drag blue squares**).

Greebles will appear only in the chosen volume, never going beyond it. Some greeble sets can interact with volume edges, forming borders or changing the direction they grow. Greebles tool works in 3d, so greebles can also grow in height, forming layered patterns, depends on the logic of chosen greeble set and available space. Greeble volume controls include height control for that, visible when you looking from the side.

2. **Scatter** (**Left Click**).

Creates greebles randomly scattered on the construction plane in the chosen volume.



3. **Grow** (**Shift + Left Click**).

Creates greebles near other greebles in the chosen volume. The grown greebles will be chosen and oriented according to the greeble set design (tubes will grow other tubes in the proper direction for example). Note, that not all greeble sets are designed for growing. If nothing happens use Scatter instead.

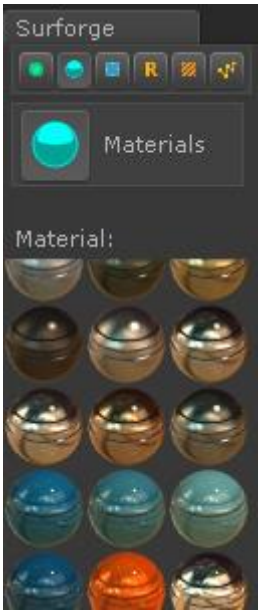
4. **Reroll** (**Right Click**).

Removes last added greebles and scatter/grow them again, randomizing their position and appearance.

5. **Remove in order** (**Shift + Right Click**).

Removes greebles in order in which they were created. Since greebles are voxel-based and stored in the octree, deleting or moving them by hand will leave their voxels in the octree and break their logic (greeble models still can be moved and rendered correctly). On this stage, it is the only proper way to remove greebles (will be improved in next versions).

Please note, that scenes with a high count of greeble objects may take a lot of disk space and require some time for saving and loading.



Materials tool

This tool mode provides access to the list of predefined materials for drag-and-dropping on the texture view.

While dragging the material to the texture view, it will realtime update texture areas under the cursor, according to object's material masks. You could drop material on the suitable area of the texture view, or move it back and choose another. This is very handy for fast finding suitable color and material design of your texture.

You could also add custom materials to this list, but it's much more convenient to create and operate not single materials, but material sets. Read about material sets in detail in texturing section.

Decals, Deform, Shatter

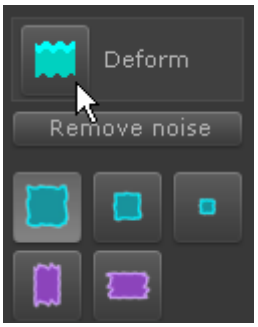
Group of 3 utility tools for using with Poly Lasso objects. Used for some special effects, such as mosaic, randomly shaped stone blocks and additional detail scattered on poly lasso objects edges.

Select one or several Poly Lasso objects, choose a desired preset from the tool's list, and press the button.

Decals tool

Scatters sets of tiny geometry around Poly Lasso object's shape or corners. Use for adding rivets at object corners, or add some random worn-looking detail on stone blocks or boards. More than one set can be added.

Remove decal button removes last added decal set from poly lasso object.



Deform tool

Deforms poly lasso object shape with chosen noise preset. You can apply only one noise preset to the object (the last chosen). Next deform button pressings randomize the result.

Remove noise button removes noise from selected poly lasso objects.

Shatter tool

Shatters selected poly lasso objects into several parts. Great for making mosaics and stonework textures. You may want to use it with the "convex stone" poly lasso profile and the deform tool.

There are a simple preset, and several Voronoi patterns of different density. High-density shatter applied to large objects could take some time.

Texture Preview

The viewport for the previewing your texture on the selected model, fast switching between materials in the set, materials drag-and-drop, copy/pasting and swapping materials.

For changing the model, used for texture previewing, select Render toolbar and drag desired mesh into “Open model” field.

Texture preview navigation:

1. **Reset camera** (**Double Click**).

Resets the Texture Preview camera to the default position.

2. **Rotate** (**Left Button**).
3. **Pan** (**Middle Button**).
4. **Zoom** (**Scroll or Alt + Right Button**).

Could also be used with holding Alt key, for matching Unity viewport navigation controls.

5. **Select material under cursor** (**Ctrl**).

Sets the material of the texture area under the cursor as currently selected material. Selected material’s properties are displayed in the Material Editor and are ready for tweaking. You could also select the material with dropdown menu on the top of Material Editor.

6. **Copy material under the cursor** (**Ctrl + C**).
7. **Paste material under the cursor** (**Ctrl + V**).
8. **Swap material under the cursor with last copied** (**Ctrl + X**).

Handy actions for arranging your materials within the material set.

9. **Cycle material under cursor** (**Ctrl + Scroll**).

Changes the material of the texture area under the cursor for the different materials from the other material sets, in a cycle. Great for fast finding color and material scheme for your texture. You could cycle through different material variants in real time.

10. **Cycle dirts** (**Shift + Scroll**).

Changes the dirt settings of the current material set for dirt settings, taken from other material set, in a cycle. Great for fast choosing suitable dirt style for your texture.

Surforge material system

Surforge is using powerful, GPU based, highly customizable material system. It is, in fact, a complex advanced shader, with a lot of parameters for tweaking and some wonderful built-in features.

One of the main Surforge's features, as being shader based, all its material operations work in real-time.

This refers to a fully real-time, unlike a "just fast". It enables variants finding with a mouse scroller, or realtime drag-and-drop results previewing, for example.

In comparison with the classical approach, it's just magical. Whereas before, you had to wait for the results of your changes to apply, in Surforge you may have already found a suitable material solution, simply by scrolling a couple of dozen variants.

Material sets

For optimal productivity, Surforge operates with Material Sets. Material Set is a group of 8 materials, used with corresponding material masks, assigned to scene objects. Besides working with separate materials, Surforge allows to instantly change between whole Material Sets, for fast finding suitable color schemes or working on multiple texture variants at the same time.

Along with 8 materials, each Material Set includes 2 emission materials, 2 separate dirt layers and a group of global controls, affecting all the materials in the set at once.

Material sets store the materials itself, not links to the materials.

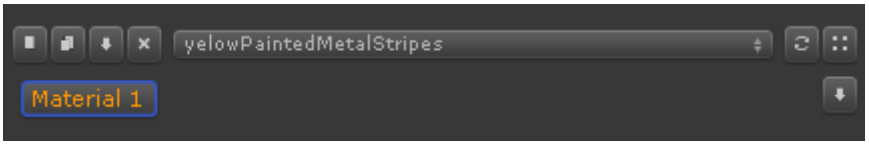
Materials

Each separate material has its own properties, such as albedo, specular and glossiness settings, worn edges settings and two separate paint layers.

Material Editor

Switch between materials in the set and tweak any material aspects here, such as specular/glossiness, worn edges, paint layers, dirt, etc.

The drop down menu on the top is used for switching between different material sets, allows to work on different color schemes at the same time, or quickly find suitable predefined material set for future editing.



Also, while dropdown not open, you could fast scroll it with a mouse scroller. Right click it to rename selected material set.

The second dropdown menu allows switching between materials within the set, along with emission, dirt and adjustments groups of controls of the currently selected Material Set. You could quickly switch between materials within the set by hovering the mouse pointer over the corresponding texture area and pressing Ctrl hotkey.

There are several utility buttons in the top area of the material editor:

1. **New material set**.

Creates a new material set, added to the material sets dropdown menu. Material sets are saved with the scene, allows you to have as many material variants of your texture as needed.

2. **Duplicate material set**.

Creates a copy of currently active material set. Very handy for testing different design variants and for creating backups of your work stages just within one scene.

3. **Save material set**.

Save custom material set to Assets/CustomPresets/MaterialSets/ folder. The existing custom preset with the same name will be updated (overwritten), so assign your custom presets appropriate names. Saved custom sets will appear next time you start to work on the new texture, along with default material sets.

4. **Delete material set**.

Delete material set from the current scene. It doesn't remove the default or saved custom presets from the disc. They will appear again in the new scene.

5. **Swap materials**.

Swap materials in this set randomly. Great for finding suitable material layouts.

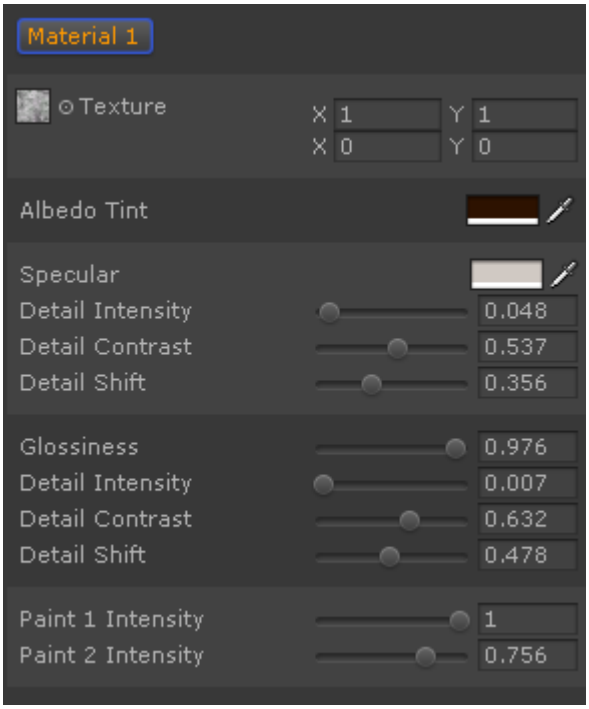
6. **Randomize materials**.

Assign random material from a random set for every material in this set.

7. **Save current material**.

Save currently selected material (not entre set) to Assets/CustomPresets/Materials/ folder. You could then add these materials to the Materials tool panel for drag and dropping.

Material Set properties



Selected material properties

The properties of the currently selected material, one of 8 available in the set.

1. **Texture**.

RGB texture for albedo and source for specular and glossiness detail extraction. Custom texture can be selected, and it has the tiling and offset properties.

2. **Albedo tint**.
3. **Specular tint**.

Sets the color tint of the specular of the material. Also, sets material specular base intensity.

4. **Specular detail intensity**.

Controls the intensity of the specular details, extracted from the texture.

5. **Specular detail contrast**.

At 0.5 it has the maximum value and inverts the specular detail map. Value range 0 to 0.5 is for contrast intensity and 0.5 to 1 for inverted map contrast intensity. This allows to obtain a wide range of specular map details, extracted from main texture.

6. **Specular detail shift**.

Along with contrast, this slider controls the range of extracted texture detail to be used for specular. Tweaking the value will change specular detail map features size and shape.

7. **Glossiness**.

The value of material's base glossiness.

8. **Glossiness detail intensity**.

Controls the intensity of the glossiness details, extracted from the texture.

9. **Glossiness detail contrast**.

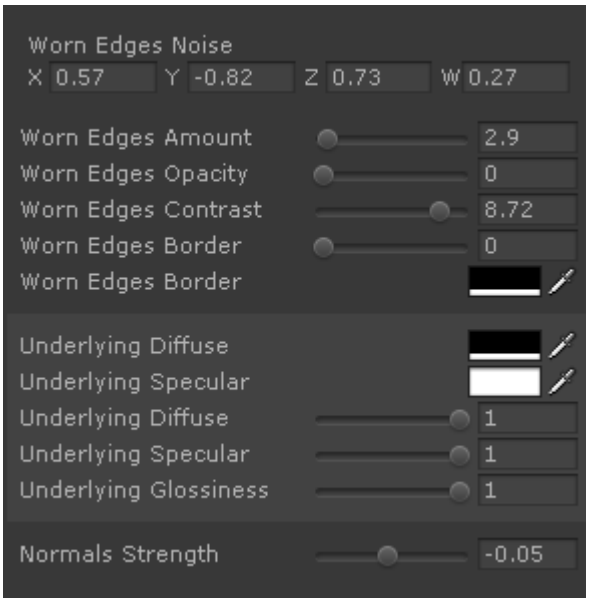
At 0.5 it has the maximum value and inverts the glossiness detail map. Value range 0 to 0.5 is for contrast intensity and 0.5 to 1 for inverted map contrast intensity.

10. **Glossiness detail shift**.

Along with contrast, this slider controls the range of extracted texture detail to be used for glossiness. Tweaking the value will change glossiness detail map features size and shape.

11. **Paint intensity 1 and 2.**

Controls the transparency of 2 paint layers on the top of the material base. Paint layers controls are located below, and include mask and separate specular/glossiness settings. Can be used for paint with high opacity, or for adding more details to the texture, while partially transparent.



12. Worn edges noise.

Controls the noise, used for worn edges. Edit XYZW to get the unique noise. 0,0,0,1 solid color with no noise. 0,0,0,0 fully transparent, the edges will not be seen.

13. Worn edges amount.

The amount of worn edges effect. Higher values make contrast parts of the normal map use separate (underlying) material settings. Usually used with painted materials, to make edges looking grated through to the metal. Also, a slight amount of this effect makes almost any material to looks better and more realistic.

14. Worn edges opacity.

Controls the opacity of worn edges, while previous amount slider controls the size of the effect.

15. Worn edges contrast.

Controls whether worn edges borders are sharp or blurred.

16. Worn edges border amount and color.

Used for make worn edges border to be more pronounced and have a different color. Old worn materials, such as aged paint usually have this effect.

17. Underlying diffuse, specular and glossiness controls.

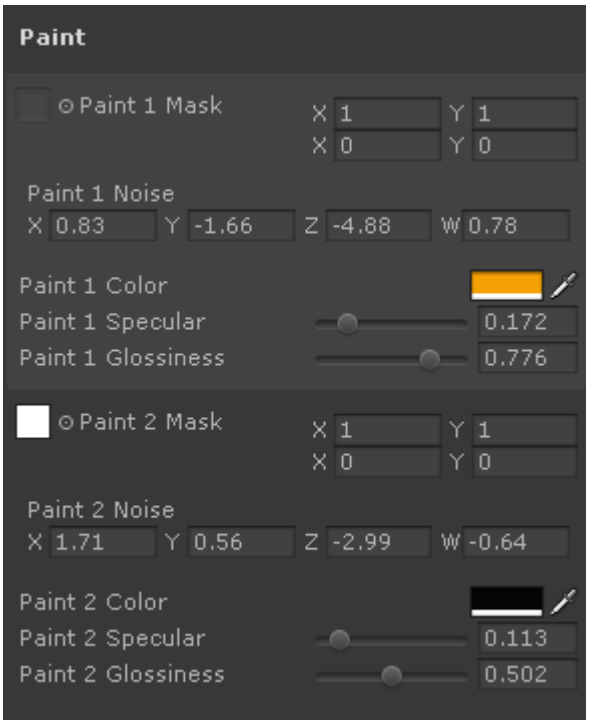
Controls of the material, that seen through worn edges. You may want to leave it's specular and glossiness values high, while keeping diffuse color black, for metallic looking worn edges. You could also set this controls to the slightly different version of your main material, for imitating aged wood or stone, for example.

18. Normals strength.

This value adds tiny normal detail, extracted from material texture, to the base normal map, rendered by Surforge. Can be used for scratches or some rough material surfaces. It is possible to extracts only tiny detail at the moment. More normal strength controls for texture detail of different frequency will be added in future versions.

Paint layers controls

Each material has two separate paint layers, that can be used one over another, or mixed with paint intensity sliders.



1. **Paint mask texture.**

RGB texture for using as a paint layer mask, to determine which parts of the material are covered with paint. Has it's own tiling and offset controls.

2. **Paint noise.**

Controls the noise, applied to the paint mask. You may want to use it for the worn paint effect. Mix XYZW to get the unique noise. 0,0,0,0 values are for solid paint without noise.

3. **Paint color, specular and glossiness controls.**

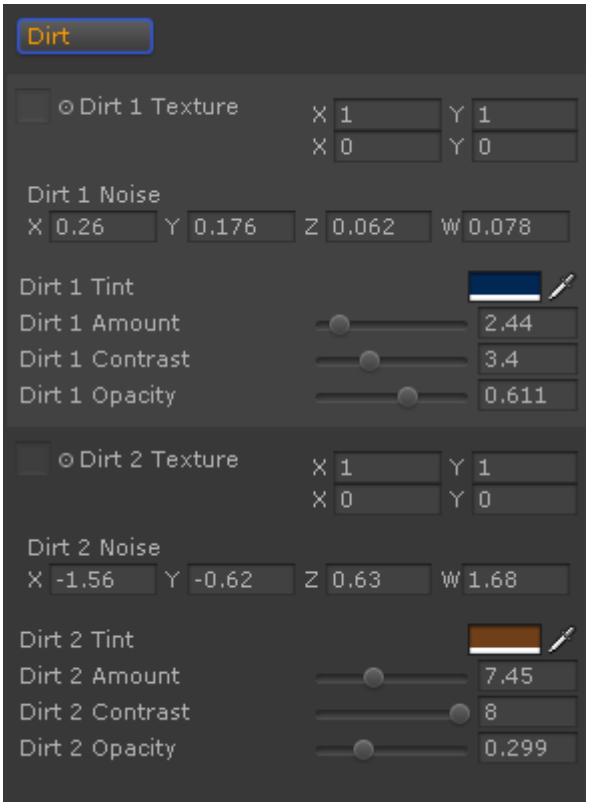
Material properties of the paint layer.

Dirt Controls

Controls group for changing the dirt settings of the whole Material Set. There are 2 separate dirt layers, applied to all materials in the set. By combining dirt layers with different settings, you can get different interesting effects.

You can mix them to make low and high frequency dirt to alter or blend them together. For example, you can make contrast dark rust in the surface cavities mixed with less opaque dust on the large deepening areas.

As dirt is used for all materials in the set at the same time, it designed to have zero specular and glossiness. Dirt blends to the material's specular and glossiness values, depending on the dirt layer opacity and contrast.



1. **Dirt noise.**

Mix XYZW to get unique noise. 0,0,0,0 no dirt, 0,0,0,1 solid dirt with no noise.

2. **Dirt tint.**

The color of the dirt layer.

3. **Dirt amount.**

Sets the size of the dirt covered regions. Increase this value to make the dirt expand from the cavities to the flat areas.

4. **Dirt contrast.**

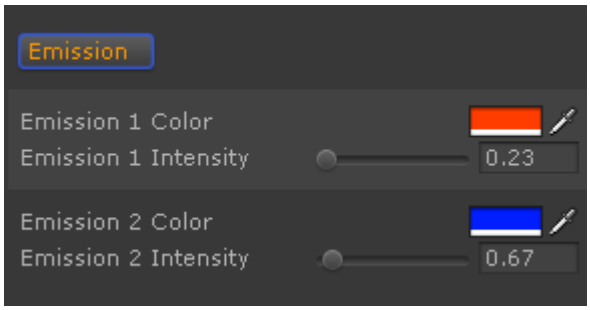
Sets the contrast of the dirt region and noise features borders.

5. **Dirt opacity.**

The opacity of the dirt layer.

Emission Controls

Controls the emission color and intensity of the texture areas with emission masks assigned. You can use two separate emission masks with different emission settings. When rendering the texture, Surforge also applies texture baked glow around emission areas. This glow depends on the emission intensity set, and could be tweaked in realtime.



1. **Emission color.**

2. **Emission intensity.**

Adjustments

A group of controls, that applied to all materials in the set at once. Use it for the final polish of your texture.

1. **Specular min/max.**

Global specular adjust. Sets the limits for all materials specular value, that will never be exceeded. Handy for the final tweaking of the whole material set. Also, lowering the max value can be useful to reduce specular flickering.

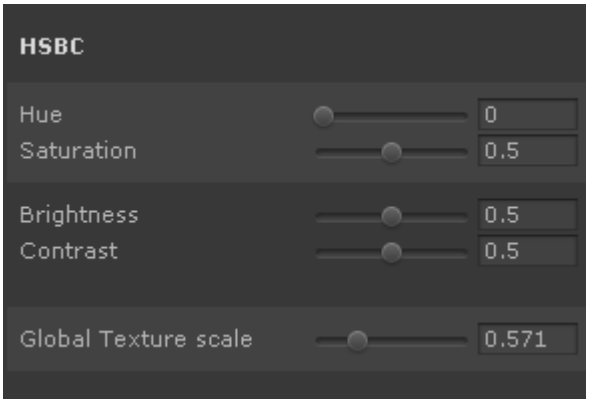
2. **Glossiness min/max.**

Global glossiness adjust. Lowering the max value could also reduce specular flickering in some cases.

3. **Levels controls.**

Similar to the Levels adjustment layer in Photoshop. Includes Gamma, min/max input and min/max output. When carefully tuned, it may significantly improve the appearance of your texture. Also, it allows you to exclude the texture post-processing in external applications from the pipeline.

For the general cases, you may want to slightly increase the gamma along with min input, to make the texture more pronounced.



4. **HSBC.**

Hue, Saturation, Brightness and Contrast tuning, similar to Photoshop. Can be handy in some cases.

5. **Global texture scale.**

Controls the scale of the noise, used in materials. You may decrease this value when working with textures of large scale (a model with large surface area and small UV islands). This makes noise based material effects better fit the scale of your texture.

Hotkeys

For keeping interface simple and ensuring efficiency, Surforge is highly focused on hotkeys usage. It also remaps couple of Unity original hotkeys, while Surforge window is open (numerical keys, arrows and space). All hotkeys are listed in the tooltips when you hover over tool buttons. Also, with “Show Actions” mode active, using a tool will display it’s hotkey (if it has one) at the bottom of the Scene View.

Complete list of Surforge keyboard shortcuts:

General

Space: Render.

A: Poly Lasso tool.

D: Add Detail tool.

G: Greebles tool.

Esc: Exit current tool.

S: Toggle Symmetry.

Numerical 1-8: Assign material mask to selected objects.

Numerical 9, 0: Assign emission mask to selected objects.

Shift + Numerical 1-8: Assign material mask to selection and similar objects.

Shift + Numerical 9, 0: Assign emission mask to selection and similar objects.

Shift + S: Select similar objects.

Shift + M: Select objects with the same material mask.

Up Arrow, Down Arrow: Move selected objects up and down.

Right Arrow, Left Arrow: Selected objects scale (offset for Poly Lasso objects) increase/decrease.

Ctrl + E: Export maps

Texture Preview

Double Click: Reset camera.

Left Button: Rotate.

Middle Button: Pan.

Scroll or Alt + Right Button: Zoom.

Ctrl: Select material under the cursor.

Ctrl + C: Copy material under the cursor.

Ctrl + V: Paste material under the cursor.

Ctrl + X: Swap material under the cursor with last copied.

Ctrl + Scroll: Cycle material under the cursor.

Shift + Scroll: Cycle dirts.

Poly Lasso tool (A)

Left Click: Set points.

Double Click or Enter after set points: Finish shape.

Double Click: Fill UV island or background.

Ctrl + Left Click: Split selected with current shape.

Backspace: Remove last point.

Hold Shift: Snap to 45 degrees.

Numpad 5: Repeat shape points left to right.

Numpad Keys: Continue shape with symmetry about the last point in the numpad key direction.

Left Click, move, Right Click: Set symmetry axes.

Shift + Right Click: Set symmetry center to UV island.

Right Click: Mirror last shape action (solid line).

Ctrl + Right Click: Mirror last shape action (dotted line).

Ctrl + Shift + Right Click: Reset symmetry axes.

Ctrl + Middle Click: Arc mode toggle.

Ctrl + Scroll: Arc curvature change.

Ctrl + Alt + Scroll: Arc points density change.

Ctrl + Alt + Middle Click: Set arc curvature to 1/4 circle.

Alt + Shift + Right Click: Set warp shape.

Ctrl + Alt + Shift + Right Click: Reset warp shape.

Alt + Shift + Left Click: Warp selected / Create warped shape / Repeated warp (if 2 similar Poly Lasso objects selected).

Ctrl + Alt + Shift + Left Click: Warped split.

Esc or A: exit tool.

Add Detail Tool (D)

Left Click: Set objects.

Left Button + drag: Rotate.

Left Button + Shift + drag: Rotate and Scale.

Hold Ctrl: Constraint Move, Rotate, Scale.

Up Arrow, Down Arrow: Move object up and down.

Right Arrow, Left Arrow: Object scale increase / decrease.

Right Click: Flip object or randomize text.

Shift + Right Click: Set symmetry center to UV island.

Ctrl + Shift + Right Click: Reset symmetry axes.

Esc or D: exit tool.

Greebles Tool(G)

Left Click: Scatter.

Shift + Left Click: Grow.

Right Click: Reroll.

Shift + Right Click: Remove in order.

Some useful hints

A few tips that may improve your workflow:

1. General-to-specific. It is more productive to first create the overall layout of the texture, and then add details.

2. Provide rest areas for the eye. Although Surforge allows you to fill the texture with details lightning fast, it is good to keep some texture areas simple. Also in the real world, small details tend to surround the larger ones, rarely appear in the middle of the empty space.

3. Switch between different skyboxes while working. This allows you to get a more accurate idea of the properties of your material.

4. It is much easier to texture a model with high-quality UVs. Use stacked, carefully aligned, perfectly symmetrical UV islands if possible. Surforge has many tools related to UV islands, which speed up your workflow.

5. Surforge allows instant switching between material sets and work on multiple material sets at once, so use it. Try different color schemes, rather than investing all efforts in one. Scroll through material sets, shuffle materials in the set, use duplicate material set button to create a copy of perspective variants. You could switch between them at any time, compare and choose the best.

6. The combination of copy/paste, move up and shrink poly lasso objects is very effective. Just with a combination of Ctrl+C/Ctrl+V, several pressings of Up Arrow and Left Arrow hotkeys you can get nice looking border effects. Cutting of the detail with Split tool and changing vertical position of result parts is also very effective.

7. For adding impressive details to the sci-fi textures, fill some rectangular areas with Greebles tool, surround it with overlapping Poly Lasso panels and place some detail with Add Detail tool on the top of the greebles. Add some tubes and cables with Poly Lasso tool with tube profiles selected.

8. For sci-fi textures, don't forget to add details with emission. Just set some tiny objects with Add Detail tool, select them and press 9 or 0 to set the emission mask.

9. For fantasy textures, you may want to scatter the ornaments at the borders of your model. Fill UV island, use it as a Warp shape. Create some Celtic ornaments or other details and use repeated warp feature, to scatter them seamlessly around UV island border. Then add some volumetric looking gems with convex gem poly lasso profile. It is very effective for fast texturing multiple fantasy game assets.

10. Feel free to use Unity transform tools with Poly Lasso and Add Detail created objects. You can select one or several objects, copy/paste and change the X or Z scale to -1 to get the symmetrical copy of the objects. They will render correctly.

11. When using your own textures with Surforge materials, don't forget to set their compression to "automatic truecolor". You can use the textures of different resolutions in one project. As being GPU based, Surforge will scale them to fit right. With specular and glossiness features extraction and built-in noise, Surforge will add crisp detail even to low resolution textures. Also you can change tiling/offset properties of the textures in Surforge materials, if using seamless textures. All textures that come with Surforge are seamless and handles tiling well.

12. As Surforge textures are fully 3d based, you get the perfect height map as a bonus. You can use it with your advanced shaders and for DirectX 11 tessellation.
13. Surforge has handy screenshot capturing tool, so show your great works to all! Easily take screenshots with a preview of your model, maps, and materials. Don't waste time or interrupt the work, just press a button and Surforge will save the screenshot with a nice layout for your portfolio.

Creating custom Surforge assets

Surforge ships with a rich asset collection, and it is planned to expand it even more in future versions.

It is also possible to create your custom assets of all types for use with Surforge. At this stage, there are no special tools for asset creation, but as Surforge is based on Unity prefabs, it is not difficult to add them.

The general approach, which is the easiest to use is to copy suitable Surforge asset (which is a Unity prefab) and to tweak its properties. Then you have to create an icon for it and add your custom asset reference to the appropriate list.

Creating material sets.

Material Sets are easiest asset type to add, and the best entity for working with materials. There is no need to copy it or add to the list manually. Press the Save material set button, to create a copy of your active material set, saved to Assets/CustomPresets/MaterialSets folder. It will be loaded automatically when you start working on the new texture, and added to the dropdown menu along with built-it material sets. It is very handy for creating sets of textures of the same style. Material sets store the materials itself, not links to the materials.

Creating materials.

Save the copy of your active selected material with a Save current material button. It will be saved to Assets/CustomPresets/Materials folder. At this stage, you have to add the reference to it manually to

Surforge/Editor/surforgeSettings prefab to the Materials list. After Surforge restart, it will be added to Materials tool panel, and used for drag-and-dropping. There is no need for creating material icon, as it is rendered automatically.

The way of adding custom materials will be improved in next versions.

Creating Add Detail tool assets.

Create your 3d models, and save it to .fbx or .obj file. Fbx is better since it can store many models at once. Make sure your models' local positions set to the scene origin, and protrude above the grid, to make them instantiate to the scene correctly.

Copy your model file to the Unity Assets folder, set the suitable import scale. Create a prefab and add a PlaceMesh script to it, located in Assets/Surforge. Create and add icons for light and dark skin (you may copy the style from one of existing icons).

If your asset has UVs and normal/ambient occlusion maps add them to the corresponding fields. You may set the option for randomize the position of your asset UVs, for they have random UV offset every time you instantiate it (handy for rock models for example). If your asset have multiple variants, add their prefabs to the corresponding list, to shuffle it with right button while using Add Detail tool.

Add the reference to your prefab to the Assets/Surforge/AddDetailTool/placeMeshes prefab, placeMeshes list. After Surforge restart, it will be added to Add Detail tool assets lits.

In the future versions, at a certain stage, it is planned to make an automatic loader models.

Creating Poly Lasso profiles.

Poly Lasso profiles are not mesh based, so no need to model anything in 3d editor. They are fully setup through Unity editor, with huge amount of parameters. Their structure is not simple, but if you dare, there is a parameters specification in the Assets/Surforge/PolyLassoProfile.cs

You can copy one of the existing Poly Lasso profiles, and use it as a base. They located in Assets/Surforge/PolyLassoProfiles/Profiles. After you tune your profile prefab, create icons for it and add the reference to the Assets/Surforge/PolyLassoProfiles/polyLassoProfiles prefab.

In the future versions, at a certain stage it is planned to make a Poly Lasso profile editor.

Adding custom skyboxes.

Create two .exr files, with a skybox for lightning, and with a blurred skybox version for the texture preview background. It's not needed to be high resolution; Surforge skyboxes are 1024 x 512.

Import your skyboxes in unity as a cubemaps, create empty prefab and add SurforgeSkybox script, located in Assets/Surforge. Add cubemap and blurred cubemap materials to the corresponding fields, create and add icons.

Set the reference to your skybox prefab to the Assets/Surforge/Editor/surforgeSettings, Skyboxes list and restart Surforge.

Adding custom decals, deform and shatter presets.

All as above. Import models for decals assets. Make a copy of existing asset, tweak parameters, add icon and a reference to your prefab:

Assets/Surforge/Decals/decalSets for decals.

Assets/Surforge/NoisePresets/noisePresets for deforms.

Assets/Surforge/ShatterPresets/shatterPresets for shatter presets.

Known issues

Surforge was carefully tested to be stable and effective, but keep in mind that it is on early development stage. Many things will be improved in the next versions.

1. As with any software for 3D modeling, you will get the inappropriate meshes in rare cases. Try to avoid unreasonable complex shapes and extreme acute angles. Surforge actively uses inward shape offsets, and in rare cases for some complex or very small shapes such offsets are impossible. If your poly lasso object's top cape mesh gone, use expand/shrink combination and Surforge will try to rebuild and fix it.

2. Although Surforge handles well even very complex multiple object Split operations, it can be CPU intensive. Try to avoid splitting extreme amounts of objects simultaneously with complex symmetry or shatter very large objects with dense Voronoi presets.

3. Surforge requires custom Shadow Cascade project settings to render ambient occlusion. It will be set automatically when clicking "New Texture" button.
4. UV Grid creation and UV Grid snapping can be slow for meshes with high polycount and complex UVs, use regular UV mode for such meshes.
5. When using the Greebles tool, since greebles are voxel-based and stored in octree, deleting or moving them by hand will left their voxels in octree and break their logic.
6. At this stage, Greebles tool not supports Undo. Use reroll and remove in order instead.
7. Warp tool is in beta stage now, and may lead to inappropriate results. It's also the only tool now, that not handles custom Root object scale.
8. Specular maps are exported to uncompressed TGA format.
9. Any software for 3D mesh editing sometimes crash. Unfortunately, that is a proven fact. Although Surforge was carefully tested, it may crash in rare cases. Save your work.

Thank you!

Thank you for using Surforge and supporting its development!

With your help, Surforge becomes more powerful, convenient and magical.

Good luck in creating magnificent works. Faster, easier, more effective than ever before.

With best regards, Surforge team.