

Release Notes for Modo 10.0v1

Release Date

06 April 2016

System Requirements

Officially Supported Operating Systems

- Mac OS X 10.9.x, 10.10.x, and 10.11.x
- Windows 7, Windows 8, and Windows 10 (64-bit only)
- Linux 64-bit operating system (RHEL 5.4+)

Minimum Hardware Requirements

- Intel processor(s), Core i3 or higher
- 10 GB disk space available for full content installation
- At least 4 GB RAM
- Display with 1280 x 800 pixel resolution
- Internet connection for product activation and online videos access
- The **Advanced** viewport mode requires an NVIDIA or AMD graphics card with at least 512 MB of graphics memory and drivers that support OpenGL 3.2 or higher

Recommended System Requirements



NOTE: This information is our best recommendation for the average user. Requirements vary by usage, and individual users may have different requirements from those listed here.

- 2.5+ Ghz quad-core processor

- 250+ GB disk space available for caching and temporary files, SSD is preferable
- 16 GB RAM with additional virtual memory*
- Display with 1920 x 1080 pixel resolution
- An NVIDIA or AMD graphics card with the latest drivers
- 2+ GB of graphics memory
- OpenGL 4.4 or higher support

*The use of virtual memory improves stability and helps prevent data loss on large projects.

Tested Workstation Hardware

The configurations listed below are those that The Foundry have tested with Modo 10.0v1. Due to the constantly changing nature and wide variety of computer hardware available in the market, The Foundry is unable to officially certify hardware. The list below can be used as a recommendation and does not guarantee that it meets your particular needs.

Please download and install the latest graphics driver from the NVIDIA or AMD websites. Make sure that you are using 8.982.8.1 drivers or higher for AMD cards.

If you encounter any issues, please contact support@thefoundry.co.uk.

Tested Workstation Hardware	
Apple	<ul style="list-style-type: none"> • MacPro4, 1 • MacPro5, 1 • iMac13, 2 • MacBookPro10, 1

Tested Workstation Hardware

Dell	<ul style="list-style-type: none">• Dell T1700• Dell T3610• Dell T3620• Dell T5810• Dell T7610• Dell T7910• Dell Precision Rack 7910• Dell Precision 5510• Dell Precision 7710• Dell M2800• Dell M6800
HP	<ul style="list-style-type: none">• HP Z440• HP Z600

Tested GPU Hardware

AMD Prosumer Graphics Cards	<ul style="list-style-type: none">• Radeon™ HD 1900 XT• Radeon™ HD 2400 XT• Radeon™ HD 2600 Pro• Radeon™ HD 3870
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Tested GPU Hardware

AMD Enterprise Graphics Cards

- FirePro™ W4170
- FirePro™ W5000
- FirePro™ W8000
- FirePro™ W2100
- FirePro™ W5100
- FirePro™ W4100
- FirePro™ W7100
- FirePro™ W8100
- FirePro™ W9100

NVIDIA Prosumer Graphics Cards

- Geforce GTX 680
- Geforce GTX Titan
- Geforce GT 650M

NVIDIA Enterprise Graphics Cards

- Quadro® K6000
- Quadro® K5000
- Quadro® K4000
- Quadro® K2000
- Quadro® K600
- Quadro® K5200
- Quadro® K4200
- Quadro® K2200
- Quadro® K1200
- Quadro® K620
- Quadro® M5000
- Quadro® M4000

New Features

UI

Game Tools Layout

The **Game Tools** layout focuses on game-related tools and features. Its flexible, easily customizable structure gives you quick access to tools needed for vertex normal editing, texture baking, and exporting to game engines, in addition to the standard modeling tools.

First Person Navigation

You can now use first person navigation to move through 3D space using a set of keyboard shortcuts, giving you a convenient way to explore game level designs.

GL

Advanced Viewport Enhancements

New rendering features have been added to the **Advanced** viewport to allow for a more photo-realistic look, assisting development for real-time engines in Modo. These features can be configured in the **Advanced Options** for the 3D (OpenGL) viewport.

Rendering

PBR Material

Two new material types have been added to Modo, closely matching the materials in Unity and Unreal Engine. They use the same material channels, and behave similarly both in both Modo's **Advanced** viewport, and in rendering.

Modo also includes Unreal Engine 4 and Unity 5 base shaders, providing a WYSIWYG representation of content that matches the runtime environment.

File I/O

Unreal Material Importer

A new plug-in for Unreal Engine 4 has been created, which reads an **.xml** file exported from Modo containing material information necessary to match the shader parameters set in Modo with those in Unreal Engine 4. This greatly improves the translation process between the two products, saving artists time and reducing iterative errors.

Unity Material Importer

A new plug-in for Unity 5 has been created, which reads an **.xml** file exported from Modo containing material information necessary to match the shader parameters set in Modo with those in Unity 5. This greatly improves the translation process between the two products, saving artists time and reducing iterative errors.

FBX Animation Import

The FBX Import dialog now has a **Merge with existing items** option. When enabled, you can load animation data from the **.fbx** file onto any matching (by name) items in your scene.

There is also a new **Import from FBX** option in the **Actions** dialog, which allows you to load actions from **.fbx**.

FBX Improvements

The new FBX 2015 plug-in allows you to export UV sets alphabetically. Default color correction is now applied to all loaded clips from non-LXO formats. When loading **.fbx** files, the vector maps, normals, and so on are auto-set to linear color correction.

Optimized Export to Game Engines

The **Game Tools** layout gives you access to the **Export** tab, where you can export content to game engines with ready-made presets for Unreal and Unity. You can also create custom presets to target additional engines.

PBR Material Export to Game Engines

You can export Unreal and Unity materials in an **.xml** format, alongside **.fbx** files. Used with our new custom Unreal and Unity plug-ins, it allows moving PBR materials easily from Modo to game engines.

DDS Format Support

A new plug-in has been added, which allows you to import a range of common DDS image formats.

Thickness Type for Occlusion Texture

Modo has a new occlusion type: **Thickness**. This allows you to bake out thickness and tweak its parameters, compared to the thickness layer.

Modeling

Vertex Tools

The **Game Tools** layout houses a series of commands for setting up vertex normals. Individual edges can be set as hard or soft, which constructs a vertex normal map on the mesh.

Baking

Bake Items and Baking Workflow

Modo uses Bake Items to store bake-related parameters on an item, which allows the baking of assets to be re-fired with exactly the same settings as the input data changes. This makes the baking process more automated. In addition, Modo's new Baking Wizard makes the baking process more easier.

UDIMs

UDIM Baking

UDIM baking is now handled automatically. You can select the UDIM texture and bake it like any other texture in Modo.

UDIM Wizard

This command automates the creation and setup of UDIM image sets, making it easier to set up UDIMs in Modo.

UVs

UVs to SVG

This new feature offers a more modern alternative to the **.eps** format. Exporting UVs with UDIMS to **.svg** format gives new options for layering UDIMS and directly loading them into Modo as textures.

Convert UVs to Mesh Improvement

The **UVs to Mesh** command can now write its output to a morph map in the same Mesh Item, as well as a separate item, like before. Additionally, it can preserve polygon tags and vertex order on continuous UV maps.

Painting

Vertex Map Painting Updates

Vertex painting tools now have blend modes, and you can now paint discontinuous vertex colors. You also have the option to view each channel of the vertex map in isolation.

Dynamics

Soft Body Improvements

Soft Bodies now handle the combination of polygons and curves in the same item as a "hybrid" mesh. They interact, can collide, and share channel settings. Curves use the **Bend** and **Struct** values.

Soft Bodies have improved collisions both with self and other items, and improved goal matching.

The **Pressure** property is now a percentage, and scales internally based on the mass of the mesh, avoiding issues where changing the mass required changing the pressure value.

Feature Enhancements

UI

Redirected Properties

The **Properties** panel for one item now shows channels from an unselected but connected item. For example, selecting a light in the **Item List** or **Shader Tree** now shows the light color channel, even if the light material is not selected. Selecting a texture layer in the **Shader Tree** displays its projection settings without selecting the Texture Locator.

File I/O

Mesh Export to Game Engines Without Triangulation

There is now an option to force triangulation on FBX export, making sure it matches Modo's internal triangulation for GL/Render.

Relative Paths

In the **Images** tab, if the image you use is stored somewhere relative to the scene file or the current project, the display of the path is truncated.

Modeling

Smooth Tool Enhancement

The Smooth tool now has a **Volume Preservation** option. When enabled, the smoothed mesh is similar to the original in terms of shape and volume, while the topology is smoothed out. You can also do this with the Sculpt Smooth tool.

Baking

Preview/RayGL Updates

Preview baking and RayGL in Bake mode can now get their settings from a bake item, simplifying the setup process.

Baking Border Expansion Enhancement

Modo now automatically adds an alpha output for the bake (one for each anti-aliasing state of outputs being baked to).

Color

Color Picker Enhancements

You can now use the **Color Picker**'s own controls to adjust intensity and color for many material and texture properties. This avoids having to change selection while adjusting. You can also swap between the background and foreground colors for textures without having to leave the **Color Picker**.

Normal Map Colorspace Conversion Prompting

When changing texture layers to Normal effect, or setting a clip to an image layer which has Normal effect, a dialog appears to ask if color correction should be auto-set to Linear for the clip.

Preview

Preview Bake to Texture Support

Preview baking to textures has been implemented. This enables quick iterations while tweaking the baking result, similar to how it works for rendering.

Miscellaneous

- BUG ID 32043 - Automatic selection of sub-tabs in forms has been improved.
- BUG ID 47704 - Support has been added to the camera 'roll' property on file import.
- BUG ID 48604 - The Render Region tool has been updated to support camera resolution override.
- BUG ID 49082 - **Locked** and **Drop (no scale)** options were added to the **Size Mode** dropdown, allowing more control over the Mesh Paint tool.
- BUG ID 49706 - UV map support has been increased from 8 to 32.
- BUG ID 50126 - SolidWorks plug-ins have been updated to support 2016 files.

Main Bug Fixes

This is a list of the most important bug fixes. For a full list, see [The Foundry Community site](#).

- BUG ID 29192 - Render progress always displayed **100%** and **Time Remaining = Done**, when baking.
- BUG ID 29503 - Group masks in the **Shader Tree** sometimes caused an increase in render times.
- BUG ID 37331 - Materials assigned to a SolidWorks model could disappear after save and re-open, due to very long polygon tags.
- BUG ID 37825 - When switching from **Array** to **Linear** mode, the properties didn't update.
- BUG ID 38730 - Replicator prototypes with offset pivots rendered incorrectly, but displayed correctly in the OpenGL viewport.
- BUG ID 38848 - The **Open Project Folder** command caused Modo to stall for several seconds.
- BUG ID 41009 - Imports failed if bind pose data was incomplete or missing.
- BUG ID 41985 - Adding new items to a group set as a prototype didn't update when used with a dynamic replicator.
- BUG ID 43048 - Geometry snapping for the Topology pen tool was not working correctly.
- BUG ID 43128 - UV Maps were not exported in the correct order.
- BUG ID 43287 - Using the Lattice deformer's auto-fit function did not affect all parts of the mesh it was being fitted to.
- BUG ID 43367 - Right-clicking in the **Script Editor** broke the input.
- BUG ID 43868 - Dynamic Replicators were not passing the correct particle rotations to replicas.
- BUG ID 44127 - Changing item properties in a particle simulation could lead to crashes during simulation.
- BUG ID 44276 - The Rotate tool was misaligned with a Local Action Center.
- BUG ID 45247 - The Solid Drill Stencil sometimes produced incorrect results.
- BUG ID 46061 - When using image-based sculpting, the displacement distance doubled after each sculpting stroke.
- BUG ID 46367 - When painting on a mesh with poorly created UVs, painting sometimes caused memory use to increase significantly.
- BUG ID 47067 - In the **Shader Tree**, **Filter on Selection** was not working in **Material** view.
- BUG ID 47297 - The Texture Switch node didn't work with UVW maps.
- BUG ID 47320 - Modo's windows came back into focus when switching to other applications.
- BUG ID 47322 - Instanced items with transformed pivots did not render in the correct location, but displayed correctly in GL.
- BUG ID 47388 - Multi-resolution sculpt data did not follow deforming meshes.
- BUG ID 47531 - When rendering animations, the time remaining sometimes displayed incorrectly.
- BUG ID 47560 - The Move brush did not always affect all selected vertices.
- BUG ID 47608 - The input value of the Texture Switch node wrapped at 100%, instead of after it.
- BUG ID 47640 - Removing dynamics from an item didn't clear its simulation cache.
- BUG ID 47684 - Exposing a single relationship exposed all relationships for assembly presets.

- BUG ID 47721 - The Dynamic Curves as Hair script wasn't working.
- BUG ID 47998 - When scrubbing material properties, Preview stopped updating.
- BUG ID 48108 - Backdrop images scaled incorrectly when **Keep Aspect** was enabled.
- BUG ID 48455 - Rotating an environment map did not rotate the viewport reflections in the **Advanced** viewport.
- BUG ID 48560 - Export to **.fbx** of scenes with multiple actions with dynamic parents failed.
- BUG ID 48696 - Instances were not exported if the original geometry wasn't exported.
- BUG ID 48887 - Purging unused materials could delete image maps used in other opened scenes.
- BUG ID 49129 - Images in **.fbx** files did not have colorspace options.
- BUG ID 49339 - **Align Work Plane to Selection** did not work correctly in some cases, such as a loop selection on a rotated unit sphere.
- BUG ID 49367 - Vertex normals drew incorrectly with a custom Work Plane.
- BUG ID 49369 - Paint selection of polygons through the **Camera** view could be problematic.
- BUG ID 49394 - Bounding box items did not render.
- BUG ID 49546 - Mirroring geometry mirrored the vertex normals incorrectly.
- BUG ID 49548 - Using a Bump Height gradient as a group mask produced artifacts during render.
- BUG ID 49557 - Using Loop Slice on a multi-resolution sculpted mesh resulted in loss of the sculpt data.
- BUG ID 49561 - Photometric lights in combination with MIS could lead to NaNs.
- BUG ID 49568 - Mac OS X only: Running a simulation with a dynamic curve and a static rigid plane caused Modo to become unresponsive.
- BUG ID 49600 - Changing cameras did not show the correct aspect ratio if **Resolution Override** was enabled on the camera.
- BUG ID 49616 - Preview image saving and auto-saving to layered images caused an extreme increase in memory use.
- BUG ID 49646 - Meshes with displacement maps were drawn incorrectly in the **Default** and **Advanced** viewports.
- BUG ID 49660 - Enabling or disabling group masks in the **Shader Tree** with Preview running caused Modo to crash.
- BUG ID 49809 - Changing environments with the Preview renderer open caused Modo to crash.
- BUG ID 49870 - Mac OS X only: Problems with SSS and EIS sometimes led to NaNs and caused Modo to become unresponsive.
- BUG ID 49930 - Multi-resolution data could be lost when moving a mesh.
- BUG ID 50084 - The **Make UVs** option of Bezier tools did not always work correctly.
- BUG ID 50186 - Fur-using guides driven by dynamics popped when rendering animations.
- BUG ID 50228 - The **Blur Length** setting had no effect on Blobs.

- BUG ID 50229 - No warning appeared when using **Open Project Folder** without a project set.
- BUG ID 50337 - Replicated mesh visibility depended on camera location.
- BUG ID 50441 - Rendering scenes with references sometimes caused Modo to crash.
- BUG ID 50682 - Closing a scene when multiple scenes were open caused Modo to crash.
- BUG ID 50685 - Transferring items between scenes caused Modo to crash.
- BUG ID 50801 - Perl libraries could not be used when running Modo from a network location.
- BUG ID 50854 - Simulations changed after being saved, re-opened, and re-simulated.

Known Issues and Workarounds

This section covers known issues and gives workarounds for them, where appropriate.

Advanced Viewport

- Shadows don't work if there is no default shader in the **Shader Tree**.
- Image Based Lighting (IBL) does not work correctly with Unreal/Unity material roughness if there is no default material under the Unreal/Unity material in the **Shader Tree**.
- BUG ID 51164 - Adding a new material after changing the image on an environment with **Advanced** viewport lighting set to **Scene + Environment** and the background set to **Environment** uses the previous environment image for lighting, but the correct one for reflections.

Adding another material should fix this issue.

- BUG ID 51124 - Clearcoat displays incorrectly (dark), when used with Image Based Lighting (IBL).
- BUG ID 50810 - Anisotropic texture filtering is lower quality than in the **Default** viewport.
- BUG ID 50698 - Modo can become unstable when using the **Advanced** viewport on NVIDIA 311 series drivers.

We recommend that you avoid using very old drivers in conjunction with the **Advanced** viewport.

- BUG ID 50629 - Changing the **Default View Colorspace (System > Preferences > Rendering > Color Management)** with the **Advanced** viewport visible can lead to instability.
- BUG ID 49598 - Spurious diagonal lines of bad pixels may appear in the **Advanced** viewport with some AMD cards.
- BUG ID 46995 - Ambient Occlusion display in the **Advanced** viewport is affected by selected item wireframes.

You can disable **Show Selection** in the **Visibility** options or disable wireframe drawing on the active mesh layers.

Assemblies

- BUG ID 36452 - Assemblies exported from the **Item List** context menu result in poor visual layout of nodes on import.

As a workaround, you can save assemblies from the **Schematic** viewport.

Baking

- BUG ID 50671 - Baking displacement maps can cause UV seams to be visible, and the baked displacement map to show quilting effects and other render artifacts.

To avoid this, you can turn off **Smooth Positions** on the low resolution mesh, use a higher resolution displacement image, higher subdivision level, and/or **Box AA** filtering to improve quality.

- BUG ID 49437 - The **Bake Channel Swizzling** option can't bake to texture alpha.
- BUG ID 48338 - **Bake Direction Effects** doesn't work correctly with EIS and roughness.

Disable **Environment MIS** in the **Channels** list for the render item when using the **Bake Direction Effects** option.

Color Management

- BUG ID 49244 - With **Perform Color Correction** on, setting a default scene to a scene with a mesh that has a position channel crashes at launch.

Use **System > Reset Preferences** to reset to defaults or move/remove the default scene as a workaround.

Default Viewport

- RGBA textures only draw correctly in the **Advanced** viewport. In the **Default** viewport, any unsupported texture effect on an image map is drawn as diffuse color when the layer is selected in the **Shader Tree**.
- BUG ID 50696 - For image maps, setting effects that can't be displayed in the viewport displays them as diffuse color, but may break subsequent updates to GL shading.

File and Image I/O

- BUG ID 51034 - Reverting a scene with a tool active may cause Modo to crash.

To avoid this, drop the active tool before using **File > Revert**.

- BUG ID 49728 - Exporting selected layers (from the **Item List** context menu) to **.fbx** doesn't export instances unless the original mesh is also exported.

To resolve this, set the **.fbx** preference to **Export Selection** and use **Export As...**

- BUG ID 47230 - Alembic export of a mesh from a MODO 401 scene fails due to a custom channel called **inherit**.
- BUG ID 47036 - Color management in **.svg** images is not currently supported. This is a side-effect of a bug fix where the largest allowable image size (64k x 64k) was always used when color correction was enabled.
- BUG ID 46962 - Rendering **.svg** images used as stencil maps for displacement or for layer masking, can be very slowly.

Fur

- BUG ID 37272 - If multiple layers of fur are present with different materials in their groups, some materials may not be evaluated.
- BUG ID 35731 - Fur length textures can't be edited with the Stretch tool.
Use different fur length drivers, such as hair guides or vector vertex maps.

General

- BUG ID 49514 - Mac OS X only: Running `modo_cl` before running the UI Modo application breaks code signing.

As a workaround, start the UI version of Modo once, before running `modo_cl` on any system where you later intend to use the UI version.

Input Devices

- BUG ID 35856 - Linux only: Plugging in a Wacom tablet while Modo is running can cause undesired movement. This cannot be fixed, due to a limitation of the hardware driver.
To avoid this, plug in the tablet before application startup or restart.

MeshFusion

- BUG ID 48669 - Linux only: MeshFusion objects set to **Airtight Final** may cause Modo to crash when the **Dup & Convert to Mesh** option is used.
If the **Dup & Convert to Mesh** button is not exposed through the **more (>>)** button, Modo doesn't crash. You can avoid clicking the **more (>>)** button by maximizing the form (**numpad 0**) and/or collapsing the other form sections by clicking on them.

Modeling

- BUG ID 48124 - The **Multi Slice** option of the Edge Slice tool doesn't work across multiple polygons if $t = 0.0\%$ and an ngon is involved.

Network Rendering

- BUG ID 30318 - Network Rendering doesn't support Realfow particles.
- BUG ID 25636 - Frame passes are not supported.

Nodal Shading

- BUG ID 50642 - Nodal shading does not support UDIMs.

Painting/Sculpting

- BUG ID 41762 - Morph maps and deformers must be enabled to sculpt on a mesh that was used as a background item in creating the morph map.
As a workaround, save and reload the scene.
- BUG ID 41682 - Textures are not always updating in Preview/Render when painting on an image map.
You can save and reload the image to force the update.
- BUG ID 40701 - Image-based sculpting can cause meshes to tear in OpenGL.

Particles

- BUG ID 51080 - Any particle-editing tool applied to an empty particle simulation can lead to instability.
- BUG ID 34925 - Re-opening scenes saved with large particle caches can cause problems.
To avoid such issues, delete the cache before closing Modo, or export the particles to **.csv** cache files or Realfow **.bin** files. You can do this by attaching one of those nodes to the Particle Simulation item in the **Schematic** viewport, and clicking **Cache Simulation**.

Presets

- BUG ID 36881 - Selecting a material mask, then double-clicking it to add an advanced preset (such as the car paint presets) loads the preset incorrectly.
Drag and drop the preset on the mesh in Preview or GL as a workaround.

Preview

- If a high poly mesh is not visible, the Preview baking output will be incorrect.
Reset Preview to fix the baking.

- BUG ID 50923 - When assigning an existing material tag to a mesh or polygon selection, Preview may not update correctly.
Select **Reset Preview Render** from the **Preview** options dropdown.
- BUG ID 50634 - Editing the material of an invisible item makes it render in Preview.
To avoid this, change the Preview mode from **Full** to **Fast**, reset Preview rendering, or toggle the visibility of the mesh item.
- BUG ID 48724 - if Preview is open as a floating palette (**F8**) and then maximized (**numpad 0**), it may fail to update keyframed material color changes, when switching frames or rendering an animation.
As a workaround, avoid maximizing the embedded Preview viewport.
- BUG ID 48639 - Rendering to 16- or 32-bit OpenEXR or **.png** produces files without an alpha channel.
Save to one of the other formats.
- BUG ID 47763 - Baking to render outputs can be slower using Preview in some cases, due to the way it is optimized for interactivity.
To increase speed, use final render instead.
- BUG ID 41160 - Preview rendering an animation doesn't allow the saving of layered images.
You can use final render for animation renders where multiple outputs are needed.

Procedurals

- BUG ID 49673 - Instances of deferred meshes do not conserve memory like replicas do, but are easier to place and align.
Use replicators with a transform map on the Point Cloud mesh. Select the Transform Map in the map list, then use the Transform tools in Vertex mode to manipulate the replicas.
- BUG ID 46512 - When rigged, Rock items and other procedurals do not display correctly in GL. This is a limitation of the feature and will not be fixed.
You can use Preview or RayGL to visualize the variations from rigging.

Projections

- BUG ID 49473 - Projections are incorrect if the projecting camera is set to **Vertical** film fit mode and the width is less than the height.
- BUG ID 49304 - Linux only: Selecting (**none**) for the camera's background image may lead to instability.
- BUG ID 43771 - Camera projections from non-render cameras show distortion in GL and baking.
To avoid this, make sure that the projection camera has a film width to height ratio that matches the main render camera.

RayGL

- BUG ID 50404 - RayGL shows the color output of the baked map on the mesh without applying the texture effect.
- BUG ID 50070 - Baking textures in RayGL with Bake items can disregard the target mesh selection. RayGL in Bake mode can only have one texture rendered and then applied to all visible meshes. You can set **Preview** to **Current Bake Item** to see the selected texture.

References

- BUG ID 44492 - If a scene that already contains references is referenced, the shading of the original references may not survive.
As a workaround, limit scenes with shading to one level of reference.
- BUG ID 41119 - Reloading a reference after replacing it with the same file can cause Modo to crash.

Rendering

- BUG ID 48348 - Artifacts may be present when rendering an animation to a layered image format. You can render to a non-layered format to avoid this.
- BUG ID 46468 - Additional (masked) alpha outputs are not saved when rendering animations. Since other render outputs do work, a remapped depth output with a very high maximum depth setting functions similarly to an alpha output.
- BUG ID 43236 - Windows only: If the number of processors on a system is greater than 64, not all of the processors are used.

Rigging

- BUG ID 27244 - Duplicating joints in a bound mesh retains influences from the original joint chain.

Shader Tree

- BUG ID 37858 - In the **Shader Tree**, choosing a group from **Add Layer > Image Map > (use clip browser)** fails.
To work around this issue, in the **Clip Browser**, choose a single image instead of the group, and then change to the image group using the Texture Layer's **Properties** tab.
- BUG ID 30947 - Layer masking displacement does not work unless you drag and drop the masking layer onto the displacement layer.

Unreal and Unity Materials

- BUG ID 50860 - Unreal Clearcoat does not display correctly in the **Advanced** viewport.
- BUG ID 50701 - Unreal material Ambient Occlusion does not bake correctly in Modo.
- BUG ID 50700 - There is no way to visualize the Unreal SubSurface Color effect in Modo.
- BUG ID 50451 - On some graphics cards, Unity material may cause flickering in the **Advanced** viewport when used with bump maps and shadows.

UI

- BUG ID 47659 - Windows only: Right-clicking in a text field and selecting **Copy** doesn't work.
- BUG ID 44896 - Dragging and dropping an image from the system into the **Clips** list doesn't work. If the **Clips** list is empty, drop the image onto the bar at the top, otherwise drop it above or below other images in the list.
- BUG ID 43162 - Windows only: Setting a custom text size affects Modo's text drawing. As a workaround, go to the compatibility settings by right-clicking the Modo shortcut or executable, and turn off font-scaling for the app.

Developer Notes

Here are the changes relevant to developers.

Bug Fixes

- BUG ID 49823 - TD SDK: Indexing was wrong when deleting transforms, and clearing a transform was broken.
- BUG ID 49861 - TD SDK: **Scene().items** and **item.children()** used Item Types differently.
- BUG ID 50536 - TD SDK: **modo.Scene().items(iType)** was very slow compared to similar custom functions. The speed has been improved by a factor of 50 in a scene containing 5000 meshes.
- BUG ID 50678 - SDK: Modo now handles plug-ins that set **depltemType** to zero, like the gear procedural.
- BUG ID 50716 - TD SDK: Synthetic channels were not handling the correct type.