

Release Notes for Modo 10.2v3

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Release Date

4 May 2017

System Requirements

Officially Supported Operating Systems

- Mac OS X 10.9.x, 10.10.x, 10.11.x, and 10.12.x (64-bit only)
- Windows 7, Windows 8, and Windows 10 (64-bit only)
- Linux 64-bit operating system (CentOS/RHEL 7+)

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 1920 x 1080 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 1 GB 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 11.0v1. 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 visit the Support Portal at supportportal.thefoundry.co.uk.

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

Tested Workstation Hardware

	<ul style="list-style-type: none"> • 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
AMD Enterprise Graphics Cards	<ul style="list-style-type: none"> • FirePro™ W4170 • FirePro™ W5000 • FirePro™ W8000 • FirePro™ W2100 • FirePro™ W5100 • FirePro™ W4100 • FirePro™ W7100 • FirePro™ W8100 • FirePro™ W9100
NVIDIA Prosumer Graphics Cards	<ul style="list-style-type: none"> • Geforce GTX 680 • Geforce GTX Titan • Geforce GT 650M
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Tested GPU Hardware

- Quadro® K600
- Quadro® K5200
- Quadro® K4200
- Quadro® K2200
- Quadro® K1200
- Quadro® K620
- Quadro® M5000
- Quadro® M4000

New Features

There are no new features in this release.

Feature Enhancements

- Licensing: Sign-in licensing capabilities have been added to Modo 10.2, allowing Modo 11 subscription and maintenance users to use the same method in Modo 10.2.
- BUG ID 55312- Licensing: Added the ability to specify an optional proxy server for login-based licensing from behind a firewall.

Bug Fixes

- BUG ID 55304 - Play Mode: Selecting **Add Item** in the **Mesh Operations** list caused Modo to crash when launched in Play Mode.

Known Issues and Workarounds Specific to Modo 10.2

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

Advanced Viewport

- BUG ID 50810 - Anisotropic texture filtering is lower quality than in the **Default** viewport.

- BUG ID 50364 - The **Advanced** viewport shows visible seams or noise after using environment textures.
- 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.

Animation

- BUG ID 53716 - Onion Skinning does not work in the **Advanced** viewport.

As a workaround, use the **Default** viewport.

- BUG ID 53661 - Selecting actions does not always select the correct one. This is caused by copying actions.

As a workaround, manually edit the tags on the broken actions by selecting them in the **Groups** tab, then save and reload the scene.

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.

Audio

- BUG ID 52242 - Windows only: The **.au** format doesn't load on Windows 10, due to the lack of DirectShow support for the format.

As a workaround, convert the audio file to a different format, such as **.wav**. This bug will not be fixed.

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.
- BUG ID 49437 - The **Bake Channel Swizzling** option can't bake to texture alpha.

Color Management

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

As a workaround, use **System > Reset Preferences** to reset to defaults or move/remove the default scene.

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**.

Dynamics

- BUG ID 54208 - Procedural Shatter doesn't connect to geometry or add a Solver to the scene.

As a workaround, make the mesh you want to shatter an active rigid body first, then click the **Procedural Shatter** button.

File and Image I/O

- BUG ID 53897 - Exporting selected layers does not export Library shaders.
- BUG ID 50198 - Alembic scenes don't export some surface items, including static meshes and procedural shatter items.
- 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 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 slow.

Fur

- 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.

GL

- Windows only: Using Raptr can cause GL driver crashes in Modo.
- BUG ID 53088 - Independent drawing does not work in the **Default** or **Advanced** viewport modes.

As a workaround, use **Shaded** or other modes when using independent drawing.

- BUG ID 52886 - The **Draw Faded Grid** option does not work correctly with X- or Z- up coordinate systems.
- BUG ID 43220 - Replicated items may not be visible in GL from certain Camera or Perspective view angles.

As a workaround, turn off GL culling using the **glculling** toggle command.

Input Devices

- BUG ID 51741 - Mac OS X only: Modo sometimes becomes unresponsive when using the combination of a click-drag in a tree view (for example, when toggling the visibility of two successive items in the **Shader Tree**), followed immediately by a two-finger scroll gesture on some devices, including laptop trackpads and the Magic Mouse.

As a workaround, change to a 3-button mouse (recommended to fully access all of Modo's features).

- 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.

Modeling

- BUG ID 54206 - The **Apply Morph** option in the **Vertex Map** menu doesn't work.
- BUG ID 53893 - The Mirror tool merges vertices with geometry that is hidden.

- BUG ID 53424 - Focus (**Ctrl/Cmd+A** or **Shift+A**) does not work with morph targets when Deformers are enabled.

As a workaround, disable the **Enable Deformers** setting in the **3D Viewport Properties** (keyboard shortcut: **O**) under **Drawing and Control > Animation**.

- BUG ID 32728 - Zooming out with a Space Navigator alters the Work Plane position.

Network Rendering

- BUG ID 48325 - Scenes with image sequences rendered with Full Frames use the wrong image sequence number on slave machines.

As a workaround, use **File > Consolidate Scene**, then render the scene using a shared network folder (**Preferences** option under **Rendering > Network Rendering**).

- BUG ID 36986 - Slaves render hidden meshes. Since mesh visibility state is not stored in the scene, when that scene is transferred to the slaves, the state is lost. However, the master respects the hidden state.

As a workaround, If the intent is to avoid rendering, use the item or render visibility instead (eye icon in the **Item List**, or set **Render** to **No** on the mesh item properties). This is not a bug and won't be fixed.

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

Nodal Shading

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

Painting/Sculpting

- 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.

Particles

- BUG ID 44551 - Surface Particle Generators may not update with changes to a **Density Gradient Input** set to **Slope**.

As a workaround, choose **Distance to Locator** or any other setting from the **Density Gradient Input** dropdown, then change it back to **Slope**.

- 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 Realflow **.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**.

Preview

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

Reset Preview to fix the baking.

Procedurals

- BUG ID 52149 - Curve Extrude mesh operation: The Path Segment Generator's **Align to Normal** option doesn't work when using a Bezier with zero-length tangents.

As a workaround, rotate the polygons to point toward the +Z before extruding or make sure there are no zero-length tangents.

- BUG ID 50486 - If a mesh has a deformer affecting it, you can't deselect elements using lasso or **Ctrl/Cmd**+paint with your mouse.
- BUG ID 49767 - Scenes, which contain a UV constraint modifier driving texture properties, may fail to load after saving, due to a modifier dependency loop.
- 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 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.

References

- BUG ID 44492 - If a scene that already contains references is referenced, the shading of the original references may not persist.

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 54263 - Portal Lights don't render correctly.

As a workaround, use Modo 10.2v1, where they render correctly.

- BUG ID 53411 - Mesh lights or any direct light too close to a surface can produce fireflies (hot pixels) in some cases.

As a workaround, use a **Maximum Radiance** higher than 1 W/srm² to reduce the bias.

- BUG ID 53184 - Value presets created for material Subsurface Scattering samples in Modo 10.1 or earlier now show on the render item instead.
- BUG ID 53151 - Saving passes as images can save the wrong alpha if the scene only has alpha outputs in material masks.

As a workaround, make sure you have a Global Alpha render output in the **Shader Tree**.

- BUG ID 52730 - The Vertex Illumination Bake command doesn't work as expected, when the mesh has transform channels.

As a workaround, freeze the transforms in the mesh properties.

- BUG ID 52553 - Light sources with negative intensity values clip into black incorrectly.
- BUG ID 52011 - Tangent Basis handles Mirror UVs incorrectly.

As a workaround, apply Mikk or any other tangent space basis to the mesh before baking.

- 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.

Rigging

- BUG ID 53224 - Assembly and Alias vector channels don't display gang edit controls.
- BUG ID 27244 - Duplicating joints in a bound mesh retains influences from the original joint chain.

Scripting

- BUG ID 53458 - Right-clicking or running a script in the Script Editor can lock up input to Modo.

As a workaround, click in the top window of the Script Editor, use the main menus, or change to another application, then switch back to Modo.

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 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 46499 - Windows only: Autosave steals focus.

As a potential workaround, if either of the following registry keys exist on your system, try deleting them and then restarting.

- **HKCU\Control Panel\Desktop\ForegroundFlashCount**
- **HKCU\Control Panel\Desktop\ForegroundLockTimeout**

- BUG ID 44496 - Mac OS X only: Disabling **Affect System Color Dialog** in **Preferences > Rendering > Color Management**, and using the system color picker causes colors to darken with each use of the color picker.

This is due to an OS X issue, which requires the color profile in both the monitor settings and color picker to be set to sRGB IEC61966-2.1.

- BUG ID 44896 - Dragging and dropping an image from disk 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 application.

Volumes

- VDBVoxel items support OpenVDB 3.0 files or earlier and don't properly load those encoded with Blosc.
- BUG ID 45847 - VDBVoxel motion blur is oriented incorrectly.

Release Notes for Modo 10.2v2

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Release Date

21 February 2017

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- Windows 7, Windows 8, and Windows 10 (64-bit only)
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- Intel processor(s), Core i3 or higher
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- Quadro® K5200
- Quadro® K4200
- Quadro® K2200
- Quadro® K1200
- Quadro® K620
- Quadro® M5000
- Quadro® M4000

New Features

There are no new features in this release.

Feature Enhancements

- Game Export: Substance textures can be exported, when enabling **Copy Textures**.



NOTE: The **Different Only** option is currently not supported.

- Network Rendering: Minimal logging has been added to full-frame mode.
- Topology: The **Retopo Edge Lock** and **Retopo Edge Flow** controls have been added to the **Mesh Edit** sub-tab of the Model tools, allowing you to create edge selection sets.

Bug Fixes

- Documentation: **F1** Help links were broken for some UI elements.
- GL: Mac OS X only: The **Advanced** viewport was incorrectly disabled on some operating systems.
- MeshFusion: Legacy conversion issues occurred when multiple unions shared meshes through inactive input links.
- MeshFusion: Enabling the **MeshFusion** command did not consider mesh instances.
- MeshFusion: **Strip Width** could not be set to a width less than 10 mm in the **Strip Properties**.
- MeshFusion: Converting multiple legacy MeshFusion setups didn't work as expected.
- MeshFusion: Using MeshFusion with procedural meshes didn't work as expected.

- Procedurals: The selection stack operated on the incorrect selection type if the selection type channel on the **Mesh Operations** list was not set correctly on creation.
- Schematic: Dynamic schematic didn't allow forces to connect to dynamic replicator filters.
- Shader Tree: When working with detail normal map effects, there was no prompt to switch to linear colorspace.
- Shader Tree: Using Unreal and Unity materials caused a memory leak.
- Shader Tree: Creating shaders occasionally caused Modo to crash.
- Shader Tree: Moving non-GL textures under the base Shader item caused Modo to crash.
- UV: UV peeling multiple meshes at once sometimes resulted in Modo crashing.
- BUG ID 39162 - Rendering a frame with no visible render outputs caused Modo to crash.
- BUG ID 47276 - Windows only: Loading long audio files sometimes caused Modo to crash.
- BUG ID 47509 - File Output: Exporting to **.dae** or **.obj** formats with OpenSubdiv elements in a scene caused Modo to crash.
- BUG ID 50247 - Mac OS X only: The **Advanced** viewport was disabled on systems using NVIDIA cards with non-Apple drivers (NVIDIA web drivers).
- BUG ID 50629 - GL: Changing the **Default View Colorspace** preference when using the **Advanced** viewport caused Modo to crash.
- BUG ID 50959 - GL: Drawing UV distortion in the UV view sometimes caused Modo to crash.
- BUG ID 52045 - Rendering scenes without Environment items multiple times caused Modo to crash.
- BUG ID 52073 - Rigging: The Gravity channel modifier was disabled.
- BUG ID 52310 - Render window: The progress bar in the top left of the Render window did not show the Global Illumination pre-pass progress.
- BUG ID 52722 - File Output: STL meshes changed dimensions when exported and re-imported.
- BUG ID 53215 - MeshFusion: Partially coincident geometry sometimes caused meshing errors.
- BUG ID 53220 - Modeling: Auto curve edit didn't work for curves in the base mesh with ghosting enabled.
- BUG ID 53442 - Rigging: User channel minimum and maximum values were reset to 0 when editing the user channel.
- BUG ID 53461 - Preview: Locking Preview with **Render All Outputs** disabled, then changing the **Effect**, restarted the render.
- BUG ID 53468 - UV: Using Transfer UVs with multiple meshes caused Modo to crash.
- BUG ID 53478 - Linux only: Opening scenes containing a Wrap Deformer sometimes caused Modo to crash.
- BUG ID 53491 - Procedurals: Using the Boolean mesh operation with an irregular driver or target mesh sometimes caused Modo to crash.
- BUG ID 53498 - Mac OS X only: **Export Selected Layers** caused Modo to crash on some operating systems.

- BUG ID 53512 - Topology: Using Automatic Retopology on meshes with degenerate triangles caused Modo to become unresponsive.
- BUG ID 53528 - Sculpting: The Text tip brush didn't respect font selection.
- BUG ID 53534 - Rigging: Undoing moving a rig created by the CharacterBox kit by PSoft caused Modo to crash.
- BUG ID 53540 - Sculpting: Sculpting didn't work on meshes scaled to 200% or more in **Item** selection mode.
- BUG ID 53544 - Edge tracking on procedural models caused Modo to crash when edge vertices belonged to different meshes.
- BUG ID 53554 - The item type for VDBVoxel items could not be set to **Mesh**.
- BUG ID 53556 - Procedurals: Using the Boolean mesh operation with **Driver Surface** set to the selected mesh caused Modo to crash.
- BUG ID 53557 - Mac OS X only: Activating the interactive help tool sometimes corrupted the **About MODO** panel.
- BUG ID 53558 - Mac OS X only: Clicking on **About MODO** or **Preferences** when the menus were corrupted, caused Modo to crash.
- BUG ID 53560 - Putting the main Modo config file into an import path caused Modo to crash on launch.
- BUG ID 53573 - Procedurals: Adjusting Edge Bevel using channel hauling, with **Edge Snapping** enabled, caused Modo to crash.
- BUG ID 53578 - Modeling: Deleting instances sometimes caused Modo to crash.
- BUG ID 53584 - Render window: Dismissing a collapsed thumbnail slider's tooltip sometimes caused Modo to crash.
- BUG ID 53588 - UI: Overwriting a 3D viewport preset occasionally caused Modo to crash.
- BUG ID 53589 - Modeling: Activating the B-Spline tool, after selecting a B-Spline created from two edges, sometimes caused Modo to crash.
- BUG ID 53590 - Windows only: Activating Edges to Curves from the **Curve Palette** on adjoining edges of a cube caused Modo to crash.
- BUG ID 53598 - Shader Tree: Transferring materials from one scene to another swapped the order of the layers.
- BUG ID 53599 - Modeling: The Quadruple command run on a selected polygon in a customer scene caused Modo to crash.
- BUG ID 53602 - Color: Giving a long name to an OCIO profile sometimes caused Modo to crash.
- BUG ID 53604 - Rendering scenes with mesh lights and masked render outputs occasionally caused Modo to crash.
- BUG ID 53613 - Loading scenes with unnamed vertex maps sometimes caused Modo to become unresponsive.

- BUG ID 53619 - Windows only: Loading some scenes with backdrop images into layouts with multiple GL viewports caused Modo to crash.
- BUG ID 53620 - MeshFusion: Manipulating the control handles after mirroring a Fusion Trim item sometimes caused Modo to crash.
- BUG ID 53622 - Procedurals: Applying the Polygon Bevel mesh operation after Symmetrize caused Modo to crash.
- BUG ID 53634 - Rendering: When rendering certain scenes with an Orthographic camera, fireflies (hot pixels) appeared on the output.
- BUG ID 53637 - Modeling: Using Background Morph from the **Vertex Map** menu caused Modo to crash.
- BUG ID 53642 - Procedurals: Editing meshes used by hidden meshes with mesh operations caused intermittent crashes.
- BUG ID 53647 - UI: Setting a subtext on a menu item caused Modo to crash.
- BUG ID 53651 - GL: Calling InvalidateOverrides in modo_cl resulted in Modo crashing.
- BUG ID 53652 - GL: Playing particle simulations in the **Advanced** viewport sometimes caused Modo to crash.
- BUG ID 53653 - Network Rendering: Modo crashed when the master and slave bucket directories were not writable.
- BUG ID 53655 - Particles: Converting a particle simulation into a mesh, then playing back the simulation and converting the mesh to particles caused an error when the simulation reached the end of the timeline.
- BUG ID 53656 - Modeling: Moving vertices with the Transform tool with Snapping enabled occasionally caused Modo to crash.
- BUG ID 53667 - Modeling: Using the **poly.make** command in Edge selection mode with Symmetry enabled sometimes caused Modo to crash.
- BUG ID 53668 - Modeling: Localization occasionally caused Modo to crash when the scene was loading.
- BUG ID 53674 - Rendering: Baking textured displacement produced a black image.
- BUG ID 53676 - UI: Closing multiple scenes with the pointer over the **Item List** sometimes caused Modo to crash.
- BUG ID 53680 - Modeling: Using the Topology tool in Symmetry mode occasionally caused Modo to crash.
- BUG ID 53681 - Procedurals: Using polygon loop selection in the UV view occasionally caused Modo to crash.
- BUG ID 53683 - Painting: Projection Ink did not respect the **Density** setting of the brush.
- BUG ID 53688 - Modeling: **Ctrl/Cmd**+clicking and dragging on primitives did not work as expected.

- BUG ID 53705 - MeshFusion: Clicking the **Trim** button with multiple meshes selected in a specific scene caused Modo to crash.
- BUG ID 53706 - Modeling: Fill Quads using Fill with Grid Pattern did not work correctly on concave patches.
- BUG ID 53708 - MeshFusion: Triggering an update after assigning a material to a mesh in a specific scene sometimes caused Modo to crash.
- BUG ID 53724 - Topology: Automatic Retopology didn't respect transforms on parent items.
- BUG ID 53728 - MeshFusion: Opening a specific scene, selecting a Fusion item in it, then activating **Fusion On** caused Modo to crash.
- BUG ID 53729 - Documentation: The **Preview** option for **Final Render Quality** was not documented.
- BUG ID 53733 - Mesh Types: Performance was low with instances imported from Collada.
- BUG ID 53734 - Rigging: Command Regions were not selectable when the rig was moved.
- BUG ID 53736 - Procedurals: Selecting a hidden mesh layer after editing vertices caused Modo to crash.
- BUG ID 53754 - Scripting: Using **edge.knife** in a script caused Modo to crash.
- BUG ID 53756 - MeshFusion: Clicking the **Fusion Source Mesh Visibility** button displayed an error message.
- BUG ID 53768 - GL: Value gradients did not display in the **Advanced** viewport.
- BUG ID 53790 - Rendering: The surface area calculation for mesh lights with non-uniform scaling produced incorrect illumination.
- BUG ID 53791 - Modeling: Snapping didn't work on background geometry in **Shaded** and **Default** modes if geometry was overlapping.
- BUG ID 53816 - Rigging: Deleting items from a specific scene with Command Regions caused Modo to crash.
- BUG ID 53821 - MeshFusion: The **Fusion Source Mesh Visibility** control didn't affect the Compound Trim Locator.
- BUG ID 53828 - Sculpting: Dismissing Preview lock warnings after trying to UV sculpt occasionally caused Modo to crash.
- BUG ID 53834 - Preview: Modifying a mesh light while Preview was rendering sometimes caused Modo to crash.
- BUG ID 53838 - Item List: Hiding unselected items also hid all images and clips.
- BUG ID 53845 - Render window: There was no option to set the maximum render slots in the **Preferences**.
- BUG ID 53852 - Network Rendering: Separate Render Outputs were not saved when using the **Render with Network Nodes Only** and **Send Whole Frames to Network Render Nodes** settings.
- BUG ID 53885 - File Input: A scene imported using a command caused Modo to crash.

- BUG ID 53894 - Modeling: Primitives were not placed at the position where you first clicked in the viewport.
- BUG ID 53895 - Rendering: Lights rendered black and in the wrong place when the geometry was not visible in the scene.
- BUG ID 53896 - Rendering: Rigging area lights with negative width or height values caused Modo to crash.
- BUG ID 53899 - MeshFusion: Evaluating a model in a specific scene sometimes caused Modo to crash or produced a bad mesh.
- BUG ID 53911 - Rigging: Sculpting a corrective morph onto a Joint Influence was not possible.
- BUG ID 53912 - Modeling: While in **Edge** selection mode, Modo crashed when you tried to lasso-select edges on a curve that had been UV transformed.
- BUG ID 53919 - UI: When the **Info** tab was expanded horizontally to display the spreadsheet view, values could not be selected, copied, or pasted.
- BUG ID 53930 - Preview: Area lights added to an existing Group Locator caused Modo to crash.
- BUG ID 54084 - Deformers: In some scenes, playing back an animation with cached deformations caused Modo to crash.

Developer Notes

Here are the changes relevant to developers.

Bug Fixes and Enhancements

- SDK: It was not possible to get a **CLxUser_SchematicNode()** interface from a Schematic item node.
- SDK: **ILxSchematicNodeConnection** has been replaced with **ILxSchematicNodeChannel** in the Schematic SDK.
- BUG ID 53503 - Scripting: Disconnecting graph connections using the bitshift-operator (<<) caused an error.
- BUG ID 53713 - Scripting: Several vertex and polygon properties returned values from the wrong components.
- BUG ID 53741 - Scripting: Querying edge selection resulted in a **MeshEdges object has no attribute _mesh** error.
- BUG ID 53844 - SDK: It was not possible to put geometry into setup mode when using a CharacterBox kit script.

Release Notes for Modo 10.2v1

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Release Date

13 October 2016

System Requirements

Officially Supported Operating Systems

- Mac OS X 10.9.x, 10.10.x, 10.11.x, and 10.12.x (64-bit only)
- 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 1920 x 1080 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 1 GB 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 11.0v1. 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 visit the Support Portal at supportportal.thefoundry.co.uk.

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

Tested Workstation Hardware

	<ul style="list-style-type: none"> • 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
AMD Enterprise Graphics Cards	<ul style="list-style-type: none"> • FirePro™ W4170 • FirePro™ W5000 • FirePro™ W8000 • FirePro™ W2100 • FirePro™ W5100 • FirePro™ W4100 • FirePro™ W7100 • FirePro™ W8100 • FirePro™ W9100
NVIDIA Prosumer Graphics Cards	<ul style="list-style-type: none"> • Geforce GTX 680 • Geforce GTX Titan • Geforce GT 650M
NVIDIA Enterprise Graphics Cards	<ul style="list-style-type: none"> • Quadro® K6000 • Quadro® K5000 • Quadro® K4000 • Quadro® K2000

Tested GPU Hardware

- Quadro® K600
- Quadro® K5200
- Quadro® K4200
- Quadro® K2200
- Quadro® K1200
- Quadro® K620
- Quadro® M5000
- Quadro® M4000

New Features

Animation

Deformer Caching

The output of mesh operations and deformers can now be cached when animating a scene. When frames are cached, performance is limited mostly by GPU drawing performance. The **Cache Deformers** options greatly improve playback speed, at the expense of using more memory.

Direct Modeling

Curve Tool Improvements

The following improvements have been made to the Curve and Bezier tools:

- **Auto Curve Edit** - When selecting a curve, the corresponding curve editing tool now automatically activates, allowing you to immediately start editing the curve.
- **Zero-weight Bezier Tangents** - You can create sharp corners on Bezier curves by clicking in the viewport (as opposed to clicking and dragging to create a smooth control point).
- **Round Corner Tool** - While editing Bezier curves, sharp corners now have a widget you can drag to add a rounded corner.

- **Bezier Tool: Preserve Broken Tangents by Default** - You can edit the tangent handles of a Bezier curve's control point independently.
- **Close Curve by Clicking on First Control Point** - Right-clicking on the first control point while creating a new curve closes it into a loop.

File I/O

Redirecting Content

The content location can now be controlled by the config system, making it easier to change where the content is located. You can set this in **Preferences > Defaults > Application > Content Location**.

MeshFusion

Compound Trim Viewport UI

The Schematic-free system utilizes Compound Trims. They are simple assemblies created and destroyed on the fly as you add Trim geometry consisting of multiple meshes.

Deferred Updates

The Fusion item now has a **Deferred Updates** checkbox. When enabled, the Fusion item doesn't update to reflect changes to the input geometry until you release the mouse button. This allows you to edit very complex setups with reasonable performance.

Fusion Legacy Model Conversion

Previous Fusion models (Schematic or Item List structure used for 3D-Tree Fusions) can be converted to the new Flat Schematic Tree used by the Schematic-free system. Legacy Fusion models still load and display properly, conversion is only required for further editing.

Source Mesh N-gon Support

MeshFusion now supports n-gons in source meshes.

Support Standard Transforms of Fusion Item

You can now use the standard Modo transforms to move, rotate, and scale your Fusion Item.

Fusion Tab

MeshFusion's toolbar has been updated with new functionality. Additionally, drag-and-drop functionality has been added.

Wireframe Drawing of MeshFusion Input Items

MeshFusion input items are now drawn in wireframe mode. This improves clarity in the viewport, and means MeshFusion no longer creates or requires custom shaders or groups.

Procedural Modeling

Assembly Aliases

Assemblies can be collapsed into a single Assembly Alias item. This allows more technical artists to create assemblies that are easier to use for others and makes the scene appear tidier.

Duplicating Geometry

The following procedural mesh operations have been added to Modo:

- Array
- Clone
- Mirror
- Radial Array
- Radial Sweep
- Scatter Clone
- Symmetrize

Slice Tools

The following procedural mesh operations have been added to Modo:

- Axis Drill
- Axis Slice
- Boolean
- Slice
- Solid Drill

Surface Support for Merge Meshes

The Merge Meshes operation has been extended to accept any item with geometry in it, including MeshFusion items, procedural items, such as the Gear and Rock items, VDBVoxel meshes, the output from Fabric canvas graphs, and so on.

Selection Modifiers

The following procedural selection modifiers have been added to modify existing selections:

- **Boundary Edges** - Converts a polygonal selection into an edge selection by using the boundary of the polygon selection to determine the edges to select.
- **Grow/Shrink** - Grows and shrinks the selection.
- **Invert** - Inverts selection operations.

In addition, selections have blend modes that specify how multiple selections are combined.

Rendering

Mesh Lights

A new light type - Mesh Light - has been added. This new light type allows you to choose a single mesh item in the scene and use it as the shape of the light.

Sampling Settings

Reflection, refraction, and subsurface scattering (SSS) sample settings have been moved from the individual materials to a global control on the Render item. If the global setting is 0, the local control on the materials is still used. Additionally, there is a quality multiplier on the individual materials if you want to have different quality levels on different materials.

Preview Lock

A new **Lock** button has been added to the Preview window. When enabled, it completely locks Modo, preventing you from accidentally restarting preview. Secondly, it overrides all the quality settings to make sure that everything is set up correctly for final frame rendering.

This makes it much easier to use preview for final frame rendering for stills.

Rounded Edges

Two new properties have been added to the Material item properties:

- **Rounded Edge Width** - A new **Shader Tree** effect that allows the widths of rounded edges to be controlled by image maps, procedural textures, or gradients. The value of a texture using this effect acts as a multiplier on the edge width specified in the material properties.
- **Rounded Edge Angle** - A new material channel that controls which edges should appear rounded based on how sharp they are. An edge appears rounded if the surface normals of the adjoining polygons vary by more than the **Rounded Edge Angle** setting. The default value is 40 degrees, same as the default **Smoothing Angle**. Lowering the setting to 0 causes all edges to appear rounded.

Simpler Controls in Render Window

The **Image Processing and Compare**, **Region**, and **Options** tabs in the Render Window have been tidied up and simplified.

Topology

Automatic Retopology

A new command has been added that generates new mesh items from the selected items. The new mesh is produced according to an automatic retopology algorithm that aims to output a clean mesh with good topology at a density you specify. The density can be controlled by Weight Maps or by the input density and the mesh flow can be controlled by edge selection sets or by sketching guide curves on the surface. For more information about sketching guide curves, see [Retopo Guides](#) on page 30.

The automatic retopology implementation converts a mesh into a mesh made up of all 3-, 4-, and 5-point polygons of a uniform size. To determine this polygon size, it looks at the number of polygons you request in the output, and divides the surface of the area by that number. As a result, the target

polygon number, either as a number or a percent, is only approximate. An option to apply a subdivision to the mesh to produce pure quads is also available.

The retopology algorithm can detect sharp edges in the input mesh and preserve them by looking for faces that meet at an angle greater than the crease angle you specify. Although the process is automatic, you can guide the results using standard Modo mesh attributes, like the RetopoDensity weight map, or the RetopoEdgeLock and RetopoFlow edge selection sets.

Detriangulate

The Detriangulate tool removes diagonal edges. It allows you to control flatness thresholds and to specify one or more edges to act as guides for where the quads are.

Retopo Guides

This tool allows you to sketch curves (polylines) on a surface that are set up as either position or edge flow guides for automatic retopology. The curves are tagged with the special selection set name that the autoretopo command looks for, and they have a vertex normal map with normals taken from the surface. These are both necessary elements for autoretopo.

You can activate the tool by clicking on the **Retopo Guides** button in the **Topology** layout under the **Tools** sub-tab.

UI

Automatic Component Selection

In **Auto Select** mode, Modo automatically switches between Vertex, Edge, and Polygon selection mode, depending on what type of component you click on.

Enable/Disable Camera Images

You can now enable and disable foreground and background images in the Camera item's properties.

Fading Grid

The grid now fades out around the corners, providing a sense of depth and distance. Red and blue color highlights for the X and Y center axis can also be enabled to help keep your orientation.

Item Mode Wireframe and Selection Drawing

Selected items now always draw their wireframe, even if wireframe display is disabled. Optionally, the item selection can be drawn with a solid fill instead.

Item Work Planes

To make aligning the Work Plane to items easier, you can now right-click on an item in the 3D viewport and align the Work Plane to that item.

Morphed Mesh Drawing

Morph maps can be drawn as a cage, with various drawing styles, with vectors drawn as line segments from the base mesh to the morph mesh, and with color and opacity settings for the morph cage.

Primitive Tool Handle

Additional controls have been added for the interactive tools. The tool handles can now either adjust around a locked central location, or lock the opposite side to the grabbed handle, making them easier to use.

Proficiency Switching in Forms

Panels that contain controls with different proficiency levels now show **Less** and **More** buttons at the bottom of the view, allowing you to display fewer or more controls.

Vertex Drawing Options

Vertices are now automatically visible in Vertex mode, but not otherwise. They can still be explicitly enabled in other component modes.

Work Plane Align to Screen

An option to align the work Plane to the **Perspective** view has been added to make certain modeling tasks easier, such as drawing curves using Sketch.

Work Plane Bookmarks

Work Plane bookmarks can now be assigned to polygons and re-used later on. This is useful to store construction planes in the geometry itself. Work Plane Bookmarks work in a way that is very similar to selection sets. Different bookmarks can be saved for each of your scenes.

Work Plane Visibility Options

New viewport visibility options have been added to provide more control over the main grid and the Work Plane.

Miscellaneous

Maximum Environment Resolution

A new preference for environment resolution has been added to the **Display Preferences**. Reducing the resolution increases performance when editing the environment.

Numeric Control Color Correction

Numeric control color correction applies color correction to the numeric values displayed in color fields. For example, this allows you to copy and paste the hex code for a color from Photoshop into Modo and have the colors match. Previously, Modo supported color correction for the drawn representation of a color in the UI but the numeric values were always drawn in linear space.

Particle ID Channel

Locator items now have a **Particle ID** channel that can be used to drive the Particle ID assigned to rendered surfaces. You can set this value manually or drive it by a rig and then feed it to Shaders. This is mostly useful for Gradients and Texture Switch.

Simulation Modifiers

Simulation Modifiers provide ways to control animated behaviors based on set triggers.

String Encode Modifier

This is a simple channel modifier for turning a numerical value into a text string with optional decimal precision and leading zeroes.

Feature Enhancements

- UI: There was no keyboard shortcut to quickly open popovers and to match snapping and symmetry.
- BUG ID 14167 - Paint layout: You can now undo your settings for **Image Set Resolution**.
- BUG ID 26856 - Render layout: A **Rounded Edge Width** has been added as a texture effect in the **Shader Tree**.
- BUG ID 31383 - Render layout: A **Rounded Edge Angle** channel has been added to the advanced Material item to control which edges should have the rounding effect applied (expressed as the minimum angle between the surface normals of the adjoining polygons). The default value of 40 degrees matches the default **Smoothing Angle**.
- BUG ID 31747 - Online Help: The documentation has been updated for Environment Presets, highlighting the fact that full lighting setups can be stored.
- BUG ID 32703 - Item List: Item filter selection by color has been added.
- BUG ID 47652 - Volumes: The VDBVoxel item has been added to the schematic's **Add > Volumes** menu.
- BUG ID 50877 - Procedurals: The ability to apply Curve Fill to pave in axis other than the Z axis has been added.
- BUG ID 51256 - Procedurals: To improve performance, Mesh Ops are no longer evaluated in the Setup layout and in Setup mode.
- BUG ID 51262 - GL: Color has been improved in the viewports.
- BUG ID 52354 - File Output FBX: Added functionality for exporting replicators with multiple prototypes.
- BUG ID 52422 - Item List: **Item List > Filter Items > By Color** dropdown options now matches the options in the Item List right-click context menu.
- BUG ID 52463 - Model layout: The command **select.all** has been added to **modo.cl**.
- BUG ID 52452 - UI: The VDBVoxel option has been added to the Schematic Preset Browser.
- BUG ID 52455 - Procedurals: The **Enable** option has been added to the Curve Rebuild operation Properties.
- BUG ID 52491 - UI: The **Mesh Operations** list is now consistent between layouts.
- BUG ID 52650 - Shader Tree: The **Assign Material** command has been updated to display a material type dropdown menu when a pre-existing material group is selected.

- BUG ID 52651 - Shader Tree: Selecting an existing Unity or Unreal material in the **Assign Material** dropdown menu now updates the properties in the dialog.
- BUG ID 53058 - Particles: **Spring** and **Viscosity** properties have been added for Dynamic Fluid.
- BUG ID 53073 - Shader Tree: **Normal Map Blend** mode has been added to stack normal maps correctly.
- BUG ID 53117 - Performance: In the **Advanced** viewport, the minimum GPU RAM specification has been increased from 512 MB to 1 GB.
- BUG ID 53432 - UI: Tooltips has been added to Preview.

Bug Fixes

- Deformers: Selection drawing wasn't disabled when scrubbing or playing animations.
- File Output: The Unreal export didn't work as expected.
 - There was no progress confirmation when re-exporting or overwriting unchanged image files.
 - The image map names were missing for warning/handling of non-alphanumeric characters.
 - The file names were missing for warning/handling of non-alphanumeric characters.
 - File names for images used in the clip view were not captured.
 - Export Substance textures was not supported.
- File Output (Game Export): The latest version of the Unreal Modo Material Importer was not supported.
- File Output: UV Distortion Maps were not filtered out from **.fbx** files when exported.
- Network Rendering: Rendering with **Use Network Nodes Only** enabled caused Modo to crash.
- Preview: There were no notification if all buckets had been processed at least once in Preview Animation.
- Render: Occlusion-based edge rounding was skipped entirely for indirect rays.
- Render: Render performance was slow generating scenes using indirect rays.
- BUG ID 29134 - Shader Tree: Duplicating a nested layer mask created a nested layer mask in the group mask.
- BUG ID 30312 - Model layout: With **Symmetry** on, axis transform handles were drawn in the wrong transformation. For example, the Y axis moved in the X direction and the X axis moved in the Z direction.
- BUG ID 30417 - Render layout: Moving points on a curve broke continuous implicit UV textures.
- BUG ID 36363 - Shader Tree: Duplicating or copying an instance in the **Shader Tree** set its effect incorrectly.
- BUG ID 36881 - Presets: Selecting a material mask, then double-clicking to add presets, loaded them incorrectly.

- BUG ID 37318 - Model layout: Undoing the **workPlane.fitGeometry** and **workPlane.fitSelect** commands did not work correctly.
- BUG ID 38613 - Sculpt layout: Image-based sculpting sometimes broke meshes along polygon borders.
- BUG ID 40167 - Animation layout: Pivot snapping did not work in **Skeleton Edit** mode.
- BUG ID 41021 - Render layout: Using the **Shadow Density** render output resulted in high render times.
- BUG ID 41326 - Deformers: **Wrap Deformer** did not respond to deformations on the wrap mesh.
- BUG ID 41743 - File Output: When exporting Alembic format data files, unit distances were not preserved.
- BUG ID 42163 - Shader Tree: Blending between two masks (material presets), and altering the properties of the topmost mask, did not blend results correctly.
- BUG ID 42391 - Dynamics: Closed polylines were simulated as if opened.
- BUG ID 43736 - File Input: Importing Alembic format data files changed the scene to 24 fps.
- BUG ID 44616 - File Output: When using **Export Selected Layers**, Modo crashed exporting layers to separate files.
- BUG ID 44732 - Preview: Autofocus (**Ctrl/Cmd+F**) did not work in full-resolution mode.
- BUG ID 45172 - GL: Performance - Zooming in and out, with the mouse in a dense scene, sometimes caused a lag.
- BUG ID 45847 - Volumes: VDBVoxel motion blur didn't orient properly.
- BUG ID 46732 - File Input: Vertex maps without a name could not be selected.
- BUG ID 46781 - UI: Dragging the render camera label sometimes caused Modo to crash.
- BUG ID 47134 - Network Rendering: If the last frame was rendered on a slave system, the Render window didn't show it.
- BUG ID 47230 - File Output: Export of Alembic format data files failed due to a custom channel called **inherit**.
- BUG ID 47636 - File Output: Export of Alembic format data files failed to include User channels.
- BUG ID 47909 - UI: Editing the Work Plane made it visible, even when its visibility was disabled.
- BUG ID 47916 - File Output: Export of Alembic format data files failed if the scene FPS was not set.
- BUG ID 48187 - Dynamics: Compound Rigid Body Glue did not work.
- BUG ID 48495 - File Output: Exporting unsupported face types in Alembic format data files caused Modo to crash.
- BUG ID 48630 - UI: The command query button worked as a toggle in most forms but not in Pie menus.
- BUG ID 48669 - UI Linux only: Meshfusion object set to **Airtight Final** crashed Modo when **Dup & Convert to Mesh** was applied.

- BUG ID 48724 - Preview: A maximized Preview failed to update keyed color changes when switching frames.
- BUG ID 48793 - Animation layout: Animation Baking did not work with Dynamic Parenting.
- BUG ID 48952 - Performance: Working on FBX scenes or objects which were imported with high values for scaling causes extreme GUI lags.
- BUG ID 49304 - UI Linux only: Selecting **None** for the camera's background image caused Modo to crash.
- BUG ID 49440 - UI Mac: Target filenames were not displayed in the **missing** file dialog.
- BUG ID 49810 - GL: In the **Advanced** viewport, a negative scale of an object displayed as flipped polygons.
- BUG ID 49857 - Deformers: Lattice deformation smoothing was incorrect.
- BUG ID 50208 - Shader Tree: Using a procedural material as a Layer Mask rendered incorrectly until disabling and re-enabling the layer above it.
- BUG ID 50412 - Schematic: Assembly values were not saved and reloaded with specific scenes.
- BUG ID 50459 - UI Linux: Popover windows did not display when activated.
- BUG ID 50601 - File Input: Importing **.obj** files with the material **Diffuse** set to 0%, produced black textures.
- BUG ID 50623 - Volumes: Preview didn't respond to feature parameter changes made to VDBVoxel items.
- BUG ID 50629 - GL: Changing the **Preference > Color Management > Change Default View Colorspace** setting with the **Advanced** viewport active caused Modo to crash.
- BUG ID 50634 - Preview: Editing the material of an invisible item made it visible.
- BUG ID 50657 - Procedurals: Translating procedural meshes was slow.
- BUG ID 50684 - Deformers: The Lattice deformer did not work correctly in some cases.
- BUG ID 50789 - GL: In the **Advanced** viewport, Screen Space Ambient Occlusion (SSAO) caused a memory leak.
- BUG ID 50802 - Volumes: Blobs didn't render in Preview with a Particle Source and Orthographic Camera.
- BUG ID 51015 - UI: **Shift** + right-clicking **3D Selection Add** did not work, but **Alt** + right-clicking did, when in Maya navigation remapping.
- BUG ID 51021 - Model layout: The Text tool's **Font** menu only displayed the first member of font families.
- BUG ID 51174 - GL: When started in Play mode, there was no indication that Play mode was active.
- BUG ID 51292 - Model layout: Using the Bevel or Inset tool caused shading issues for all polygons that had holding edges for holes.
- BUG ID 51298 - File Input: Modo either crashed or displayed the error message **Scene load unsuccessful** when importing a specific Alembic format data file.

- BUG ID 51332 - Model layout: Make Curve Fill didn't work as expected.
- BUG ID 51397 - Render layout: Round Edge Shader didn't work in certain situations.
- BUG ID 51401 - Render layout: Loading a **.png** file into the Render Window did not work as expected.
- BUG ID 51424 - Fusion: **Alt+N** and **Alt+M** produced errors when a non-Fusion item was selected.
- BUG ID 51443 - GL: The Environment Map was flipped in **Advanced** viewport orthographic views.
- BUG ID 51450 - Model layout: The MeshFusion trim tool produced unexpected results and displayed jagged edges where the mesh quads were cut off.
- BUG ID 51452 - Model layout: The MeshFusion trim tool displayed jagged edges.
- BUG ID 51513 - Animation layout: The Camera Matching Line length control wasn't accurate and did not match the geometry to an image.
- BUG ID 51529 - GL: Environment reflection did not work correctly in orthogonal viewports.
- BUG ID 51554 - GL: The **Advanced** viewport roughness did not match Modo's render with Image-based lighting (IBL).
- BUG ID 51686 - Model layout: Drawing a curve in the base mesh in the procedural with Merge Meshes and Polygon Reduce operations caused Modo to crash.
- BUG ID 51695 - Render layout: Baking a UDIM bake item with **save output** for **.png** formats created corrupted saved images.
- BUG ID 51772 - GL: The **Default** and **Orthographic** views of the **Model** layout displayed artifacts.
- BUG ID 51809 - Schematic: Closing a scene after using **select.link** with no arguments caused Modo to crash.
- BUG ID 51865 - Model layout: Procedural tool handles sometimes severely affected viewport performance.
- BUG ID 51957 - GL: Using a GL background with Gradient set in an **Orthographic** view looked incorrect.
- BUG ID 52068 - Dynamics: Mesh Shatter source mode created shards incorrectly.
- BUG ID 52081 - Particles: Particle Modifiers using a mesh as an input Point Source changed the particle color to black.
- BUG ID 52240 - Render layout: Texture Replicators did not work correctly on vertical surfaces.
- BUG ID 52246 - Model layout: The Polygon Extrude mesh operation only worked when the axis was set to **none**.
- BUG ID 52247 - Shader Tree: The Particle ID list displayed Material IDs.
- BUG ID 52249 - File Input: Using the **Image** tab **Add** button to make a new image group failed.
- BUG ID 52258 - Sculpting layout: Cutting and pasting part of a multi-resolution sculpt mesh removed sculpting on the part of the mesh that was not cut.
- BUG ID 52290 - UI: Environment images didn't appear in the **Images** tab when loading scenes with those clips parented.

- BUG ID 52297 - Scripting: The NEXUS_SCRIPTS environment variable did not change the location for implicit scripts run with @.
- BUG ID 52320 - Preview: Volume items did not display the alpha output in Preview.
- BUG ID 52321 - Sculpting layout: Unsupported falloff input options remained in the Sculpt Modifiers menu.
- BUG ID 52325 - Model layout: Copying and pasting a closed curve caused the pasted curve item to have a sharp start/end point.
- BUG ID 52334 - Mesh Types: Using the **poly.convert** command on curves produced unexpected results.
- BUG ID 52364 - Model layout: The Extrude and Bevel mesh operations sometimes caused Modo to become unresponsive when used on a frozen Text item.
- BUG ID 52381 - Preview did not updated correctly when visibility changed on an Item Shader.
- BUG ID 52389 - Preview: Deleting a Cel Edges material while Preview was running caused Modo to crash.
- BUG ID 52399 - Model layout: After having a Freeze mesh operation in the stack, any change to the Subdivision Level of the base mesh didn't update until you disabled and re-enabled the Freeze mesh operation.
- BUG ID 52403 - Shader Tree: Deleting a Shader mask caused Modo to crash or become unresponsive.
- BUG ID 52407 - Preview: Changing the convergence slider relaunched Preview.
- BUG ID 52411 - Model layout: The Radial Array **Merge Vertices** option only merged vertices with the source geometry.
- BUG ID 52415 - Render layout: Bump maps couldn't be baked from a mesh.
- BUG ID 52423 - Model layout: Freezing subdivisions to quads with the Freeze mesh operation did not update when changing subdivision level on the mesh.
- BUG ID 52442 - Model layout: The Tube tool sometimes crashed if you tried to select a non-existent preset by using a script or command.
- BUG ID 52445 - Procedurals: A scene containing a hidden procedural mesh took a long time to open.
- BUG ID 52470 - Model layout: Modo became unresponsive when adding a Polygon Bevel Mesh Operation to a specific item.
- BUG ID 52480 - GL: After disabling GL visibility performance checkboxes with the **Advanced** viewport active Modo crashed.
- BUG ID 52484 - Preview: When changing the Render Curve **Start** value while running Preview Modo crashed.
- BUG ID 52487 - Deformers: The **Add Item** buttons in the **Mesh Operations** list and in the **Item List** displayed the same name.

- BUG ID 52488 - Deformers: The **Add Item** list in the **Mesh Operations** list and in the **Schematic** viewport displayed as **Procedural** in the menu.
- BUG ID 52490 - UI: Some deformers had no buttons in the **Setup** layout toolbar.
- BUG ID 52498 - Animation: A customer project was performing significantly slower in Modo 10.1 than in Modo 10.0.
- BUG ID 52500 - UI: No **Apply** button was displayed in the Edge Slide tool properties.
- BUG ID 52503 - Scripting: Using a command alias for mesh cleanup caused Modo to crash.
- BUG ID 52515 - Model layout: Running the Mesh Cleanup or Merge Vertices commands on specific meshes caused Modo to crash.
- BUG ID 52528 - Render layout: When rendering a specific scene after deleting the B-spline Weight Map Modo crashed.
- BUG ID 52539 - Model layout: Deleting a Weight Map with transparent materials caused Modo to crash.
- BUG ID 52553 - Render layout: When using standard scene lights with negative intensity values, a clipped patch of black was displayed.
- BUG ID 52556 - UI: Some area light flags were disabled but were still needed if the falloff type was changed.
- BUG ID 52563 - Shader Tree: Two Texture Locators were created when Final Color output was defined using the Bake Wizard.
- BUG ID 52567 - Deformers: The Deformer List showed graphs ordered in the opposite order to the Schematic.
- BUG ID 52582 - Render: The Render Output Bake item didn't save to an output directory driven by a String Constant node.
- BUG ID 52583 - Render layout: Render failures occurred using Bake items.
- BUG ID 52584 - Preview: Adjusting Occlusion Texture cache settings with Preview running caused Modo to crash.
- BUG ID 52585 - Model layout: Copying procedural items from one scene to another didn't work.
- BUG ID 52586 - Model layout: The Procedural Lattice Effector crashed when scaling lattice points.
- BUG ID 52599 - Deformers: Polygon rollover highlighting was incorrect for deformed meshes.
- BUG ID 52610 - UI: Texture falloff XYZ was only visible when the Locator was selected.
- BUG ID 52621 - Scripting: Trying to remove an item when the value was set to **None** (`scene.removeItems(None)`) caused Modo to crash.
- BUG ID 52633 - Shader Tree: Texture Replicators did not align to particles.
- BUG ID 52644 - Volumes: Navigating Preview with VDBVoxel items was much slower in Modo 10.1v2.
- BUG ID 52645 - Model layout: The Right-click Lasso selected more than expected.
- BUG ID 52656 - Model layout: UV data was lost when freezing a procedural item.

- BUG ID 52660 - Model layout: **modo_cli** crashed when running the **poly.freeze** command on curves with **Tessellation** set to **false**.
- BUG ID 52665 - Model layout: New materials were not created when copying and pasting polygons into a new scene.
- BUG ID 52668 - Preview: Right-clicking in Preview showed item masks multiple times.
- BUG ID 52688 - UI: Profile names in the Preset Browser displayed the file path instead of the name.
- BUG ID 52701 - Animation: The **Command Region** command entry field displayed the command name, not the command.
- BUG ID 52709 - File Input: Loading a scene with a corrupt **.png** image caused Modo to crash.
- BUG ID 52748 - Particles: When using a UV Constraint in a Particle Simulation Modo crashed.
- BUG ID 52786 - Item List: Mesh item visibility couldn't be enabled in Element mode.
- BUG ID 52793 - Paint layout: Flipping image inks created repeats, even if **Repeat** was disabled.
- BUG ID 52814 - GL: Polygon selection only worked on selected items.
- BUG ID 52826 - Procedurals: Selecting the base mesh and adding an operator placed it in the wrong location in the stack, instead of immediately above the base mesh.
- BUG ID 52830 - Model: Right-clicking on selected edges after beveling caused Modo to crash.
- BUG ID 52857 - Shader: Tree UV mapping was not working correctly with the Texture Switch node.
- BUG ID 52858 - Shader Tree: Modo allowed Particle IDs to be 1.0 (previously, any ID ≥ 1 was set to 0) for the Texture Switch node. It added the username for the Particle ID channel.
- BUG ID 52860 - Content: Closing a scene with a SLIK2 Studio preset in it caused Modo to crash.
- BUG ID 52889 - UV: Using Bevel with Inset and Make UVs Connected broke the UVs.
- BUG ID 52893 - UV: Copying and pasting from the UV lists tab sometimes broke UVs.
- BUG ID 52899 - Procedurals: New mesh operations were always added to the top of the **Mesh Operations** list.
- BUG ID 52940 - Deformers: Lattice points set up with Item Influence crashed when used as a Replicator prototype.
- BUG ID 52969 - Deformers: Tools were not respecting the **Enable Deformers** option setting in the viewport.
- BUG ID 53131 - Procedurals: The Path Generator tool operation flipped polygons.
- BUG ID 53134 - Shader Tree: Dragging and dropping an item into a new scene reordered all associated shaders.
- BUG ID 53137 - Preview: Replicators could not be deselected.
- BUG ID 53172 - File Import: Loading an **.fbx** file with a user-defined channel name caused Modo to crash.
- BUG ID 53194 - Network Rendering: Image processing was not possible and dummy thumbnail images were generated for offloaded (slave-only) renders after the 10th render.
- BUG ID 53207 - File Output: Saving Substance images sometimes caused Modo to crash.

- BUG ID 53219 - Schematic: When dragging materials from one file to the other, all schematic links were lost.
- BUG ID 53229 - UI: The Time Offset Type channel had a dropdown menu with incorrect entries.
- BUG ID 53248 - File Output: Alembic format data files crashed or hung when exporting a procedural mesh with a Bevel mesh operation.
- BUG ID 53457 - UV: Selecting the next loop on a UV map caused Modo to crash.

Developer Notes

Here are the changes relevant to developers.

Bug Fixes and Enhancements

- The **DrawingOverride** metaclass has been added.
- **ILxSchematicGroup**, **ILxSchematicNode**, **ILxSchematicNodeChannel** and **ILxSchematicNodeConnection** have been added. **ILxSchematicNodeConnection Count** and **ByIndex** are not fully implemented.
- The **saveOK** method didn't take the **MSGDIALOG_NO** message into account.
- **ILxSceneEvalListener** has been extended to add two new functions: **ChannelPreValue** and **ChannelPostValue**. These are called before and after a series of **ChannelValue** calls to signal a series of related changes.
- The ChannelTracker has been extended to pass a flags value that specifies the reason the channel tracker is being called; Pre, Value, or Post.
- Mesh edits performed by TD SDK couldn't be undone.
- RenderCache: **GeoCacheSurface_Sourceltem()** has been updated to return instanced items. PrintStats has been updated to not display segment information (faster for heavy scenes) and output more information for instanced items.
- The RenderCache documentation has been updated.
- BUG ID 41346 - Resizing a viewport sometimes caused the mesh to turn white.
- BUG ID 49913 - A specific scene caused RenderCache to crash when you changed the render camera from Camera 2 to Camera 1.
- BUG ID 51346 - Changing dependent channels in plug-ins didn't update forms.
- BUG ID 51728 - Command blocks didn't allow message keys.
- BUG ID 52550 - **item.channel** notifications for vector channels are now handled by base name.
- BUG ID 52561 - RGBA map definition has been added to the TD SDK meshgeometry.
- BUG ID 52731 - Setting multiple channel values ignored the action argument.
- BUG ID 52812 - Moving a proxy with RenderCache on caused Modo to crash.

- BUG ID 53196 - TD SDK: Setting the color channel did not work as expected.
- BUG ID 53198 - RenderCache: Drawing a Bezier curve with **`sdk.rcache.listen`** on caused Modo to crash.