



ENGLISH DOCUMENTATION

Model Vista Create Blender Plugin

User documentation for the Model Vista Create Blender Plugin.

15 September 2026

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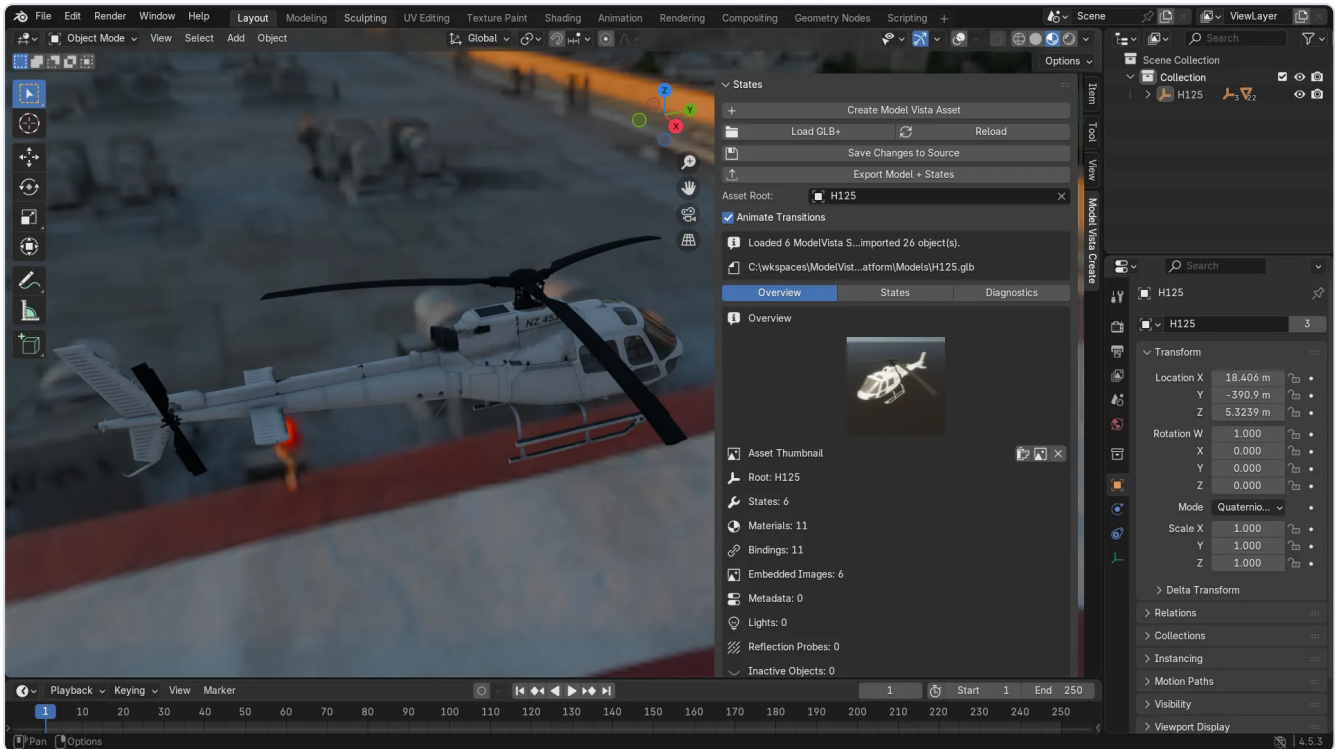
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Blender plugin

Model Vista Create Blender plugin 1.0.0 lets you author all seven Model Vista States types in Blender, starting from a Blender hierarchy, a standard GLB/gITF, or an existing GLB+ asset.



Create your first asset

1. [Install the plugin](#), open the 3D Viewport, press **N**, and select **Model Vista Create**.
2. Select your model root. An Empty parent makes the export hierarchy easy to manage.
3. Choose **Create Model Vista Asset** and confirm **Asset Root**.
4. Select a target inside that hierarchy and choose **Add State** in **States**.
5. Choose Activation, Transform, Camera, Material, Group, Light, or Animation and name the State.
6. Use **Add Option**, then click its name to preview it. Expand **Edit** to change values or choose **Set as Startup**.
7. Save your authoring project with Blender's normal Save command.
8. Choose **Export Model + States** to create a GLB+ containing the model and States.

To edit an existing file, use **Load GLB+** with **Import Scene On Load** enabled. Standard GLB/gITF files can also receive new States. Use **Save Changes to Source** for extension-only edits to a loaded file.

What is available in 1.0.0

- Create, duplicate, delete, and reorder States and options, with reference validation.
- Edit names and Transform values inline; assign materials and object targets with pickers.
- Preview transitions, inspect them with a time slider, and filter States by selected objects.
- Capture poses and Light settings, bake object-transform animation, and manage thumbnails.
- Add and edit serialized keyboard, mouse, gamepad, and XR Input Action bindings.
- Keep authoring data on the asset root in the saved blend, with undo/redo support.

Review [compatibility and limitations](#) for animation, material, platform, and runtime scope.

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Install the Blender add-on

Install a packaged Model Vista Create zip that matches Blender's operating system and embedded Python version. The current delivery includes compiled native modules, so a generic zip made from older source files may not load.

Requirements

Item	Current supported delivery
Add-on version	1.0.0
Blender	4.5 or 5.1
Platform	Windows x64
Package	model_vista_create-1.0.0-blender45-51-win64.zip
Sidebar location	View3D > Sidebar > Model Vista Create

The packaged zip contains native cores for Blender 4.5's Python 3.11 ABI and Blender 5.1's Python 3.13 ABI. Other Blender or platform combinations require a matching release package.

Install from zip

1. Close any Blender session that is using an older Model Vista Create add-on.
2. In Blender, open **Edit > Preferences > Add-ons**.
3. Click the add-on installation control and select `model_vista_create-1.0.0-blender45-51-win64.zip`.
4. Enable **Model Vista Create**.
5. Open the 3D Viewport and press `N`.
6. Confirm that the **Model Vista Create** sidebar tab appears.

Depending on the Blender release, the installation control may be labeled **Install...** or be available from the Add-ons menu.

Replace an older installation

Remove or disable older add-ons named Configurables, ModelVista States, or Model Vista Create before installing the current package. An old package folder can shadow the newly installed files and make Blender report an earlier version.

The Python package directory remains `modelvista_create`, and internal operator IDs continue to use `mvconfigurables` for compatibility. These names do not indicate that an older add-on is active.

Confirm the installation

Expand the add-on entry in Blender Preferences and confirm that:

- the name is **Model Vista Create**;
- the version is `1.0.0` ;
- the add-on is enabled;
- the **Model Vista Create** tab is available in the 3D Viewport sidebar.

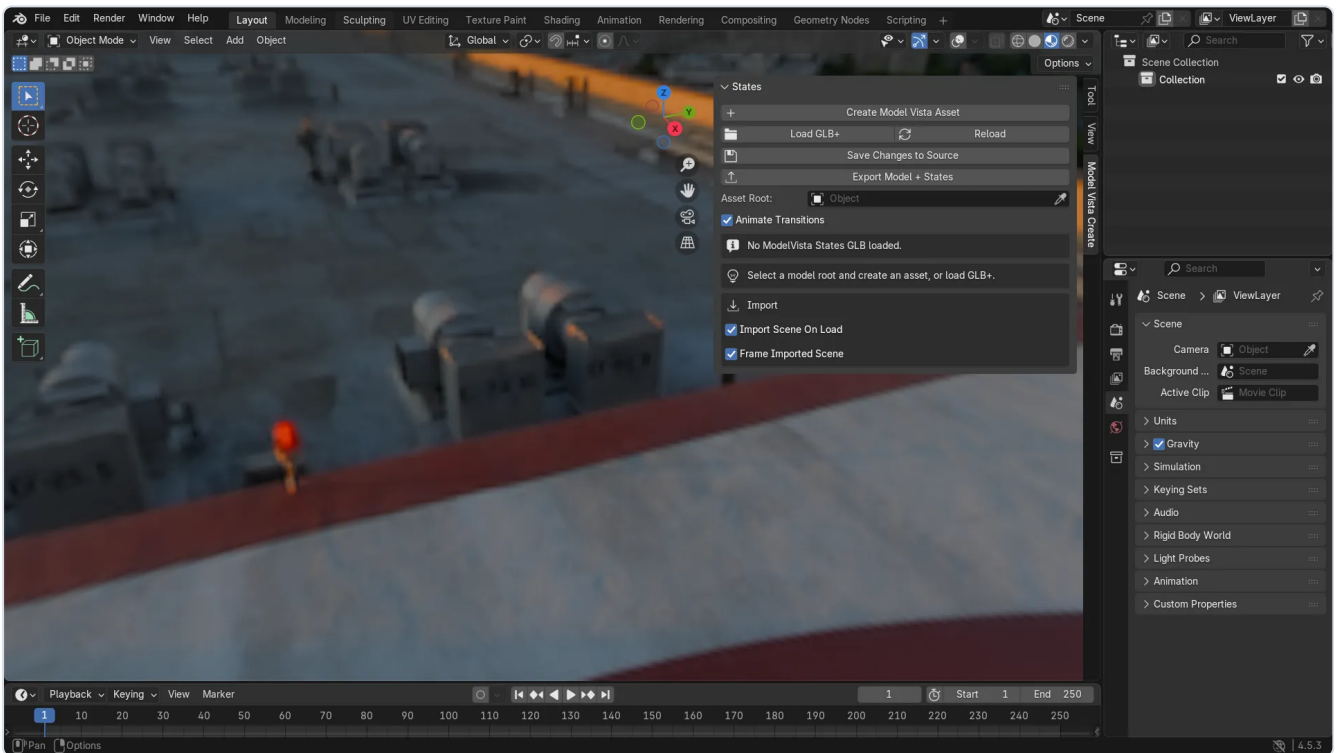
If Blender reports that the native core is unavailable, see [Native core does not load](#).

Load and inspect a file

Use **Load GLB+** for an existing Model Vista asset or a standard `.glb` / `.gltf` that needs new States. Loading does not modify the source file.

Load the file

1. Open the 3D Viewport, press **N**, and open **Model Vista Create**.
2. Enable **Import Scene On Load** to import the model hierarchy.
3. Enable **Frame Imported Scene** to frame imported objects.
4. Choose **Load GLB+** and select the file.
5. Confirm **Asset Root** and review **Overview**, **States**, and **Diagnostics**.



The loader validates the file, reads the root glTF document, and recognizes `INNOWORKS_configurables` or the legacy `INNOWORKS_states` extension. A standard file can start an authoring asset without an existing States extension. Imported assets restore stored inactive-object visibility. String-valued `KHR_lights_punctual` numeric fields are normalized in a temporary import copy when needed; this does not replace the original file.

Use the toolbar

- **Create Model Vista Asset** creates authoring data for the selected Blender model root.
- **Load GLB+** opens a GLB/glTF; **Reload** reloads the source file and discards session edits.

- **Save Changes to Source** writes extension edits to the existing source file.
- **Export Model + States** exports the asset hierarchy and States to a new GLB+.
- **Asset Root** switches between authored assets; **Animate Transitions** controls timed previews.

The status area shows operation messages, source path when present, and **Unsaved changes**. Ordinary names, values, and paths are display text. Explicit copy controls are under **Diagnostics**.

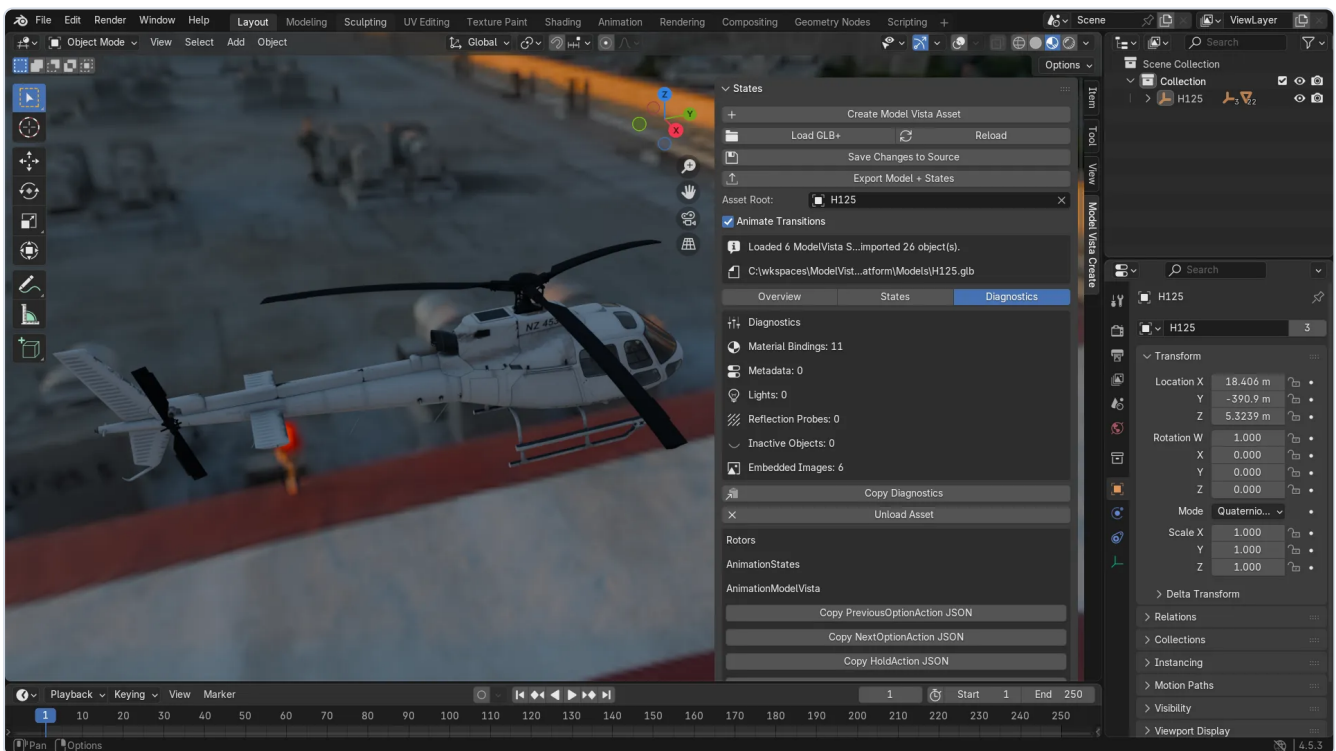
Review Overview

Overview contains the asset thumbnail, root name, State counts by type, materials, bindings, embedded images, metadata, lights, reflection probes, and inactive-object counts. It also contains import settings and **Export > Mesh Compression**.

Under **Preview Targets**, **Preview Root** is the same object as toolbar **Asset Root**. **Preview Camera** supplies a camera when no explicit target is stored. **Preview All Material Slots** overrides the normal first-slot material preview behavior.

Review Diagnostics

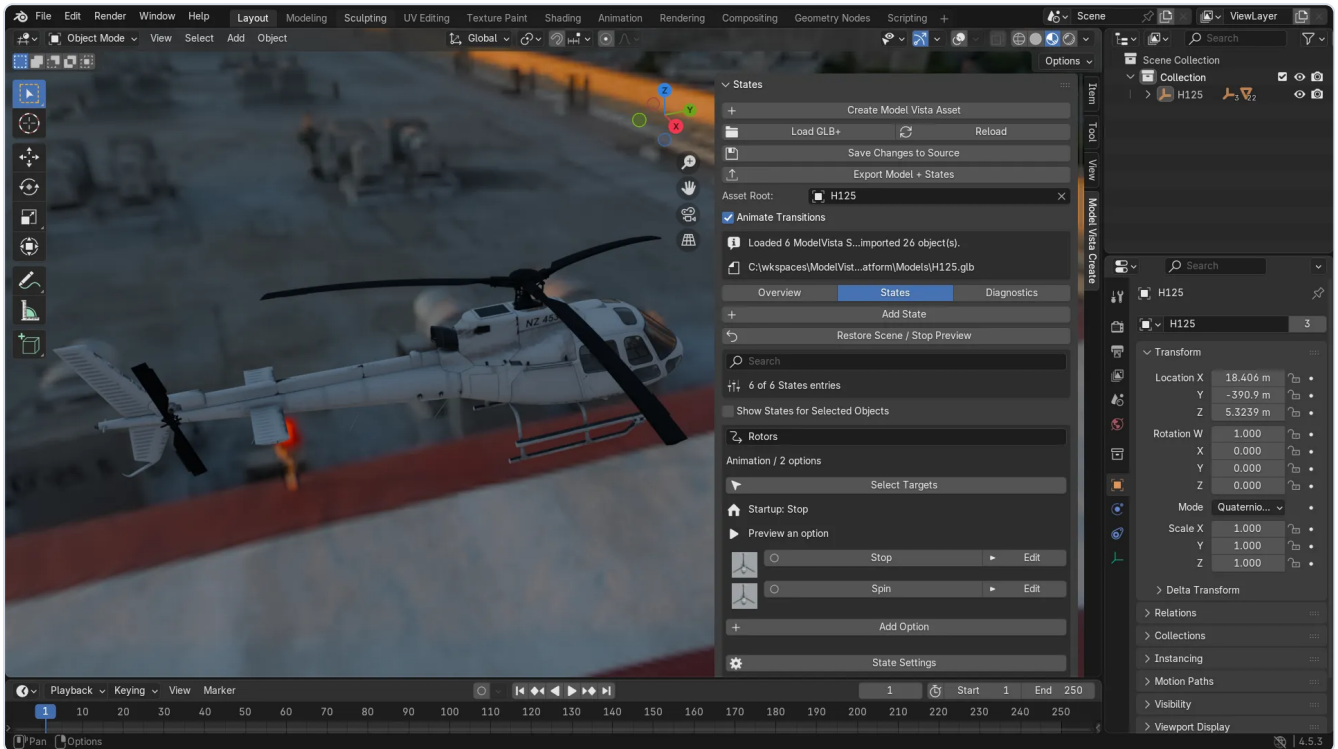
Use **Copy Diagnostics** for the extension JSON and the explicit action JSON controls for serialized Input Actions. **Repair > Apply Material Bindings** restores serialized material slots on the imported hierarchy. Summary counts and binding, metadata, and reflection-probe records help locate problems.



Unload Asset clears the session and can optionally delete the resolved hierarchy. To restore scene values while keeping the asset loaded, use **States > Restore Scene / Stop Preview**.

Preview States

In **States**, click an option name to preview it. The highlighted button is a transient preview; it does not change the saved startup choice. Expand **Edit > Set as Startup** to change that choice explicitly.



Prepare and restore a preview

1. Load a file with **Import Scene On Load**, or use your authored Blender asset.
2. Confirm **Asset Root**. The same root appears as **Asset Root** under **Overview > Preview Targets**.
3. Assign **Preview Camera** when a Camera State has no explicit camera target.
4. For materials, choose whether **Preview All Material Slots** is needed; normal State behavior uses the first slot.
5. Click an option name. Use **Restore Scene / Stop Preview** to stop playback and restore cached scene values, materials, and Actions.

Diagnostics > Unload Asset clears the session and can optionally delete its hierarchy. Use **Restore Scene** to reset a preview while keeping the asset loaded. Saving the blend clears previews; export finishes pending transitions before writing.

Preview transitions

Enable **Animate Transitions** below Asset Root. Expand an option's **Edit** controls to set duration/rate and easing; **Edit Option Settings** exposes additional settings. A destination duration above zero enables a timed transition. Disable Animate Transitions for immediate previews. Selecting another option interrupts that State's transition.

State type	Preview behavior
Activation	Changes visibility immediately; switches halfway within a timed Group.
Transform	Blends position and rotation using Time, Distance, or Angle timing.
Camera	Blends pose, field of view, and orthographic size; switches projection after halfway.
Material	Blends compatible numeric/color Principled inputs, roughness, and metallic using a temporary material. Texture graphs stay with the starting material until the destination applies.
Light	Blends EV100, color, and supported temperature values. Temperature preview requires Blender 5.1; 4.5 previews energy/filter.
Animation	Plays supported embedded or reconstructed native glTF object-transform clips with speed, loop, stop, and pose crossfade.
Group	Drives linked States with the parent Group duration or each linked option's duration.
Unknown	Preserves data without emulating unsupported behavior.

Inspect a transition at a chosen time

1. Expand the destination option's **Edit** and choose **Inspect Transition**.
2. Choose the source option index and inspection range in seconds.
3. Move the 0–100% slider at the top of **States** to seek within that range.
4. Choose **Finish Inspection / Restore Scene** when finished.

Seeking backwards rebuilds from the saved source option. Inspection leaves startup choices and option values unchanged. Zero-duration changes remain instantaneous. Animation inspection samples supported clips at up to 60 steps per second; long ranges and large hierarchies can be slower.

Normal preview, save, load, and clear end inspection. Editing the asset invalidates inspection on the next seek.

Focus on relevant States

Search by State name, type, target path, or option name. **Show States for Selected Objects** matches exact selected targets, including targets reached through Group links. It does not automatically match every descendant of a selected parent. Turn the filter off if no States appear.

Use **Select Targets** on a State card to inspect its objects. Inline warnings identify missing targets, missing materials, and invalid Group links. See [Create and edit States](#) to repair assignments.

Create and edit States

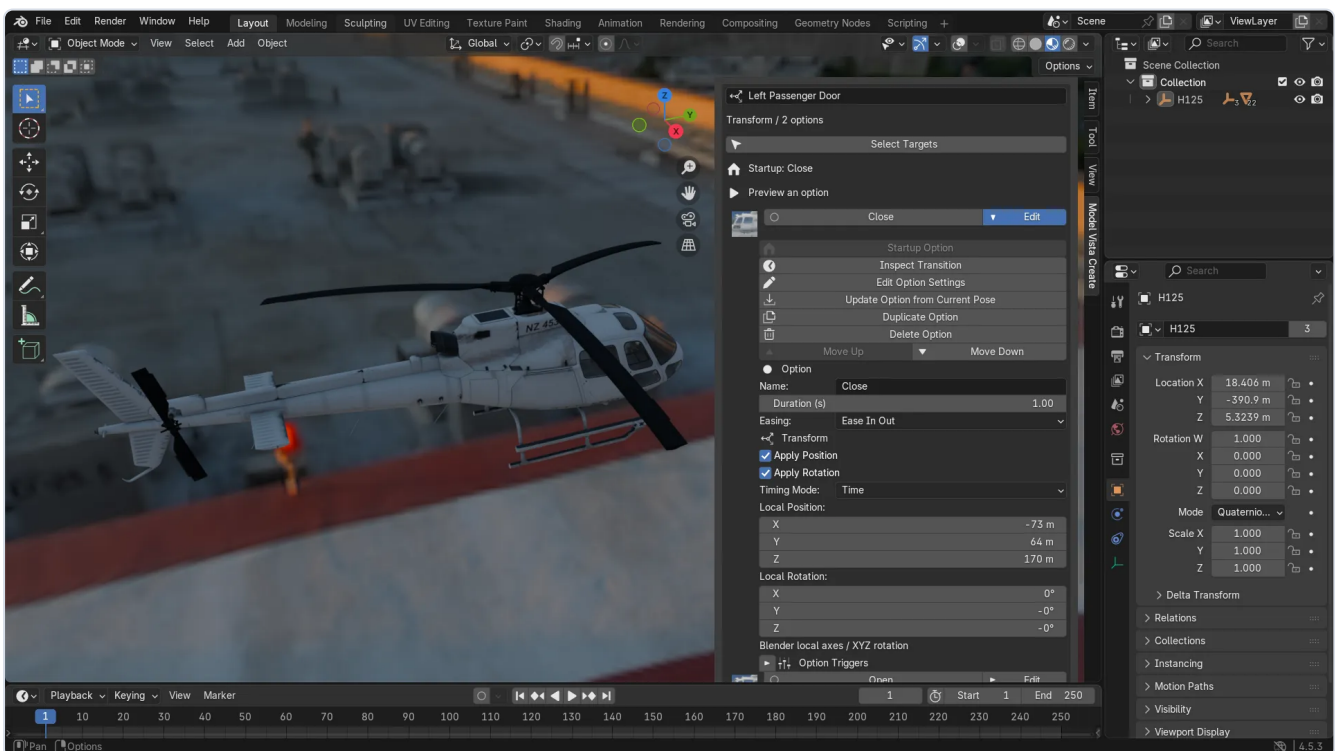
Create an asset from your model root with **Create Model Vista Asset**, or load a [GLB/gITF](#). Choose **Asset Root** to switch between authored assets. States are stored on that root and saved with the blend; edits support undo/redo.

Add States and options

1. Select a compatible target inside **Asset Root**.
2. In **States**, choose **Add State**, select a type, and name it.
3. Set up the scene, then choose **Add Option** in the State card.
4. Click an option name to preview. Expand **Edit** and choose **Set as Startup** to save the initial choice explicitly.
5. Edit the State name in its card header. **State Settings** contains UI visibility, startup/default and apply-on-awake settings, autoplay, random playback, interval, and the State thumbnail.

Option **Edit** exposes name, duration/rate, easing, thumbnail controls, **Edit Option Settings**, and duplicate/delete/reorder controls. State management is under **Advanced / Organize**. Deletion asks for confirmation. Reordering updates Group references and defaults; deleting a referenced State or option is blocked until its links are removed.

Capture or edit a pose



For Transform and Camera, **Add Option** captures the current pose. To replace it, expand **Edit > Update Option from Current Pose**. Review the destination option, resolved source object, and overwritten properties before confirming.

Transform capture stores local position and rotation and enables their apply flags. Inline controls include **Apply Position**, **Apply Rotation**, **Timing Mode**, **Local Position**, and **Local Rotation**. Position uses Blender local axes and scene units; rotation uses XYZ Euler angles and is serialized as a normalized quaternion. Disabling an apply flag preserves its stored values.

Camera capture stores local position, rotation, field of view, projection, and orthographic size, enabling the related apply flags. Use **Edit Option Settings** for additional type-specific settings. Editing values changes the saved option; click its name to preview the result.

Assign object targets

Targets applies to every option in Transform, Camera, Animation, Material, and Light States. Single-object fields offer **Choose Object**, **Select**, and **Use Selected Object**. Choose Object opens a searchable picker. Mesh and Light lists offer **Add Selected**, **Replace with Selected**, and individual choose/select/remove controls. Add preserves existing entries and ignores duplicates; Replace replaces the list.

Activation targets are per option under **Edit > Visible Objects**. Adding an Activation option records selected children; no selection creates an empty, hidden option.

Bindings follow renames and reparenting within the asset root. Deleted targets or targets moved outside it must be reassigned before export. Exact paths distinguish objects such as `Fuselage` and `Fuselage.001` in 1.0.0. If an older version saved the wrong target, remove that entry and add the intended object again. Target edits stop previews.

Author material alternatives

Select meshes inside the root, with a material on the active mesh, and add a Material State. In an option's **Edit** controls, choose a Blender material (including unused alternatives), **Use Active Material**, or **Make Unique Copy**. A unique copy has its own material and node tree; image textures remain shared.

Use **Select Meshes** to select the targets, then edit the shader in Material Properties or the Shader Editor. The usage count identifies options sharing the material. Editing a shared material affects those options.

Material States affect the first material slot on each target mesh. **Preview All Material Slots** is a Blender preview override. Inline hints flag procedural textures, node groups, missing images, and missing Principled surfaces. Bake procedural effects to glTF-compatible image textures; hints do not guarantee matching appearance.

Link States in a Group

Add a Group State and expand an option's **Edit > Linked States**. Use **Add Linked State**, **Change Linked Option**, and **Remove Link** to assemble its choices. Adding the same State replaces its choice. Missing references, invalid option indices, and cycles block export.

In **State Settings > Group Timing**, choose **Group Duration** to drive links with the Group option's duration/easing, or **Linked State Durations** to use each linked option's settings.

Capture Light settings

Select a normalized Sun, Point, or Spot light and add a Light State. Adjust the light, then add an option or use **Capture Light Settings**. Review the source and overwritten settings in the confirmation dialog. **Edit Option Settings** exposes EV100, color filter, and temperature.

Blender 5.1 previews temperature; 4.5 preserves it for export while previewing energy and filter. Area lights and custom light-node shading are outside capture support.

Bake Animation options

1. Select a mesh/Empty subtree and set the scene frame range before adding an Animation State.
2. Set up the source Actions, NLA, and constraints.
3. Add an option, then choose **Bake Timeline into Option** to capture the evaluated timeline at the scene frame rate. Confirm the subtree and frame range.
4. Repeat for alternative animation setups. Each bake appends an independent clip, preserving other options.
5. In **Edit Option Settings**, set clip index, speed, loop, and crossfade. Index **-1** stops playback.

Restore previews before editing source animation. Rebake after source changes. Baking supports object position, quaternion rotation, and scale, with a limit of 10,001 frames; animated objects must stay in the target subtree. Skeletal, shape-key, camera/light, and shader animation authoring are excluded.

Save the blend to retain the project, or [save/export the delivery file](#).

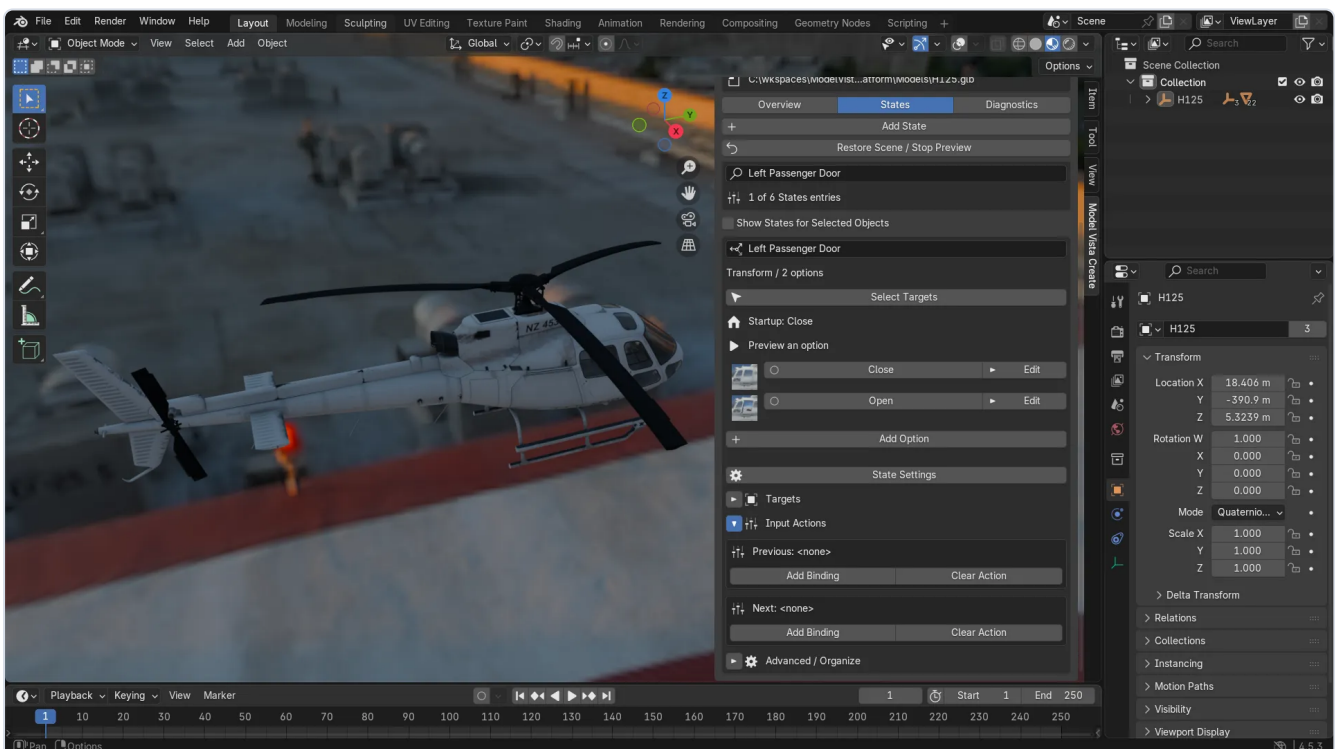
Edit Input Actions

Input Actions are serialized for the consuming Model Vista application; they do not drive Blender shortcuts or emulate Unity Input System runtime behavior.

Add a binding

1. Open a State's **Input Actions** for Previous/Next actions, or an option's **Edit > Option Triggers** for Hold/Trigger actions.
2. Choose **Add Binding** for the desired action.
3. Filter the control picker by device and choose a preset, or enter a **Custom Control Path**.
4. Keep **Add to Existing Bindings** enabled to append. Disable it only to replace the action with a single Button binding.
5. Confirm, then expand **Bindings** to review the saved paths.

Presets cover letters, digits, F1–F12, navigation/modifier keys, mouse buttons, gamepad buttons/triggers/D-pad, and XR trigger/grip buttons. Custom paths require support from the consuming application's installed Input System layouts.



Edit or remove bindings

All bindings are shown when **Bindings** is expanded. **Edit Path** preserves the binding's processors, interactions, groups, and composite flags. **Remove Binding** removes one binding; **Clear Action** removes the complete action.

The serialized fields are `PreviousOptionAction` and `NextOptionAction` on a State, and `HoldAction` and `TriggerAction` on an option. Use the explicit action JSON copy controls under **Diagnostics** to inspect their full data.

There is no live input listening, composite-creation wizard, or full interaction/processor editor. Preserve complex action data unless you intend to replace it. [Save the blend](#), [save to source](#), or [export](#) to persist your work.

Manage thumbnails

Thumbnails help identify the asset, a States entry, or an individual option. The add-on reads embedded glTF image payloads and `ThumbnailBase64` data and can write updated thumbnails back to the extension.

Thumbnail targets

You can edit:

- the asset thumbnail in **Overview**;
- the State thumbnail in **State Settings**;
- the option thumbnail in **Edit Option Settings**.

Capture from the 3D View

1. Frame the subject in the 3D View.
2. Open the thumbnail controls for the intended target.
3. Click **Capture**.
4. Confirm the preview image.

The add-on captures the current 3D View and normalizes it to a 256 × 256 PNG payload.

Load an image

1. Click **Load** in the thumbnail controls.
2. Select a PNG, JPEG, or GIF file.
3. Confirm the normalized preview.

The selected image is stored as PNG data regardless of its source format.

Clear a thumbnail

Click **Clear** in the thumbnail controls to remove that thumbnail field. Clearing an option thumbnail does not delete the option.

Capture, load, and clear actions mark the extension as dirty. Save the blend to retain the project, or use [Save Changes to Source](#) or [Export Model + States](#) to persist the change.

Save and export

Use **Save Changes to Source** for extension-only changes to the loaded file. Use **Export Model + States** when the Blender hierarchy or materials changed and you need a new GLB.

Save the Blender project

Use Blender's normal Save command to retain the hierarchy and authoring data in a `.blend`. States live on the asset root and participate in undo/redo. Saving the blend clears temporary previews. Keep the original source GLB+ available if its texture payloads are needed for re-export.

Save extension edits

A newly authored Blender asset has no source file: use Export Model + States first. For a loaded file, click **Save Changes to Source** to write the current Model Vista States extension to the source path.

- For `.gltf`, the add-on writes updated JSON atomically.
- For `.glb`, it rebuilds the JSON chunk while preserving other GLB chunks.
- It writes `INNOWORKS_configurables` as the canonical extension name.
- It updates a legacy alias when one is already present.
- It adds the canonical extension to `extensionsUsed`.
- It removes Model Vista aliases from `extensionsRequired` so generic importers do not reject the asset as requiring an unsupported extension.

Caution: Save Changes to Source modifies the loaded file. Keep a backup or use version control for production assets.

Export Model + States

Use export for a new Blender-authored asset or when you edited geometry, visibility, or materials. Source saving updates metadata only; it does not export Blender geometry.

Under **Overview > Export > Mesh Compression**, choose **Match Source** (default), **Draco**, or **None**. Match Source re-encodes with Draco if the loaded source uses it; it does not preserve the original compressed bitstream or exact encoder settings. Check the displayed source/output compression and set the Draco level when applicable.

1. Confirm that **Asset Root** points to the hierarchy you want to export.
2. Resolve validation problems shown by the add-on.

3. Click **Export Model + States**.
4. Choose a new `.glb` path.
5. Confirm that the success status names the expected output.

Export behavior:

- exports only objects below **Asset Root**, not the whole scene;
- includes cameras and lights in the exported hierarchy and preserves/retargets Model Vista light metadata;
- temporarily includes hidden descendants, then rebuilds `GameObjectVisibilities` from them;
- rebuilds material bindings from the Blender material slots actually used by each exported mesh;
- retargets supported state, group, material, binding, metadata, reflection-probe, and light paths;
- strips synthetic `__INNOWORKS_MATERIAL_STASH__` and `__INNOWORKS_MATERIAL__*` helper objects;
- skips invalid empty UV layers by using temporary mesh copies;
- stages the export through a temporary GLB and replaces the target only after extension patching succeeds;
- preserves compatible source texture and thumbnail image payloads when Blender did not reproduce them;
- validates `TextureImageIndex` and thumbnail image references before writing.

Pending transitions finish before export. When every Animation State contains embedded clips, export uses those snapshots instead of exporting live Actions twice. Add every intended animation to a State and rebake after source edits.

The add-on restores the previous Blender visibility and selection state after the export attempt.

If export is cancelled

Export stops rather than writing a partially valid Model Vista file when validation finds missing paths, missing material records, or invalid image references. Read the status summary, fix or retarget the reported data, and export again.

Compatibility and limitations

Release compatibility

The `1.0.0` Windows x64 package supports Blender 4.5 and 5.1.

Authoring and preview scope

All seven State types support creation: Activation, Transform, Camera, Material, Group, Light, and Animation. States and options support duplicate, delete, and reorder operations with reference validation.

- **Materials:** portable PBR materials and image textures depend on Blender's glTF exporter. Procedural effects require baking; arbitrary Blender graphs and Unity shaders are not portable. State changes affect the first slot per target mesh. Material transitions interpolate supported numeric/color inputs, not arbitrary shader graphs.
- **Animation:** baking supports evaluated object position, quaternion rotation, and scale from Actions, NLA, and constraints. Skeletal, shape-key, camera/light, and shader animation authoring are excluded. The range is capped at 10,001 frames. Preview is not Unity's full layered animation system.
- **Lights:** normalized Sun, Point, and Spot capture is supported. Area lights and custom light-node shading are excluded. Blender 5.1 previews temperature; 4.5 preserves temperature for export while previewing energy/filter. SPEC intensity conversion uses 683 lumens/W and divides point/spot intensity by 4π ; Model Vista uses `intensity = 2^(EV100-3)`. Exposure and render pipelines can still produce different appearances.
- **Input Actions:** bindings can be added, edited, removed, or cleared. There is no runtime emulation, live input listening, composite wizard, or full interaction/processor editor.
- **Targets:** bindings follow renames and reparenting inside the root. Deleted/outside targets and unresolved metadata or reflection-probe paths require repair. Missing materials, invalid image references, and invalid/cyclic Group links block export.

Troubleshooting the Blender add-on

Read the status message in the **Model Vista Create** sidebar. Use **Diagnostics > Copy Diagnostics** and the explicit action JSON copy controls for detailed inspection.

Add-on does not appear

- Install `model_vista_create-1.0.0-blender45-51-win64.zip`, not a zip with an extra parent folder.
- Enable **Model Vista Create** in Preferences and remove/disable stale Configurables, ModelVista States, or Model Vista Create installations.
- Restart Blender after replacing an imported add-on.

Native core does not load

Use the complete Windows x64 package with Blender 4.5 or 5.1. It includes ABI-specific native modules such as `_modelvista_create_core.cp311-win_amd64.pyd`. Copying Python files alone is insufficient. Other Blender releases/platforms need a matching package.

File does not load

- Confirm the file is a valid `.glb` or `.gltf` and required external resources exist.
- A standard file does not need an existing States extension; it can receive new States.
- Check the status for GLB header, JSON, import, or native-core errors.

Preview does not work

- Confirm **Asset Root**, target object types, and target paths. Load with **Import Scene On Load**, or assign your existing hierarchy.
- Assign **Preview Camera** if a Camera State has no explicit target.
- Clear search and disable **Show States for Selected Objects** if the State is missing.
- Use **Restore Scene / Stop Preview** to recover the scene after a preview or interrupted transition.
- Light previews support energy/filter and, in Blender 5.1, temperature. Unknown State behavior is not emulated.

The wrong duplicate object changes

Version 1.0.0 resolves exact paths before import-name compatibility matching. If an older version stored the wrong target, remove the entry and add the intended selected object again under **Targets** or **Visible Objects**. Keep targets inside **Asset Root**.

Material preview or export looks wrong

- Use **Diagnostics > Repair > Apply Material Bindings** for imported material slots.
- Assign an existing Blender material to the option and check the target meshes.
- Normal Material States affect the first slot. **Preview All Material Slots** changes Blender preview only.
- Inspect the material usage count before editing a shared material; use **Make Unique Copy** for an independent alternative.
- Address missing-image and shader hints and bake procedural textures for glTF export.
- Keep the original GLB+ available when re-export needs its texture payloads.

Animation changes are missing

Restore previews before editing Actions/NLA or constraints, then **Bake Timeline into Option** again. Embedded clips are snapshots, so editing live Actions does not update them. Keep animated objects in the target subtree and check clip index, speed, loop, and frame range. Index `-1` stops playback. See [animation scope](#).

Input Actions look wrong

Expand **Input Actions** or **Edit > Option Triggers**, then **Bindings**. **Edit Path** changes one path while retaining other binding settings; disabling **Add to Existing Bindings** replaces the action. Check full JSON under **Diagnostics**. Bindings do not trigger Blender shortcuts.

Inactive objects look wrong

Confirm inactive-object records in **Overview** or **Diagnostics** and the intended **Asset Root**. Export includes hidden descendants and records them as inactive, excluding material helper geometry.

Changes were not saved

- Blender Save stores the authoring project. **Save Changes to Source** writes extension metadata to a loaded source. **Export Model + States** writes geometry, materials, and States together.

- A new Blender-authored asset has no source file; use export.
- Previewing an option does not set its startup choice. Use **Edit > Set as Startup**.
- Confirm write access and verify the saved project or exported file by reopening it.

Export is cancelled

Read the validation summary and repair missing/outside targets, invalid target types, unresolved materials, metadata/light/reflection-probe paths, invalid image references, or missing/cyclic Group links. Use **Choose Object** or selection-based target controls to reassign objects. Export deliberately stops when required references are invalid.