

3DGS WebTools — Help

Editor shortcuts, menus, and Web AR guide

SHORTCUTS

F1	Open help in a new browser tab
F2	Rename the selected Outliner item
Middle-drag	Outliner: drag a Group or node onto Scene or another Group to regroup; drag a splat onto a mesh joint/locator to attach (follows animation)
W E R	Gizmo mode: Move / Rotate / Scale. Click the mode chip on the handle to cycle. Move: axis arrows, XY/YZ/XZ plane pads, yellow center = free drag. Scale: axis cubes; orange center = uniform scale (respects Scale lock in Model Info)
+ / -	Scale transform handle up / down (also = / Numpad ±). Default length = one grid cell
Mode / Space chips	On the transform handle: top chip cycles Move → Rot → Scale; bottom chip toggles Wld ↔ Obj axis space
1 / 3 / 7 / 5	Viewport (Blender-style): Front / Right / Top / Perspective — Numpad or number row
Ctrl + Numpad 1 / 3 / 7 · Shift + 1 / 3 / 7	Opposite ortho: Back / Left / Bottom
9	Flip to the opposite orthographic view
F	Frame selected object(s) — also Display → Frame Selected (works in Perspective and ortho)
Drag	Orbit camera (Perspective only — locked in ortho views)
Right-drag	Pan camera
Scroll	Zoom
Esc	Close panels, menus, or help; stop or close screen record; clear edit selection
Delete	Delete selected object · gaussians (Splat Edit) · mesh (Object Edit) · light (Lighting Edit) · camera (Animation Edit)
I	Animation: insert keyframe for the selected object at the playhead
Alt + I	Animation: delete keyframe at the playhead
Space	Animation: play / pause the Timeline
Numpad 0	Look through the selected (or first) scene camera — toggle to exit. Orbit / pan / zoom moves that camera (Lock Camera to View). Resolution menu sets the passepartout frame

Ctrl + Z	Undo last scene change (gizmo / Transform panel including Freeze & Reset Pivot, group/ungroup) · in Splat Edit: undo splat selection/delete
Ctrl/Cmd + N / O / S / Shift + S	File shortcuts: New · Open · Save · Save As
Ctrl + C / V / D	Copy / Paste / Duplicate the selected node
Ctrl + G / Ctrl + Shift + G	Group / Ungroup (multi-select supported for mesh objects)
Shift +click / Ctrl +click	Outliner / viewport: add to selection · toggle selection (mesh objects)
Ctrl hold	Splat Edit: subtract from selection while dragging
Alt hold	Splat Edit: orbit / pan without leaving edit mode
[/]	Splat Edit: decrease / increase brush size

FILE MENU

New	Clear the scene and start empty
Open...	Replace the scene with a scene zip from this app (named from the top-bar project: <code>{name}.zip</code> with <code>{name}.glb</code> + <code>{name}.js</code> and sidecar media; older <code>*_scene.zip</code> still opens), a Scene GLB, mesh GLB, or splat (.ply / .splat / .ksplat / .spz / .sog). With 3DGS Simplify Tool open, splat Open/Import goes into that tool's Original preview instead
Save / Save As...	Opens a save window — Scene (zip) uses the top-bar project name (<code>{name}.zip</code> with <code>{name}.glb</code> + <code>{name}.js</code> , lights, HDR, shaders, sidecar media). Mesh formats export geometry; splat formats export the active splat. Drag the title to move; edges/corners to resize (size remembered)
Save Selection...	Same resizable save window for the selected splat or mesh; formats that do not apply are greyed out. Mesh selection can export .glb, embedded .gltf, or a zip with separate textures. Splat format conversion works on static web hosts (in-browser) as well as with <code>python run.py</code>
Import...	Add another splat or mesh without replacing the scene. With Simplify Tool open, splat files load into Original
Export as HTML zip...	Downloads <code>{name}.zip</code> from the top-bar project name — a flat zip (no extra folder) with the offline viewer HTML plus sidecar media (see HTML export zip below). Includes meshes, materials (Standard / Phong / Basic / Movie / Shadow Catcher / Occlusion), Outliner lights & shadows, studio/HDR lighting, sky/background, and splats
Export AR zip...	Builds a mobile AR package (<code>{name}-ar.zip</code>) with <code>index.html</code> , <code>scene.glb</code> , <code>scene.json</code> , splat files, and bundled runtime. Same layout and relative scale as Preview 3D in the AR panel. Requires HTTPS to host. See the Web AR Guide help tab

HTML EXPORT ZIP

Package	Zip is flat (no extra folder): <code>{name}.html</code> plus sidecar files next to it. Name comes from the top-bar project
Meshes	All meshes pack into one GLB named from the top-bar project (<code>{name}.glb</code>). Model textures (albedo, normal, roughness, alpha, ...) are embedded in that GLB — no separate texture files. The viewer loads it once and places each mesh by name
Lighting / sky	Mesh IBL HDR/EXR is a separate file. Background photo or LDR sky is a separate image. When env and background share the same HDR, only one HDR is written (plus an LDR <code>sky.jpg</code> plate for reliable display)
Movies	Video files stay as separate files next to the HTML (not inlined). Movie materials play video + audio; if the browser blocks unmuted autoplay, the first click or keypress unlocks sound
Open / share	Fully unzip — do not open the HTML from inside the zip. Keep <code>{name}.html</code> , <code>{name}.glb</code> , HDR/sky/background, and any movie files together. Model textures are already inside the GLB. Open the <code>.html</code> from that folder (double-click or a local static server)
EDIT MENU	
Undo	Undo the last scene change — transform (gizmo / Model Info, including Freeze Transform & Reset Pivot to World) or group/ungroup. In Splat Edit, undoes splat selection/delete (<code>Ctrl</code> + <code>Z</code>)
Copy	Copy the selected splat, glTF object, or mesh part
Paste	Paste from the editor clipboard (slightly offset)
Duplicate	Copy and paste the selected node in one step (not a Group)
Delete	Remove the selected object, light, or (in Splat Edit) selected gaussians
Group	Wrap selected mesh objects, nest splats and/or whole meshes under a shared parent Group (children inherit its transform). Shift/Ctrl+click to multi-select. Objects are not auto-grouped on open
Ungroup	Dissolve the selected group(s) — mesh Group, splat parent Group, or splat virtual group
Freeze Transform	Zero Position / Rotation / Scale without moving the object — bakes the current pose into the geometry / hierarchy. Works for splats, meshes, nodes, and Group folders
Reset Pivot to World	Move only the selected model's pivot to the world / grid center (0,0,0). Clears Position to 0; rotation and scale stay; the object stays put
EDIT MODE MENU	
Layout	Default — select and transform in the Outliner / viewport; no edit toolbars
Splat Edit	Toolbar appears below the top bar — box / lasso / brush select, delete floaters, undo. Hold <code>Alt</code> to orbit without leaving edit mode

Object Edit	Toolbar below the top bar — add Primitives (box, sphere, ...) and delete mesh objects
Lighting Edit	Toolbar below the top bar — Add Light (Directional / Point / Ambient / Hemisphere) under Scene → light_grp. Click a light helper or Outliner row to select. Directional: amber orbit = az/el (aims at world origin), cyan = distance. Point / hemisphere use the normal gizmo; ambient has no transform. Color, power, Cast shadow, Softness (0–200), Quality (Low–Ultra), and aim live in Model Info → Selected Light (drag  to reorder sections)
Animation Edit	Toolbar below the top bar — Add Render Cam , insert keyframes, Auto Key vs Manual, Camera View (Numpad ), camera resolution (passepartout), and Timeline. In Camera View, orbit/pan/zoom moves the camera (Lock Camera to View). Keyframe any Outliner node except the Scene root (meshes, joints, groups, lights, splats, cameras). Interpolation: Auto Smooth / Linear / Constant / Ease
TOP BAR ICONS	
Grid	Toggle world grid and axes at the origin. Sized to the scene; one cell = default transform-handle length. In ortho views the grid plane aligns to the viewport (axes stay world XYZ)
Performance	Speedometer icon — open the monitor or toggle the compact HUD. When closed, opens the full window; when the full window is open, minimizes to the HUD; when the HUD is showing, restores the full window
Viewport	Camera — Perspective (free orbit), or ortho Front / Back / Right / Left / Top / Bottom (pan & zoom only; orbit locked). Shortcuts like Blender:  /  /  /  ; opposite with Ctrl+Numpad or Shift+number;  flips. Returning to Perspective restores the previous orbit pose (avoids Top-view Z-up leaking into free orbit)
Transform Handle	Maya-style manipulator — Move: RGB arrows + plane squares + yellow center; Rotate: RGB rings + outer yellow view ring; Scale: axis cubes + plane squares + yellow uniform center.  /  /  or click the mode chip; space chip toggles Wld ↔ Obj. Default length = one grid cell;  /  scale the handle
Orient	Cycle camera up orientation
Capture	Camera icon opens the screen record frame — save and record controls are on the frame toolbar
Theme	Toggle UI chrome dark / light. Opening or importing a mesh applies a matching solid viewport plate (light → white, dark → black) unless you already set a custom image, HDR, or gradient
Help	Open this help window (also  or Windows → Help...)
Fullscreen	Toggle fullscreen. When Performance is minimized, its compact HUD appears immediately to the right of this icon

CAPTURE & SCREEN RECORD

Save image	Image icon — dropdown with JPEG, PNG, or PNG transparent. Captures the crop region at output resolution
Format	Dropdown — WebM or MP4 (MP4 when your browser supports it; otherwise WebM)
Record	Red film-strip icon — starts recording; icon switches to a stop square while recording
Close	× icon or Esc — closes the frame (Esc stops an active recording first)
Custom size	Choose Custom in Preset — type width × height in px; the crop frame becomes exactly that size on screen (1:1 with output). Drag the corner to scale freely instead
SCREEN RECORD	
Open	Camera icon → Screen record — a crop frame appears over the viewport with the rest of the screen dimmed
Preset	Dropdown on the frame toolbar — 1080p (1920×1080), phone portrait / landscape, tablet portrait / landscape. Pick one to set the starting output size
Resolution	Monospace label on the toolbar shows output pixels (e.g. 1920 × 1080). Updates live while you drag the resize handle
Resize	Drag the bottom-right corner marker to set any frame size. Preset switches to Custom when dimensions no longer match a preset
Format	Format dropdown — WebM (widest support) or MP4 (Safari and some Chromium builds). Unsupported options are disabled
Record	Red film-strip icon starts capture; it switches to a stop square while recording — click again to stop and choose where to save the WebM/MP4. Gizmo, grid, and helpers hide during recording. Timer shows elapsed time
Close	Close or Esc — closes setup; Esc while recording stops and saves
Move frame	Drag the toolbar (empty area or labels) to reposition the crop window. Preset, resolution label, and buttons are not drag handles
View camera	Orbit, pan, and zoom work as usual — drag inside the crop area or on the dimmed viewport outside the frame
Tip	Frame the shot inside the crop area before Record — custom typed resolution captures that region 1:1; corner-drag resize scales output to match the frame size
DISPLAY MENU	
Grey	Meshes: toggle — clay grey material, textures off. Combines with Wireframe and No Light

Color	Meshes: toggle ON by default — lit shaded materials with textures. Turn OFF for flat material color only (maps removed). Mutually exclusive with Grey. Combines with Wireframe and No Light
Wireframe	Meshes: toggle — dark neutral edge overlay. With Color (or Grey) on, shows the textured or grey surface plus dark wires. Wireframe alone (Color and Grey off) shows edges only
No Light	Meshes: toggle — unlit shading; studio lights + env IBL off. Combines with Grey and Wireframe
Gaussian	Splats: default full 3D Gaussian rendering with view-dependent shading
Point Cloud	Splats: each splat as a screen-space dot — a Dot size bar appears under the top menu (0.25×–30×) for editing floaters
Flat Color	Splats: base albedo only (SH degree 0), no view-dependent highlights
2D Surf	Splats: SurfSplating-style flattened ellipsoids (mutually exclusive — pick one splat display mode)
Frame Selected	Move the camera to frame the selected object(s) — splat, mesh, node, or Group folder. Also F . In ortho, re-aims the current axis view at the selection
Show Joints	Toggle thin color-coded bone lines in the viewport (drawn over meshes)
Show Lights	Toggle light helpers (Outliner lights, glTF lights, studio key). Tint follows each light's color with a deep contrast remap + solid core marker so helpers stay readable on both dark and light viewport plates (including white lights)
Show Cameras	Toggle render-camera frustum helpers in the viewport (from Animation Edit → Add Render Cam). On by default; helpers hide while looking through a camera (Numpad 0)
Camera Name	In Camera View (Numpad 0), show the active camera name at the bottom of the resolution frame. On by default
WINDOWS MENU	
Tools Window	Open or close the floating Tools window (Model Info + Scene Settings tabs). Drag the title bar to move, edges/corners to resize. Header ≡ three-step collapse; drag ≡ on a section header to reorder cards. Opens by default when the editor starts
Timeline	Floating animation window — Windows → Timeline or the top-bar Timeline button. Three tabs: Dope Sheet (key diamonds — drag to retime), Graph Editor (channel curves + Bezier handles), and Tracks Editor (glTF clip strips + audio strips). See Timeline & animation below
3DGS Simplify Tool	Workbench to reduce splat count — see section below. Opens large under the top bar
Scene Analyze	Metadata report — overview, HDR/environment lighting, meshes, materials, textures (size / VRAM), animations, splats. Refresh updates live stats

Performance	Live FPS gauge, frame time, GPU load estimate, renderer stats (draw calls, triangles, ...), scene splat/mesh counts, and JS heap when available. Drag title to move; edges/corners to resize (size remembered). Header ↓ minimizes to a compact HUD in the top bar (right of Fullscreen). Click the HUD expand icon or the top-bar Performance icon to restore the full window. HUD on/off preference is remembered
AR Experience	Floating AR panel — Preview 3D on desktop (webcam composite) or Start AR on mobile (8th Wall World Placement / Image Target). Export AR zip from here or File → Export AR zip.... See the Web AR Guide help tab
Help...	This large centered help window (also F1) — drag title to move, edges/corners to resize; size is remembered
TIMELINE & ANIMATION	
Open	Windows → Timeline , the top-bar Timeline button, or Edit Mode → Animation Edit . Drag the title bar to move; edges/corners to resize
Playback	Toolbar: Play / Pause (Space), step frames, jump to start/end, Frame / Start / End / FPS. Loop button cycles Loop → Once → Ping-Pong. Bottom scrub bar drags the playhead
Dope Sheet	Keyframe diamonds per track — click to select, drag horizontally to retime , marquee-select multiple keys. Insert (I) / delete keys. Interp (Auto Smooth / Linear / Constant / Ease) and Tangent (Auto / Free) apply to the selected key; All Keys applies to the whole track
Graph Editor	Channel curves for Tran / Rot / Scale — drag keys and Bezier handles. Same interpolation controls as Dope Sheet. Visibility toggles (Tran / Rot / Scale) filter which channels draw
Tracks Editor	Layered Anim and Audio lanes. Drop glTF animation clips from Model Info onto the Anim lane; drop scene audio onto the Audio lane. Overlapping clips stack on separate rows
Animation clips	When a mesh has glTF clips, Model Info lists them under Animation . Click a clip name to select it; drag a clip row to Timeline → Tracks Editor to place a strip. Strips show mesh name + clip name + frame range
Retime clips	In Tracks Editor, drag a strip horizontally to change its start frame on the timeline. Playback seeks the clip at the current playhead — use Start / End frames and FPS to set the overall timeline range
Scene audio	Add audio files in Model Info → Audio (play / loop / clear). Drag from Model Info onto Tracks Editor → Audio lane to sync with animation. Waveform preview on each strip
Auto Key	When enabled, gizmo / Transform panel edits at the playhead automatically insert keyframes on keyed tracks
What can be keyed	Any Outliner node except the Scene root — meshes, joints, groups, lights, splats, cameras. Custom camera resolution (W×H) is supported on render cameras

Mesh clips (simple)	Without Tracks Editor strips, Model Info ► Play / Pause / Stop runs the selected glTF clip on that mesh. Timeline Play runs keyed tracks + placed strips together
Saved in exports	Timeline data (keyframes, Tracks Editor strips, audio library) is saved in Scene (zip) and included in AR / HTML exports as <code>scene.json</code> timeline + audio sidecar files
PERFORMANCE MONITOR	
Open	Windows → Performance, or the speedometer icon in the top bar (opens the full resizable window when closed)
Full window	Semicircle FPS gauge (60 FPS = full arc), frame-time bar, estimated GPU load, renderer table, and scene load (splats, gaussians, mesh verts/tris). Updates live while open
Minimize	Header ↓ — saves window size/position and docks a pill HUD after the Fullscreen icon: FPS arc + label, frame ms, expand icon
Restore	HUD expand icon (four corners), top-bar Performance icon, or Windows → Performance — returns to the last full-window size and position
Top bar cycle	Speedometer: closed → full window → HUD → full window
3DGS SIMPLIFY TOOL	
Open	Windows → 3DGS Simplify Tool. Opaque workbench under the top bar; Original Simplified previews stay side-by-side
Load Original	Drop a splat on Original, click Browse..., or Import from the scene list when splats are loaded. File → Open / Import with the tool open also feeds Original
Formats	.ply · .compressed.ply · .splat · .ksplat · .spz · .sog (same splat family as the editor)
Split	Drag the vertical divider between Original and Simplified to resize the previews
Suggest from Target	Enter a desired final splat count (or use Mobile AR / Half / Keep 75%). Suggest fills Ratio, Merge Cap, KNN, optional opacity/SOR, and SH so Simplify lands near that count. Mobile AR targets ~150K for smoother phone SLAM
Ratio	Fraction of splats to keep after merging (higher = less reduction)
KNN Neighbors	How many nearby splats are considered when building the merge graph
Merge Cap	Maximum share of splats that may be removed by merging (safety limit)
Opacity Prune	Drop splats dimmer than this opacity before merging (0 = off)
Target SH Degree	Truncate spherical harmonics — Keep preserves input; lower degrees shrink file size

SOR Filter	Statistical outlier removal for floating isolated splats. Std Ratio 0 disables SOR; Neighbors sets local density sample size
Simplify	Runs opacity → SOR → kNN merge → SH. Uses the local Python API when available (<code>python run.py</code>); otherwise runs entirely in the browser (static web hosting / GitLab Pages). Progress shows in Parameters
Result	Shows original vs simplified counts, splat/data reduction, and SH change
SSIM Quality	Calculate SSIM compares Original vs Simplified from the same camera. View-dependent — recalculate after orbiting (note appears when the camera moves)
Replace in scene	Swap the imported scene splat with the simplified model (keeps pose / hierarchy). Enabled only when source was Import from scene
Place as new	Add the simplified splat to the scene (offset slightly when sourced from a scene splat)
Export	Download the simplified model (PLY) to disk
SCENE SETTINGS	
Color Background	Solid color presets and gradient (colors, tightness, position)
Image Background	Sample photo presets (Warm Evening, Kitchen, Restaurant, Camping, ...) plus upload jpg/png/webp or equirectangular HDR/EXR sky, then Cover / Contain / Stretch, Behind color, Scale / Pos / Blur / Rotate. Background HDR is a sky plate only — it does not light meshes
Background Rotate	Yaw for the photo plate or HDR sky — slider in Image Background (0–360°)
Background Blur	Soft-focus blur on photo plates and HDR/EXR skies (0–40 px). Saved in Scene GLB and HTML export
Lighting — Mesh	Studio lights + HDR environment lighting for glTF / GLB meshes (separate from splat Relight)
Add / Remove Default Lights	Toggle studio ambient, soft fill, and key. When off, HDR / env can still light meshes. Add also restores the studio room env if HDR lighting was removed
Environment Map	Import equirectangular HDR / EXR for image-based lighting (PBR). Lights meshes even when studio lights are off
Env Map Rotate	Yaw for HDR / environment IBL — slider under the Environment Map thumbnail (0–360°). Independent of Background Rotate
Remove HDR Light	Clear the environment map so it no longer lights meshes (studio / Outliner lights can still light them)
Exposure / Reflections	Master brightness and IBL strength (Reflections = how strongly the HDR lights the mesh)
Sliders / numbers	Most controls accept type-in values (Enter or blur to apply), including FOV, color grade, and lighting

Panel collapse	Header ≡ — (1) collapse all sections, (2) shrink to title bar only so the panel stays narrow at the side of the viewport, (3) restore. Same behavior as Model Info
OUTLINER (MODEL INFO)	
Select	Click a row — or click a splat / mesh / light helper in the viewport (meshes in front of a splat win the click). Empty space clears selection
Visibility	Eye icon on each row — hide/show that node. Hidden lights stop lighting the scene; splat Group hide cascades to children
Filter	Multi-select types to show: Meshes, Joints, Lights, Splats, Groups. Matching nodes still appear when a parent type is unchecked (children are promoted)
Rename	Double-click the name, or press F2
Regroup	Middle-drag a Group or node onto Scene or another Group
Resize	Drag the divider under the tree — details (anim, transforms) scroll underneath
Rotate anim	Add rotate anim / Stop rotation on a mesh node, splat Group, or Group folder · Axis X/Y/Z/-X/-Y/-Z · Loop seconds — saved in Scene GLB and HTML export
Animation (mesh)	When a glTF / GLB has clips, Model Info lists them under Animation . Click a clip name to select it (does not auto-play). Use ▶ Play / ⏸ Pause , ■ Stop (returns to frame 0 of the selected clip), and the timeline scrubber. Skinned characters stay deformed while paused. On import, clip 0 at t=0 is shown when clips exist; otherwise bind pose
Shadows	Selected object (top) and Whole scene (bottom): Cast / Receive. Softness of the penumbra is set per light (Selected Light), not on the material
Selected Light	Model Info section when an Outliner light is selected — Color, Power, Cast shadow, Softness (0–200; 0 = hard edge), Quality (Low–Ultra map resolution for smoother penumbra), Reset. Directional also has Azimuth / Elevation / Distance (aims at world origin). Collapse with the section header; drag ⋮ to reorder alongside Selection, Transform, etc.
Selected Camera	Model Info section when a render camera is selected — FOV (degrees), same range as Scene Settings → Perspective Camera. Updates the frustum helper and Camera View when looking through that camera
TRANSFORM (MODEL INFO)	
Position / Rotation / Scale	Edit the selected splat, mesh, node, or Group folder — Local Position, Local Rotation, and Local Scale (parent-relative). Sliders + number boxes stay in sync with the gizmo. Undo with Ctrl + Z
Scale lock	Padlock to the right of Scale — locked (blue) keeps X, Y, and Z proportional when editing one axis or dragging a single scale handle; unlock for independent axes

Reset Transform	Set Position / Rotation / Scale back to identity (moves the object back). Also clears a custom pivot bake so identity is a true origin reset
Freeze Transform	Zero Position / Rotation / Scale without moving the object — bakes the current pose into the geometry / hierarchy. Same as Edit → Freeze Transform
Reset Pivot to World	Move only the selected model's pivot to the world / grid center (0,0,0). Clears Position to 0; rotation and scale stay; the object stays put. Same as Edit → Reset Pivot to World
MATERIAL (MODEL INFO)	
Shader	Standard (PBR), Phong, Basic, Movie (video + audio), Shadow Catcher, or Occlusion — switching keeps compatible maps when possible
Import — Maya / Blender	On glTF / GLB import, materials normalize to Standard (PBR) . Maya aiStandardSurface and Blender Principled BSDF map base color, metalness, roughness, normal, emissive, and opacity. Clearcoat, transmission, and specular extensions are baked into roughness / opacity where Standard cannot represent them. Packed ORM maps: use Channel R / G / B on AO / Rough / Metal (Maya glTF: R=AO, G=Rough, B=Metal)
Import limits	Subsurface, true glass refraction, anisotropy, and separate clearcoat layers are not in Standard (PBR) — those channels are approximated or dropped. Re-export from Maya / Blender with metallic-roughness PBR for best match
Movie	Playback section above Textures (Play/Pause, Stop, Loop, Mute, scrubber). Texture slots accept image or video; sound follows the material's audio slot (usually Albedo). Saved in Scene zip; HTML zip keeps videos as sidecar files next to the viewer
Audio	Model Info section between UV Edit/Anim and Shadows — choose a scene audio file (play / loop / clear). Included in screen recordings with Movie material audio
Sides	Single-sided (front faces), Single-sided reverse (back faces), or Double-sided
Textures	Each slot: bold name · thumbnail to add/replace · UV1 / UV2 · Tile on/off (repeat vs clamp) · x to clear. Data maps have Channel RGB / R / G / B . UV / Tile choices are saved in Scene GLB and HTML export
Standard slots	Albedo (+ Color) · Normal (Intensity 0–5) · Bump (Scale) · Height (Scale / Bias) · Rough · Metal · Emit (Color + Power) · AO · Light · Alpha
Phong slots	Albedo · Normal · Bump · Height · Spec map · Emit · AO · Light · Alpha — plus Specular color / Shininess below
Basic slots	Albedo · AO · Light · Alpha
AO / Light	Intensity sliders; default to UV2 when assigned — use the UV button to switch sets per slot
Height	Vertex displacement — needs dense geometry to look smooth
Alpha	Opacity mask; enables transparency when a map is assigned

Opacity	Overall material opacity (below the texture blocks)
Shadow Catcher	Transparent surface that only shows shadows from other meshes. Enable Cast shadow on casters; set Softness on the light. Controls: Shadow color and Opacity
Occlusion	Invisible depth mask — hides splats and meshes behind or inside it
TRANSPARENCY SORTING (MODEL INFO)	
Scope	Applies to the whole scene, not just the selected mesh. Use it when overlapping transparent surfaces sort incorrectly.
Disable Depth Writing	Keeps depth testing on, but turns depth writing off for transparent materials so later transparent surfaces are less likely to punch holes into each other. Good first fix for glass, decals, and layered alpha.
Use Alpha Testing	Turns cutout-style transparency into a binary mask. Pixels above the threshold draw fully; pixels below it are discarded. Best for leaves, fences, labels, and hard-edged opacity maps.
Manual Render Order	Builds a scene-wide list of likely transparent meshes and lets you set each object's <code>renderOrder</code> manually. Higher values draw later, so they usually appear on top of lower values.
Enable Alpha Hashing	Uses hash-based alpha coverage on supported materials instead of standard transparency blending. This can reduce sorting artifacts while keeping soft transparency, but it may introduce fine dithering or noise.
Per object render order	Shown only in Manual Render Order mode. The list includes transparent-looking scene meshes and skips editor helpers such as occlusion and shadow-catcher helpers.
Help button	The  button next to Mode jumps directly to this help section.

Tip: menus are File · Edit · Edit Mode · Display · Windows. Edit-mode toolbars sit directly under the top bar. Transform handle defaults to one grid cell ( /  to resize). Scale lock (padlock next to Scale) links X/Y/Z. Camera icon opens the record frame — save images, record video, and set resolution on the frame toolbar; drag the toolbar to move or the corner to resize. Performance can stay as a compact HUD next to Fullscreen while you work. Softness on Selected Light softens cast shadows for Shadow Catchers. Click a mesh or light helper to select (meshes beat nearby splats); empty space clears selection. Windows → Tools Window toggles the floating panel (Model Info / Scene Settings tabs) — drag to move, edges to resize, ≡ to collapse. Help never blocks that panel. For sharing, use File → Export as HTML zip..., unzip fully, and open the HTML from that folder so sidecars resolve.



Web AR Experience Guide

Create, preview, and export AR experiences directly from the editor — no app install required.

Powered by 8th Wall (free, open source). Both AR modes work on **iOS Safari** and **Android Chrome** — no app install required. Requires **HTTPS** for camera access.

OVERVIEW

Two AR modes	The editor provides two AR sessions: Image Target (anchor content to a printed image) and World Placement / SLAM (place content on real-world surfaces). Both use 8th Wall's engine and work on iOS + Android.
What gets shown in AR	Meshes (GLB/glTF) and 3D Gaussian Splat scenes (.ply / .splat / .ksplat / .spz / .sog) loaded in the editor. You can mix both in one scene. Large splat counts may be slow on phones — use 3DGS Simplify Tool first if needed.
Opening the AR panel	Go to Windows → AR Experience . The panel floats and can be moved/resized.
Desktop Preview 3D	On a desktop browser the primary button reads Preview 3D . It composites your scene over the webcam — drag to orbit, scroll to zoom. Use this to verify layout and relative scale between meshes and splats before exporting or testing on a phone.
Mobile Start AR	On a phone or tablet the button reads Start AR and launches the full 8th Wall camera session (World Placement or Image Target, depending on the active tab).
Export	Use File → Export AR zip... or the Export AR zip button inside the AR panel. The zip includes a standalone <code>index.html</code> viewer that loads 8th Wall from CDN — host on any HTTPS server and share.

SCENE LAYOUT & SCALE

The **editor viewport is the source of truth** for how objects are arranged. AR Preview, AR export, and the mobile AR experience all preserve the same relative size and placement you see in the editor.

Individual transforms	Position, rotation, and scale you set on each mesh, splat, or group in the Outliner are preserved exactly in AR Preview and in exported AR zips. Edit them with the gizmo or Model Info before previewing or exporting.
Scene root scale	Select the top-level Scene node in the Outliner to scale the whole scene uniformly. This becomes the shared AR fit scale applied to all content together — it does not change the relative size between objects inside the scene.
GLTF + splat together	When a scene contains both a mesh and a splat, their relative size in AR matches the editor viewport (e.g. a robot beside a burger stays the same proportion). Neither object is independently resized to fit its bounding box.
Camera vs scale	Orbit / zoom in AR Preview only changes the camera distance — it does not rescale objects. Product framing for the preview camera is separate from object scale.
Pinch in mobile AR	After placing content in World Placement mode, a two-finger pinch scales the whole placed scene around the placement pivot. This is an in-session adjustment on top of your authored layout, not a replacement for editor transforms.
Workflow tip	Arrange meshes and splats in the editor → open Preview 3D to confirm → export AR zip → test on phone. If scale looks wrong on an old export, re-export a fresh zip after updating the editor.

ANIMATION & AUDIO IN AR

Timeline carries over	Tracks Editor glTF clip strips, keyframe animation, and timeline audio saved in the editor are included in AR Preview and exported AR zips (<code>scene.json</code> + audio sidecar files).
Desktop Preview 3D	After preview opens, use Play / Pause and Enable Audio / Mute Audio in the preview HUD. Timeline playback starts when you press Play — clip strips and audio sync to the timeline playhead.
Mobile AR	After placing content (SLAM) or detecting a target (Image Target), animation and timeline audio start automatically. Tap Audio in the HUD to mute/unmute. Movie-material video audio is separate from timeline soundtrack.
Setting up clips	Build the edit in Timeline → Tracks Editor : drag glTF clips from Model Info onto the Anim lane, drag scene audio onto the Audio lane, drag strips to retime start frames. Preview in the editor first, then export.
Movie materials	Video textures with audio on mesh materials also play in AR. Use Model Info Movie controls or the preview HUD Play button. Timeline audio and movie audio can run together.
Autoplay note	Mobile browsers may block unmuted audio until you tap the screen. Use the HUD Audio button if sound does not start immediately.

STEP-BY-STEP — IMAGE TARGET AR

1 Load your 3D content

Open or import a GLB/glTF mesh and/or a 3DGS splat (.ply / .splat / .ksplat / .spz / .sog) via **File** → **Open...** or **File** → **Import...** Position and scale it as you want it to appear.

2 Prepare a target image

Choose a flat printed image — a poster, business card, book cover, or any high-contrast image. Save it as a JPEG or PNG.

Best results: use images with varied, asymmetric detail and good contrast. Avoid large solid-colour areas, repeating patterns, or glossy reflective surfaces.

3 Generate an image target JSON file

8th Wall uses target metadata JSON files. Generate yours with the CLI:

```
npx @8thwall/image-target-cli@latest
```

Follow the prompts: provide the path to your image, choose flat/cylinder/cone type, and specify an output folder. The CLI generates a `.json` file with target metadata.

Alternatively, use the [8th Wall Desktop app](#) to create targets with a graphical interface.

4 Open the AR panel and select Image Target mode

Go to **Windows** → **AR Experience**. Choose **Image Target** from the mode selector.

- 5 Load the target JSON file**
Click
Choose target JSON...
and select the generated `.json` file. You can select multiple files to track multiple images. The file name(s) will appear in the panel.

- 6 Start the AR session**
Click
Start AR
(mobile) or
Preview 3D
(desktop). Allow camera permission. Point your camera at the printed target image — your 3D model will appear anchored to it and track as you move.

The session runs full-screen. Tap
Exit
to end. 8th Wall supports up to 32 simultaneous image targets.

- 7 Export for sharing**
Click
Export AR zip
. The zip contains `index.html` (or `image-ar.html` when both AR modes are exported), `scene.glb`, `scene.json`,
splat files, and target JSON. Host on any HTTPS server and share the URL.

STEP-BY-STEP — WORLD PLACEMENT (SLAM) AR

- 1 Load your 3D content**
Open a GLB mesh and/or a 3DGS splat (`.ply` / `.splat` / `.ksplat` / `.spz` / `.sog`). Large splat counts may be slow on phones — use **3DGS Simplify Tool** first if needed.

- 2 Open the AR panel and select World Placement**
Go to **Windows → AR Experience**. Choose
World Placement

8th Wall SLAM works on both iOS Safari and Android Chrome — no WebXR required. The engine handles surface detection internally.

- 3 Preview or start AR**
On desktop click
Preview 3D
to composite the scene over your webcam and verify layout. On a phone click
Start AR
. Allow camera + motion permission. Slowly move your phone around to let 8th Wall's SLAM scan the environment.

- 4 Place the model**
A
Tomoe reticle

appears on the detected ground plane. Tap the screen to place your 3D content at that location. Pinch with two fingers to scale the placed scene.

5

Export for sharing

Click

Export AR zip

. The zip includes `index.html`, `scene.glb`, `scene.json`, splat files (when present), and bundled runtime. Host on HTTPS and share — works on both iOS and Android.

AR EXPORT ZIP CONTENTS

<code>index.html</code>	Primary AR viewer — tap Start AR on this page. World Placement (SLAM) when exported alone; Image Target when only that mode is exported.
<code>image-ar.html</code>	Included when both World Placement and Image Target modes are exported. Image Target viewer; requires target JSON file(s).
<code>scene.glb</code>	Mesh geometry (original import bytes when possible — textures stay embedded). Loaded by the AR viewer alongside splats.
<code>scene.json</code>	Scene manifest — per-object transforms, materials, lighting, timeline, splat file list, and Scene root scale. Drives the same layout as AR Preview.
Splat files	<code>.ply</code> / <code>.splat</code> / <code>.ksplat</code> / <code>.spz</code> / <code>.sog</code> sidecars listed in <code>scene.json</code> when the scene includes 3DGS.
<code>ar-runtime.js</code>	Bundled scene loader, placement, splat renderer hookup, and playback runtime.
<code>libs/</code>	Three.js, GLTFLoader, HDR/EXR loaders, and <code>spark.js</code> (3DGS renderer when splats are present).
<code>LTomoe.png</code>	Tomoe placement fiducial texture (World Placement mode).
Media sidecars	Movie videos, timeline audio, and custom HDR environment files referenced by <code>scene.json</code> (when used).
<code>targets.json</code>	Image target metadata (Image Target mode only). Generated by <code>npx @8thwall/image-target-cli@latest</code> .
Hosting	Must be served over HTTPS. Unzip fully — keep all files in the same folder. Free options: GitHub Pages, Netlify, Vercel, Cloudflare Pages. Do not open from <code>file://</code> — camera will be blocked.

TROUBLESHOOTING

Camera permission denied	Check browser site settings and allow camera. On iOS: Settings → Safari → Camera → Allow.
Image not detected	Ensure good lighting. Use a high-contrast target image with varied detail. Avoid glossy/reflective print material. Hold the camera at a moderate angle.
Reticle not showing (SLAM)	Pan the camera slowly over a flat surface (floor, table). 8th Wall needs a few seconds of movement to initialise tracking. Avoid featureless surfaces.

Wrong relative scale (mesh vs splat)	Adjust layout in the editor viewport first — that view is the source of truth. Confirm with Preview 3D , then export a fresh AR zip . Older zips do not pick up editor or runtime fixes.
Model too large / small overall	Select the top-level Scene node in the Outliner and adjust its uniform scale, or scale individual objects before previewing. Scene root scale applies to all content together in AR.
Exported page not loading	Ensure all files from the zip are in the same folder after unzipping. The HTML references assets by relative path.
Black screen	Page must be served over HTTPS. Use a local HTTPS server for testing, or deploy to Netlify/GitHub Pages.
Motion permission on iOS	iOS 13+ requires explicit motion sensor permission. 8th Wall handles this automatically — tap "Allow" when prompted.
Splat slow on phone	Reduce splat count with 3DGS Simplify Tool (Mobile AR preset targets ~150K splats) before exporting.

Tip: use **Preview 3D** on desktop to check mesh + splat layout before exporting. For Image Targets, print at A5 or larger. For SLAM, good indoor lighting and textured floors improve detection. Export and deploy to Netlify (drag-and-drop) for instant sharing. Re-export after editor updates so the zip includes the latest runtime.