

DaVinci Resolve Studio 與 Fusion Studio 功能比較

Fusion是業界先進的2D和3D合成、VR和動態圖形軟體，如今還內建到了DaVinci Resolve中。它配備大量工具集，包括：繪圖、動態遮罩、標題製作、動畫、去背和3D分子，及支持導入3D模型與算圖、光流工具、立體3D模型、變速和穩定、協力廠商Open FX外掛程式支援等眾多精彩功能。Fusion 17 Studio還擁有無限制分散式網路算圖，在從事複雜專案工作時，還能使用其附贈的Studio Player和媒體夾伺服器實現多使用者協作，共同完成追蹤、管理、檢查和批准各類鏡頭效果。

本文件為DaVinci Resolve Studio與Fusion Studio的完整比較。

General	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Integrated 2D and 3D compositing in an animation environment.	YES	YES
Mix and match footage of different resolutions, aspect ratios and formats within a single project.	YES	YES
Footage of different color depths can be processed in their native color depth within a single flow graph.	YES	YES
Responsive UI with interactive, real time rendering.	YES	YES
Render to multiple formats and resolutions in a single pass, with multiple saver nodes at any position in the flow process.	YES	YES
Resolution independent with support for images over 32K x 32K.	Limited to 16K x 16K	YES
Support for floating point images.	YES	YES
Support for Metal, CUDA and OpenCL GPU acceleration.	YES	YES
Two-level proxy system for fast interactive response.	YES	YES
Open and work with multiple comps at once.	YES	YES
Save Custom interface Layouts.	YES	YES
Use Independent LUTs for each display view.	YES	YES
Support for dual displays.	YES	YES
A/B split view for comparing shots.	YES	YES
View and edit your project in frames, timecode or feet+frames modes.	YES	YES
Avid Connect Plug-in for using Fusion from the Media Composer timeline.	NO	YES

Node Based Interface	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Intuitive node-based flow graph interface for building composites.	YES	YES
Branch and connect tools to multiple nodes.	YES	YES
Mix and match footage of different resolutions, field orders, aspect ratios and formats within a single project.	YES	YES
Open and work with multiple comps at once.	YES	YES
Copy and paste tools into other comps.	YES	YES
Group and collapse tools into sub-flow for better organization.	YES	YES
Drag and drop footage into flow directly from file explorer.	YES	YES
Add notes to any node, or even the flow itself, as reminders or to assist with collaboration.	YES	YES
Render a comp while working on another.	NO	YES
Show thumbnails for images in flow graph.	YES	YES
Integrated Script Debug Console. Step through code, set breakpoints and have multiple scripts open at the same time.	YES	YES

VR	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Headset support for Oculus Rift, HTC Vive.	Windows only	Windows only
Pano viewer for no headsets.	YES	YES
Lag free 90fps viewing.	YES	YES
Real time viewing of 3D scenes.	YES	YES
Live action VR playback.	YES	YES
Stereo VR.	YES	YES
Conversion between VR image formats.	YES	YES
VR Paint and Fix workflow.	YES	YES
VR Motion Graphics and Tiling.	YES	YES
Stabilization of VR live action scenes.	YES	YES
VR Color correction.	YES	YES

Animation Tools	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Display and edit multiple animation splines.	YES	YES
Use Bezier or cubic splines for animation curves.	YES	YES
Scale, shape and stretch splines.	YES	YES
Set looping parameters for ping-pong, relative and number of loops.	YES	YES
Use keyframe markers as guides.	YES	YES
Step-in and step-out keyframe modes.	YES	YES
Set guides, markers and snap-to points.	YES	YES
Use time value offsets and scaling for multiple selected keyframes.	YES	YES
Global ease in and out controls.	YES	YES
Shape box to deform and taper splines.	YES	YES

Studio Player	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Playback of any format support in Fusion including EXR.	NO	YES
Playback via BMD Deck Link and UltraStudio.	NO	YES
Single layer timeline with ability to play a number of shots.	NO	YES
Set the In/Out trim for each shot.	NO	YES
Color format control allows for consistent display of shots from different formats.	NO	YES
Annotation notes can be typed on each clip, version, and project.	NO	YES
Audio, Scratch track and audio per clip.	NO	YES
Collaboration, Multiple Artists can access the same projects different machine.	NO	YES
Remote sync makes multiple Studio Players follow the master, for scrubbing, playing and collaboration around the studio and around the world.	NO	YES
Shot Versions are stored in the same project to allow for quick access to previous work and for comparison of progress.	NO	YES
Guide overlays, customisable to show monitor/title safety and crops.	NO	YES
Scriptable automation tasks using the Fusion scripting engine to control features.	NO	YES

Timeline	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Non-linear timeline display for adjusting element timing.	YES	YES
Trim and position multiple clips simultaneously.	YES	YES
Scrub audio and view waveform within timeline.	YES	YES
Sift the timeline display to show specific tools or groups of tools.	YES	YES
Set guides, markers and snap-to points.	YES	YES
Integrated spline viewer and editor.	YES	YES
Spreadsheet view for quick editing of animated parameters.	YES	YES
Drag and drop sorting of tools in the timeline to better focus on timing and keyframes.	YES	YES
Color coding of tools and splines.	YES	YES

Performance	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
2D image processing accelerated by GPU.	YES	YES
Completely multi-threaded rendering, uses every CPU available.	YES	YES
GPU Acceleration of 3D workspace and rendering.	YES	YES
GPU Acceleration of computationally intensive tools.	YES	YES
Render and interactive performance scalable with remote nodes.	NO	YES
Designed to work efficiently with extremely large files.	YES	YES
Enhanced file caching for local and networked drives.	YES	YES
Disk and Ram Caching stores processed images for immediate playback.	YES	YES
Cache manager works invisibly in background - no user intervention required.	YES	YES
Multiple tools can simultaneously maintain their own cache.	YES	YES
Improve local performance/interactivity with remote render nodes.	NO	YES
Automatic memory tuning.	YES	YES
Images already in cache do not re-render.	YES	YES
Cache output of any node to either RAM or disk.	YES	YES
Region Of Interest and User-definable Domain Of Definition speed up image processing.	YES	YES
Infinite Canvas eliminates clipping of image areas outside the project bounds.	YES	YES

3D Workspace	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
A fully integrated 3D compositing environment with lights, camera snap casted shadows.	YES	YES
3D scene importing via FBX and Alembic, includes models, cameras, lights, and rigs.	YES	YES
Render scenes with many millions of polygons and complex shading.	YES	YES
Lightning fast GPU based renderer.	YES	YES
Import 3D models from Maya, 3ds Max, Cinema 4D and more.	YES	YES
3D importing of scenes with matched animation curves, stereo cameras, lighting and multi level materials.	YES	YES
Relighting using rich deep pixels and reshading tools to a full GPU renderer.	YES	YES
The GPU render outputs multiple layer types for later processing at extraordinary speed.	YES	YES
GPU accelerated Ambient Occlusion rendering.	YES	YES
Geometry creation, with primitives and 3D text.	YES	YES
Bending, tapering and warping of geometry or groups of objects.	YES	YES
Duplicate, Replicate objects to create armies or crowds.	YES	YES
Support for multiple renderers and many scenes in one composition.	YES	YES
Import tracked cameras that match live action and also match 3D animation applications, making a seamless workflow for studios.	YES	YES

Multi Channel Support	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Use the extra channels in Open EXR files produced by 3D applications to enhance the look of 3D rendered material.	YES	YES
Depth merging combines two images based on the relative position of their pixels, eliminating the concept of foreground and background.	YES	YES
3D Z-Depth Blur for true depth of field focusing.	YES	YES
3D Shader for relighting object based on the information contained in the normals channel.	YES	YES
3D Fog applies fog to an image based on depth of each pixel, or an external z-buffer map.	YES	YES
3D Texture to apply reflection maps and replacement textures to 3D rendered objects.	YES	YES
Use object and material IDs to mask the effect of any tool.	YES	YES
Use the above tools and techniques with particles and grid warping tools in Fusion, which also produce extra channel information.	YES	YES
Deep multi channel output for Z buffers, normals, UV texture and World Pass pass, velocity vectors.	YES	YES

Deep Pixel Compositing	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Generate deep pixel data like World Position, Normals, UV.	YES	YES
Volumetric Renderer, with full ray casted self shadowing volumes with variable density.	YES	YES
World Position Pass integration of images with occlusion.	YES	YES
Masking and Volumetric Atmospherics using World Position Pass.	YES	YES
GPU accelerated for real time interactivity and rendering.	YES	YES

Particles	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
3D flow-based particle suite.	YES	YES
Fully OpenGL accelerated for incredible speed.	YES	YES
Bitmap, geometric or pixel based particle styles for ultimate flexibility.	YES	YES
Variable control over spin, size, velocity, angle, spin, fade, blur and color over time.	YES	YES
Modify particle behavior with physics-based tools like gravitational, wind, friction, tangential, point and gradient forces.	YES	YES
Control modifier tools with effectors and force emitters, based on bitmaps, shapes or polylines.	YES	YES
Advanced behavioral controls like flocking, turbulence, spawning and n-body attraction.	YES	YES
N-GON particle style provides a variety of shaded geometric shapes for particles.	YES	YES
Image Emitter tool turns each pixel of an image into a particle.	YES	YES
Modify particle attributes with custom expressions.	YES	YES
Produce depth of field blurring on particles based on Z-position.	YES	YES
Animate any particle parameter over time.	YES	YES
Apply motion blur to all particle streams.	YES	YES
Choose from a variety of predefined particle styles and brushes.	YES	YES
Merge separate particle streams together with pMerge tool.	YES	YES
Output Z-buffer position for each particle, and depth blur particles together.	YES	YES
Change particle styles based on collision and other 'events'.	YES	YES
Network renderable to slash render times.	YES	YES

Network Rendering	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Unlimited free Render Nodes.	NO	YES
Render Fusion comps on remote CPUs using unlimited number of render nodes.	NO	YES
Network rendered previews, tool caches speed the entire production process from start to finish.	NO	YES
Powerful render manager for maximum efficiency.	NO	YES
Assign remote nodes to render groups and submit flow to only specified groups.	NO	YES
Assign priorities to a submitted render to help resolve conflicts in busy environments.	NO	YES
Network render Flipbook previews Disk and Ram caches.	NO	YES
Select the range of frames to be rendered for each flow in the queue, without the need to modify or open the saved flow.	NO	YES
Nodes that become available after a render has begun automatically rejoin the queue.	NO	YES

Layer Blending Tools	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Use standard layer blend modes like screen, overlay, multiply, and soft light.	YES	YES
Choose between additive and subtractive merge modes.	YES	YES
Perform Z-depth compositing.	YES	YES
Apply ‘burn in’ overexposure to foreground layer.	YES	YES
Dissolve between layers with standard SMPTE wipes and gradients, or use custom bitmaps to control the dissolve.	YES	YES
Apply calculated motion blur to any tool with animation applied.	YES	YES

Paint	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Vector based paint system.	YES	YES
Paint with hard or soft edge brushes or bit map image brushes.	YES	YES
Choose paint styles including Clone, Emboss, Smear, Stamp and more.	YES	YES
Use strokes and shapes to paint non-destructively on images.	YES	YES
On-the-fly caching for amazing interactive performance.	YES	YES
Individual strokes can be moved, edited, animated and tracked.	YES	YES
Supports standard pressure-sensitive tablets; brushes can vary by stroke pressure or velocity.	YES	YES
Infinitely scalable brushes with extremely fine softness control.	YES	YES
Flood fill for magic wand-style operations that work over time.	YES	YES
Bezier and stroke wire removal tools for fast and flexible removal of rigging and other undesirable elements.	YES	YES

2D/3D Text Creation	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Complete control over every parameter of a font's color, size, kerning and layout.	YES	YES
Use any TrueType, Open Type or PS1 type font.	YES	YES
Layout text along spline paths, to a frame, or circle.	YES	YES
Align text to frame, image or path, including horizontal and vertical justification.	YES	YES
Full Unicode support for international and extended character sets.	YES	YES
Manually adjust the kerning and position of every character.	YES	YES
Mix and match fonts, colors, size and texture in a single tool.	YES	YES
Extrude Text in 3D.	YES	YES
Custom 3D bevel creation.	YES	YES
Use multiple fill, outline and text borders.	YES	YES
Use modifiers like Scramble, Timecode, and Follower.	YES	YES
Animate built in 'type on' effects, rolls and crawls.	YES	YES
Transform layout, characters, words and shading elements separately.	YES	YES
Fills and outlines have individual shading, softness and glow.	YES	YES
Map images and sequences onto text with a variety of mapping styles.	YES	YES
Store commonly-used styles in library swatches for future use.	YES	YES
Transform text in 3D, with independent transforms for the layout, character, shading components.	YES	YES

Tracking	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Planar Tracker.	YES	YES
Planar Stabilization and steadying.	YES	YES
Planar Transforms of Roto.	YES	YES
Camera Tracker with full 3D output of camera motion and pointcloud.	YES	YES
Unlimited tracking points within a single tracker.	YES	YES
High sub pixel precision.	YES	YES
Integrated corner positioning, perspective correction, stabilization, and match moving, all within a single tool.	YES	YES
Adaptive pattern acquisition.	YES	YES
Track paths forward and backward.	YES	YES
Stabilization based on an unlimited number of track points.	YES	YES
Smooth and stabilize camera motion without eliminating existing pan or zoom.	YES	YES
Automatic selection of best tracking channel, red, green, blue, alpha or luminance.	YES	YES
Choose a manual rotation axis for stabilization.	YES	YES
Drive the animation of any parameter, path or tool with tracked data.	YES	YES
Publish and connect individual points on a spline.	YES	YES

Creator Tools and Grain	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Fast Noise tool for extremely quick, high quality noise patterns.	YES	YES
Mandelbrot generator produces extremely scalable fractal images.	YES	YES
Continuous and discontinuous noise options.	YES	YES
Noise detail and noise brightness maps for precision control over noise generation.	YES	YES
Background generator for solid and gradient type backgrounds.	YES	YES
Generate gradients calculated in RGB, HLS, HSV or LAB color space.	YES	YES
Unlimited gradient color points for fine control over gradient progression.	YES	YES
Animate gradient procession over time.	YES	YES
Select from one of six gradient types including linear, radial and square.	YES	YES
Static, repeat and ping pong modes for out of bounds gradients.	YES	YES
Day Sky simulates the Sky based on time of year and time.	YES	YES
Plasma generator for frequency interference based noise patterns.	YES	YES
Adjustable grain strength, size, softness and spacing.	YES	YES
Response curves control amount of grain across a gradient for each color channel to closely match film stock grain behavior.	YES	YES
Color differences between grain channels help match non monochromatic type grains.	YES	YES
Choose between random or seeded grain noise for repeatable and static noise types.	YES	YES

Keying/Matte Tools	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Delta keyer, high end keyer with fine tuning controls.	YES	YES
Clean plate pre keyer to smooth lighting differences in screen color.	YES	YES
Industry standard Primatte 5 Keyer.	NO	YES
Fusion's exclusive Ultra Keyer optimized for Blue and Green screen extraction.	YES	YES
Chroma and Luma Keyer for extracting mattes from color or luminance channels.	YES	YES
Five modes of spill suppression to eliminate even the most difficult reflection halos.	YES	YES
Animated garbage mattes for isolating rigging and set elements.	YES	YES
Adjustable edge gamma and fringe color correction.	YES	YES
Matte thresholding for semi-transparent region replacement.	YES	YES
Matte blur, gamma, and contrast control for post key processing of the matte.	YES	YES

Image Processing Filters	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Lens type defocusing with blooming and NGon elements.	YES	YES
Lens flare-style hotspots with occlusion and lens aberrations.	YES	YES
Glow, soft glow, glow under and glow thresholding modes.	YES	YES
Pre-masks for glow, highlight, dve and other tools.	YES	YES
Directional blurs for motion and zoom style blurring.	YES	YES
Erode and dilate filters for burn in and overexposure effects.	YES	YES
Sharpen and unsharpen masking.	YES	YES
Sobel and laplacian edge detection.	YES	YES
Custom convolution kernel filtering.	YES	YES

Transforms and Warping	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Transform image with high-quality area sampling for excellent anti-aliasing.	YES	YES
Concatenated transformations speed operations and improve quality.	YES	YES
Apply displacements, dents, and vortexes to any image.	YES	YES
Choose from one of eight drip deformations with control over amplitude, aspect, frequency and aspect.	YES	YES
True perspective positioning and correction.	YES	YES
Corner pinning for sign replacement and four point scaling.	YES	YES
Grid-based image warping over an entire image or a specified region.	YES	YES
Define separate source and destination grids for morphing effects.	YES	YES
Complete bezier and smoothing control over each grid point.	YES	YES
Magnet or static selection types for easy manipulation of multiple grid points.	YES	YES

Retiming	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Optical Flow based retiming.	YES	YES
Linear and Non-Linear retiming of clips.	YES	YES
Animatable frame interpolation and blending for smoother motion.	YES	YES

Rotoscoping Tools and Masking	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Planar tracked roto.	YES	YES
Create masks using bezier splines, B-splines, paint tool or bitmap images.	YES	YES
Magic wand-type mask performs color picking over time.	YES	YES
Non-uniform feathering of spline shapes.	YES	YES
Roto Assist, to find edges of the subject.	YES	YES
Roto Onion skinning, shows the roto shapes for multiple frames.	YES	YES
Controllable motion blur.	YES	YES
Use masks to limit the effect of any tool to a specified region.	YES	YES
Re-order, copy, paste and cut masks.	YES	YES

Color Tools	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Adjust hue, saturation, tinting, gamma, gain, contrast, brightness for any color channel or luminance range.	YES	YES
Manipulate levels and image histogram directly.	YES	YES
Spline-based Color Curves tool allows look up table color correction for infinite flexibility.	YES	YES
User definable ranges for shadows, midtones and highlights.	YES	YES
Separate color correction by channel or region.	YES	YES
Color match to a reference image.	YES	YES
Channel Booleans tool to copy and blend image channels based on add, subtract, multiply and other mathematical operations.	YES	YES

Colorspace Processing	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Supports integer and HDRI floating processing of color depth.	YES	YES
Out of range color values are preserved through color adjustments.	YES	YES
Industry standard color spaces including ACES, REC709, REC2020, and Wide Gamut.	YES	YES
Linear Light Color/Open Color IO.	YES	YES
Monitor calibration.	YES	YES
Waveform, Vectorscope and Histogram displays.	YES	YES
LUT creation, analyzing and designing tools.	YES	YES
3D LUTs.	YES	YES
Work in RGB, YUV, CMY and other color spaces.	YES	YES
Use logarithmic images like Cineon and DPT without first converting them to linear space.	YES	YES

Optical Flow Tools		Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Optical Flow analysis for generating forward and back vectors.		YES	YES
Change the speed of a clip using optical flow analysis.		YES	YES
RepairFrame regenerates a frame using optical flow between its two neighbors.		YES	YES
SmoothMotion for smoothing of color or aux channels using optical flow.		YES	YES
Tween interpolates between two non-sequential images		YES	YES

Stereoscopic 3D Toolset	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Built in 3D cameras with support for eye separation, convergence and toe in, or Parallel mode.	YES	YES
Disparity stereo map generation, with mapping in both left and right eyes.	YES	YES
New Eye tool for generating new left and right images, with convergence and alignment.	YES	YES
Stereo Align tool for adjusting vertical alignment, convergence, and eye separation.	YES	YES
DisparityToZ and ZToDisparity converts Disparity to and from Z depth.	YES	YES
Global Alignment tool for adjusting a stereo pair without warping.	YES	YES
Stereo Stack and Unstack to combine Left and Right images into a single stereo pair.	YES	YES
Support for 3D stereo viewing systems including anaglyph, side-by-side, stacking and interlace viewing.	YES	YES

3rd Party Plugin Support	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Support for Open FX Plugins, including GenArts and RE:Vision Effects.	YES	YES
Native SDK for 3D and image processing tools.	YES	YES

Bins and Media Organisation		Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Bins for easy access to commonly used Tools, Settings, Macros, Compositions and Footage.		YES	YES
Bin server for sharing Bin assets over network.		NO	YES
Carry Metadata through a project pipeline.		YES	YES
Read existing Metadata on clips.		YES	YES
Copy and insert custom metadata to any image.		YES	YES

File Format Compatibility	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
MXF, DNxHQ, DNxHR.	YES	YES
FFMpeg Bridge for further Codec Support, customer must download separately.	NO	YES
EXR 2.2.	YES	YES
Support for Blackmagic Design Cinema Cameras and Cinema DNG format.	YES	YES
Supports over 30 image file formats including OpenEXR, DPX, TIFF, JPEG, PSD, and QuickTime.	YES	YES
Support for SVG scalable vector files.	YES	YES
Support for Arri raw format, R3D format, Canon rmf raw, Support for Vision Research Phantom Cameras and Cine format.	YES	YES
3:2 Pull Down and Pull Up with automatic sequence detection.	YES	YES
Process fields/frames in NTSC, PAL or HD field orders, control over dominance or field order.	YES	YES
Create clip lists containing multiple files within a single loader.	YES	YES
Load and process common IFL (image file list) formats.	YES	YES
Load full resolution and proxy clips together, toggling between modes on the fly.	YES	YES
Use WAV audio for timing and playback.	NO	YES
View audio waveform in timeline.	YES	YES

Extensibility	Fusion in DaVinci Resolve 17	Fusion Studio 17 RMB 2,350
Embedded Lua and Python scripting support.	YES	YES
Integrated development environment.	YES	YES
Pre-built scripts to automate common workflows.	YES	YES
Control Fusion scripts from local or remote machines.	YES	YES
Launch and control external tools from within Fusion.	YES	YES
Macro tool combines standard tools to create custom tools.	YES	YES
Fuses tool kit for development of custom tools with build in compiler.	YES	YES
Just-In-Time compiling of image processing tools.	YES	YES