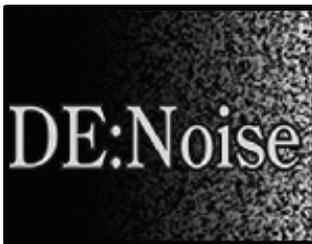


Neuron Bundle 2: RE:Vision FX

RE:Vision FX includes highly specialized filters to: Reduce noise using smart spatial and time-based methods; Provide smarter de-interlacing/pull-down; Intelligently mend holes in images; Blur based on tracked image motion; Turn 2D artwork into 3D rendered imagery; Slow down or speed up clips using image warping; Turn pictures and videos into painted works of art; and Apply advanced blurring and distortion tools. Utilizes RE:Vision's proprietary motion tracking and shading-from-shape technology. All filters work in both 8 and 16 bit per pixel depth, for highest possible color resolution, and feature multi-processor support for render intensive tools.

RE:Vision FX includes the following nine sets of tools and effects, further described on the following pages.



DE:Noise

Smart Noise Removal



FieldsKit

Intelligent De-Interlacing



RE:Fill

Mend holes in images



RE:Map

Advanced Distort/Warp



ReelSmart MotionBlur

Time-based Motion Blur



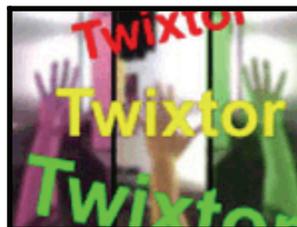
ShadeShape

Turn 2D artwork into 3D



SmoothKit

Blur and smoothing tools



Twixtor

Slow or speed clips w/ warping



VideoGogh

Painterly Effects for video

DE:Noise reduces noise using novel feature-sensitive spatial filtering along with time-based optical flow methods! DE:Noise makes it easy to remove excessive noise in one easy-to-use tool.

DE:Noise handles spurious frame-to-frame defects ranging from fine digital/electronic noise to blotchy spots (e.g. dirt on the film). DE:Noise combines motion estimation techniques with feature-sensitive, edge-preserving spatial filtering methods to reduce the visual impact of various problems such as: noisy video (that can happen with low-light capture), excessive film grain, CG renders affected by ray-tracing sampling artifacts, fingerprints and dust captured during film scan/transfer and printing, snow, drop-outs and many other defects.

- Pre-processing contrast controls to help enhance the noise for easier elimination.
- Smart spatial filtering controls that allow for the spatial smoothing of noise without smoothing over important features in the image sequence.
- 8 different temporal filtering methods that use optical flow motion estimation to correlate images over time in order to reduce noise and other artifacts.
- Post-processing to help punch up the result, or to undo the preprocessing contrast enhancement.
- Post sharpening option for when the de-noising process makes the result softer than desired.



FieldsKit provides smarter de-interlacing and better workflow options for interlacing and pull-down.

At the heart of FieldsKit is FieldsKit Deinterlacer that de-interlaces video imagery with superior results. Using proprietary field reconstruction and adaptive motion techniques, FieldsKit Deinterlacer can build full frames that are of much higher quality than the standard approaches available in most effects and video editing applications.

The FieldsKit Reinterlacer plug-in allows you create interlaced material from progressive material using various techniques, including producing new fields using motion estimation techniques.

The FieldsKit Pulldown plug-in allows you to animate the pulldown phase for material that has multiple cadences in the same clip.

- All plug-ins work an arbitrary resolution (including HD).
- Deinterlacer and Reinterlacer work on both PAL and NTSC footage.

FieldsKit Deinterlacer

- Options to build better-looking frames by looking at surrounding areas in order to reconstruct better edges.
- Option to de-interlace using motion estimation.
- Ability to only perform de-interlacing where there is motion in the scene (useful for locked-off camera shots).
- Ability to blur in the vertical direction to reduce or eliminate flickering or crawling artifacts.
- Ability to post-sharpen to help regain some of the detail lost when creating the de-interlaced frames.

FieldsKit Reinterlacer

- Create interlaced material from progressive material using motion estimation.
- Ability to interlace frames from progressive sequences.
- Ability to combine and blend fields to help reduce artifacts in interlaced material.

FieldsKit Pulldown

- Ability to remove and create pull-down.
- Both traditional 3:2 and 3:2 PA pull-down supported
- Ability to animate the phase of the pull-down menu for material that has multiple cadences in the original material.

RE:Fill mends holes in images by intelligently filling user-specified regions.

- RE:Fill can replace missing pixels in numerous ways: for example, selecting the nearest "good" pixel, mirroring pixels about a hole's edge, or cloning from another "good" region. The good region can even come from another point in time or from another sequence altogether.
- Fill in holes created when keying or roto-scoping out noisy blobs, scratches or other unwanted small objects.
- Fill in small image regions along an image boundary that can become "invalid" after distorting or warping an image.
- Fill in an area between two objects being lined up that don't exactly fit together.
- Fill in areas that have unwanted blown out areas, or other unwanted specks due to bad camera or lighting setup, or due to some unfortunate color correction that has been applied.
- Fill in areas left behind after the removal of small tracking markers, crosses or orange balls.
- Create nice color gradients and washes by filling in large holes.
- Create interesting kaleidoscopic effects using a mirror fill on large holes.



Original

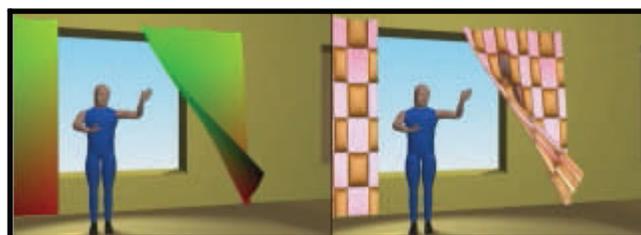


RE:Fill applied

RE:Map provides professional quality mapping and distortion tools.

RE:Map is a set of 5 plug-ins, featuring high quality filtering of images, including supersampling and mip-mapping:

- **RE:Map UV** takes a UV Map, probably rendered from a 3D system, and renders an image using this mapping. Easily clean up texture maps and remap in post without having to go back to your 3D system for re-rendering. In addition, this plug-in allows you to come up with cool 2D and 3D animated texture map templates and reuse them over again with different image sequences.
- **RE:Map Inverse UV** takes a UV Map and a color image that matches that UV Map, and inversely projects the color image to a rectangular image that may then be used to texture the UV Map with RE:Map UV, or for use as a texture map for your 3D system.
- **RE:Map Distort** takes a color image and automatically distorts the image based on the features for a caricature-like effect.
- **RE:Map Displace** warps an image with a user-supplied displacement map. This plug-in includes many more options and advanced filtering controls than most other displacement map filters.
- **RE:Map Planar** maps or inverse maps a perspective plane defined by 4 points (also known as corner pinning).



RE:Map UV Features

- Reapply new texture sequences in order to reuse animated UV maps for cool animations and transitions.
- Adjust, color correct, edit, then reapply your textures for your 3D animated objects without having to re-render in the 3D system.
- Advanced feature to deal with anti-aliased UV edges and areas where a section of an object crosses another part of the object.

RE:Map Inverse UV Features

- Paint or align textures in 2D to match your 3D rendered image and inversely project the image to make a texture map for use in your 3D system or with RE:Map UV.

RE:Map Distort Features

- Automatic distortion of features in an image for a caricature effect.

RE:Map Planar Features

- Provides much better results than the corner pinning found in most applications, with high quality filtering.
- Inverse corner pinning which enables you to work in a non-perspective space on your live-action sources.

RE:Map Displace Features

- Multiple passes available for smearing and feedback effects.
- Both forward and inverse displacement filtering provided, giving different but equally interesting results.

By automatically tracking every pixel, ReelSmart Motion Blur applies more natural-looking motion blur with no effort!

Automatically add more natural-looking motion blur to a sequence using ReelSmart Motion Blur. RE:Vision's tracking technology is at the heart of ReelSmart Motion Blur, so there is no handwork involved. Of course you can add as little or as much blurring as you need and even remove motion blur! Finally, you can create very interesting effects by blurring one sequence by using the motion from another.

ReelSmart Motion Blur Features

- automatic tracking of every pixel from one frame to the next.
- variable amount of blur.
- ability to blur one sequence using the motion from another.
- removal of motion blur.



ReelSmart Motion Blur Pro adds the following features

- Support for foreground and background separation using a specified matte. ReelSmart Motion Blur then uses proprietary filling and tracking techniques when working on the background layer, even when it is obscured by the foreground!
- Up to 12 tracking points can be specified to help guide RSMB's motion estimation. By using the tracking points you can explicitly tell RSMB where a pixel moves from one frame to the next in order to guide RSMB's calculation of motion vectors. You can set the position of each point at each frame by hand, but more importantly, these points can often be positioned from frame-to-frame using Quantel's point-tracking features.

Shade/Shape automatically turns your 2D artwork into 3D rendered imagery!

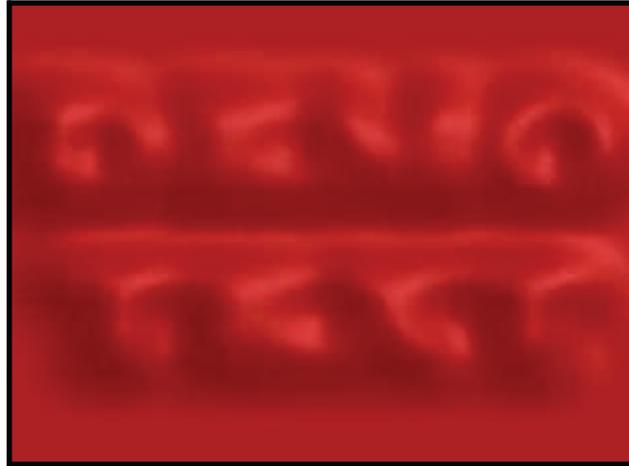
Give your imagery volume and depth without the hassle of 3D modeling! Shade/Shape generates 3D models from your 2D graphical and picture elements using RE:Vision's powerful and proprietary shading-from-shape technology. The models are then lit and rendered in true 3D! Add further detailing to your 3D models by applying reflection and bump maps.

Shade/Shape Features

- Automatic 3D model creation.
- 3D lighting and rendering.
- Bump mapping.
- Environment mapping.
- Stable and smooth-over-time shading produced for moving imagery.
- As 2D elements merge and split in a sequence, Shade/Shape automatically merges and splits the geometry in an intuitive fashion!
- Ability to define negative light intensities.
- Create a 3D shaded version of any matte you provide, including animated characters!

Shade/Shape Is Great for:

- Adding depth, shading and metallic luster to your titles and logos.
- Developing cool effects and abstract transitions.
- Soft shading on 2D hand-drawn animation.
- Adding natural 3D shading to existing image sequences.



SmoothKit provides the ultimate filter set to smooth your imagery by combining user-directed controls and feature-sensitive methods.

SmoothKit is a set of filters that complements and extends the features of basic blurs and sharpens provided by host applications. Each plug-in in SmoothKit is carefully crafted with fine control to provide the ultimate in filtering. SmoothKit's emphasis is precise control of the filtering process with no compromise on image quality.

SmoothKit allows you to blur without blurring over edges, sharpen with much less ringing, intelligently reduce small image defects, reduce jaggies, blur with per-pixel direction control, and z-blur using greyscale depth images. Many plug-ins have per-pixel controls, allowing you to vary the amount of blur or the direction of the blur, and many other controls, at each pixel.

As an example, with SmoothKit you can smooth out the skin in someone's face but not eliminate the details of the hair that hangs in front of the face. In addition to "effects", the SmoothKit toolset can be used to reduce image defects in a much more intelligent manner.

Features of SmoothKit

- Ability to selectively filter the luminance, or the chrominance, or each of the RGB channels independently.
- Soften areas while preserving sharp edges.
- Sharpen plugin with a "multi-res" mode that significantly reduces usual sharpening ringing artifacts.
- Optional grayscale images may be used to scale filters on a pixel-by-pixel basis.
- Includes a jaggie-reducing filter, to help eliminate staircasing.
- Median filter option (in the Diffusion plugin) that produces much less blocky results than regular median filters.
- Intelligently reduces block artifacts (for example, DV or MPEG compressed footage).
- Ability to soften areas without blurring edges.
- Directional filtering with per-pixel direction and strength controls.
- Multi-frame (temporal) filtering with several processing modes.
- Z-blur that uses depth maps for blurring control. Ability to change where the focal point should be.

Twixtor intelligently slows down, speeds up or changes the frame rate of your image sequences with visually stunning results.

In order to achieve its unparalleled image quality, Twixtor synthesizes unique new frames by warping and interpolating frames of the original sequence, employing RE:Vision's proprietary tracking technology that calculates motion for each pixel.

Twixtor Features

- Warping and interpolation of frames to "time warp" input footage.
- Smart processing of interlaced material
- Stretching of a sequence using a single scaling parameter.
- Key-framable retiming for complete control on a frame by frame basis.
- Frame rate conversions made easy.
- Option to automatically enhance dark imagery or imagery with poorly defined edges. In many cases, footage that was difficult to track becomes much more well-behaved upon retiming.
- Contains an option to add or remove motion blur, as appropriate.
- Support for marking material so that Twixtor does not motion-interpolate across a cut.

Twixtor Pro Features

- **Object separation.** Support for foreground and background separation using a specified matte. **Twixtor** then tracks each layer separately for improved results. This feature uses proprietary filling and tracking techniques when working on the background layer even when it is obscured by the foreground! Support for up to 3 foreground layers.
- **Track Point Guidance.** Up to 12 user-defined points can be specified to help guide **Twixtor's** motion estimation. By using the tracking points you can explicitly tell **Twixtor** where a pixel moves from one frame to the next in order to guide **Twixtor's** calculation of motion vectors. You can set the position of each point at each frame by hand, or using Quantel's point-tracking features.
- **Motion Vector Import.** Give Twixtor motion vectors generated elsewhere (like from a 3D system) to time remap footage, including adding motion-interpolated fields to otherwise progressive material.
- **Motion Vectors Export.** You can now output the motion vectors that Twixtor generates internally. This powerful feature comes with visual debugging modes to more intuitively assess and tune the quality of the motion estimation. The motion vectors can then be used elsewhere in the pipeline (including the Twixtor plugin that imports motion vectors).

Why upgrade to version 4.5? Twixtor 4.5 raises the bar in motion estimation. Twixtor 4.5 introduces a complete rewrite of its tracking. Twixtor is much more accurate, tracks objects farther, and exhibits fewer artifacts when there are objects crossing in the scene. This means less tearing and stretching of objects as they cross or go out of the frame.

Video Gogh turns your pictures and videos into painted works of art!

Providing an easy and intuitive interface, Video Gogh employs the powerful technology used in "What Dreams May Come," 1998 Academy Award Winner for Best Visual Effects. How it works: Simply open a movie with Video Gogh, make a few choices and Gogh! Out comes a painted animation. Couldn't be simpler!

With version 3, you can now supply your own custom brushes, which can be animated too!



Video Gogh Features

- Apply only where needed. Brushes are only generated in the portions of a layer that are visible.
- 3 default styles of brushes and painting looks.
- Ability to add custom brushes, including animated brushes.
- Variable size brushes.
- Variable distance between brushes (the plug-in does not require full coverage by paint strokes).
- Variable opacity of the brushes.
- Size, distance and opacity may be animated for a sequence.
- Ability to control brush motion from frame-to-frame using motion sources that are separate from the sequence being painted.
- Brush orientation by default calculated from the images being painted. However you can also control brush orientation by specifying alternate image sequences, including direction maps (via screen-space normals) from 3D systems for exact control
- Ability to control how fast or slow brushes grow into existence (birthing) or decay into nonexistence (dying) when brushes are created or destroyed.

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About VDS

VDS provides automation and content design tools for the broadcast, cable television, internet, and post production markets. VDS products automate broadcast television systems, with an emphasis on graphics-related operations, content and digital asset distribution, graphics and promo automation, and internet-to-broadcast systems. These products are used in sports, news and financial broadcast channels as well as in multichannel broadcast and cable facilities. VDS content creation products are tools that deliver graphic design, universal file translation and integration capabilities for the post product and broadcast markets.