

# PICTURENAUT

*Introducing a new breed of HDR tool*



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*Introducing a new breed of HDR tool*



*tonemapped HDR by Marc Mehl, creator of Picturenaut.*

## Preface

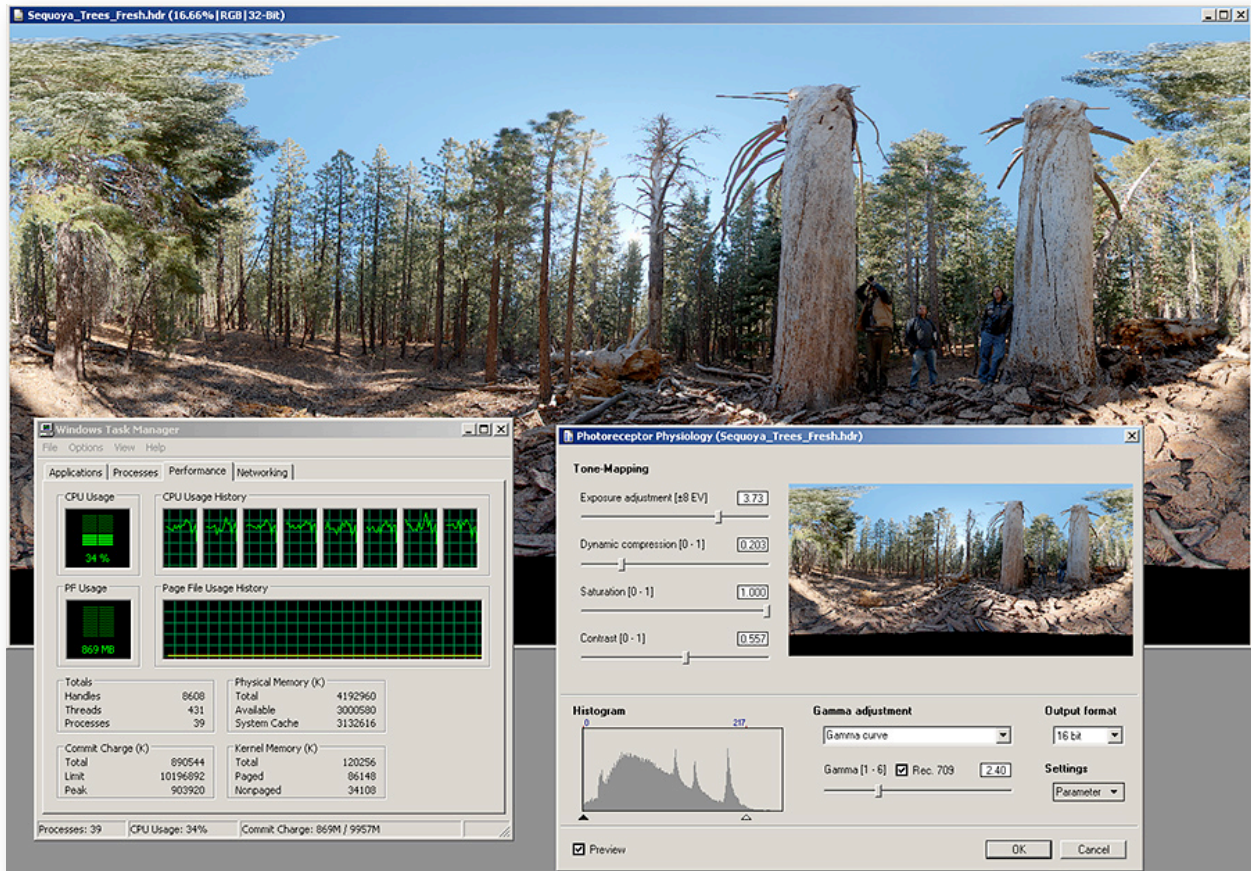
Picturenaut was made to fill the void that HDRShop left us with.

It is an image editor focused on HDR generation from a series of bracketed exposures, tonemapping, and HDR editing. Nowadays there are several applications for all these tasks coming from the photographic side of HDR imaging, which all concentrate on giving beginners an easy start by compromising control for advanced users. Picturenaut puts image quality first. It offers a blend of deep level control for advanced users (a la HDRShop), modern algorithms for automation, and scientific accuracy.

Picturenaut was born in the German photo community. It has been in the works for three years, with consistent improvements according to user feedback. Picturenaut is entirely free. ([Donations are accepted.](#))

## Enabling Technology

Picturenaut's consistent multi-threaded architecture makes it the fastest tone mapper in the world. Nothing beats it running Reinhard's Photoreceptor Physiology in realtime on the full sized image.



*tonemapping on the fast lane: 32 Megapixel in realtime on 8 cores*

The latest beta version even branches each image edit into a separate thread - which means you can edit one image while another one is loading. Picturenaut features an open SDK, where 3rd party plugins can take full advantage of its multithreading capabilities.

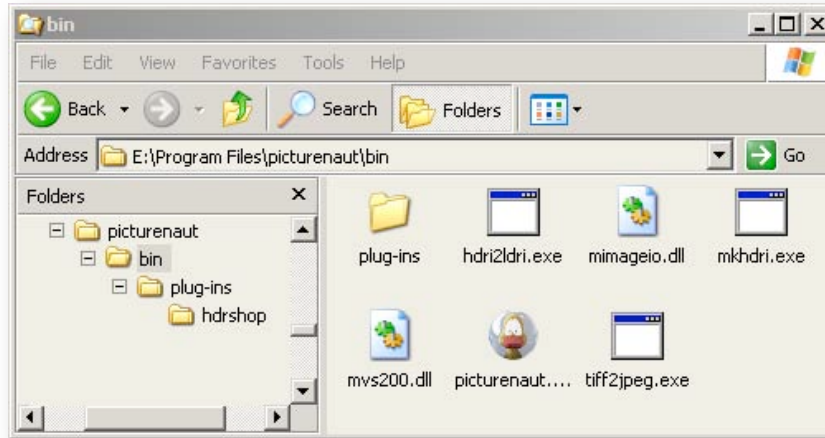
In addition to plugins natively written for Picturenaut, it can also work with HDRShop plugins. They integrate seamlessly, and underlying architecture makes them run even smoother than in HDRShop itself.

Picturenaut also handles memory allocation very efficiently. This enables it to work naturally with very large images, that could previously only be edited in Photoshop. Tonemapping a 300 Megapixel panorama? No problem.

## Installation

Picturenaut has no installer.

Unzip the picturenaut ZIP archive with it's path informations into a folder of your choice. It is very important that the subfolder structure stays intact, otherwise it will not work correctly. For example, if you unzipped into "C:\Program Files", your directory structure should look like this:



Then you can start picturenaut directly. You will find it in the "bin" subfolder.

Also included are commandline programs, that can be used to integrate Picturenaut into an automated pipeline. Available are:

- MKHDR - generates HDR images from bracketed exposures
- HDR2LDR - tonemapper (Logarithmic and Reinhard's Photoreceptor Physiology)

For detailed information on using these commandline programs see our the [FAQ online](#).

## Supported File Formats

HDR Formats:	LDR Formats
PFM (Portable Float Map)	JPEG
HDR (Radiance)	TIFF (only RGB color space)
EXR (OpenEXR)	TGA (Targa, no alpha channel)
TIFF (32-bit Floating Point)	
TIFF (LogLuv)	

All these formats are also supported by the commandline programs.

## HDR Generation

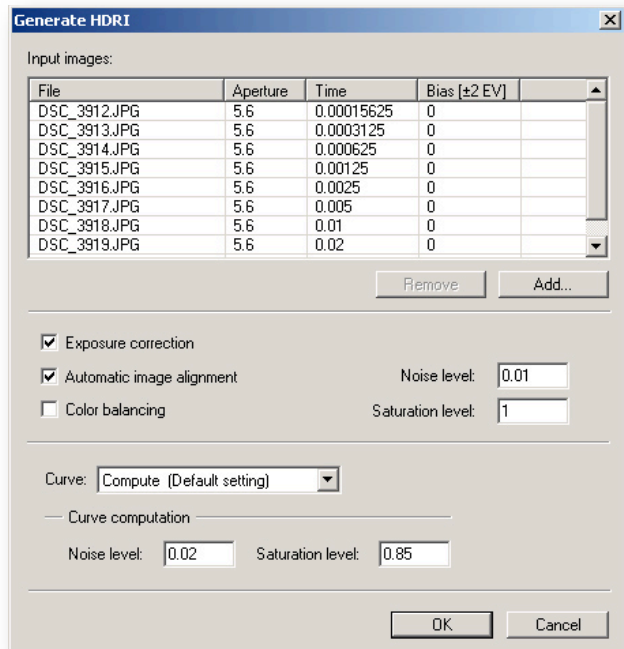
You can generate an HDRI with the menu option “File/Generate HDRI”.

Key features are:

- Automatic image alignment.
- Exposure correction.
- Color balancing.
- Noise level compensation.
- Automatically compute the camera curve from the source images.
- Derive a standard camera curve from ICC profiles found in the source images.
- Choose the weighting function used, to control how the pixel values from individual exposures are weighted during the merge.

The exposure data of the source images is automatically taken from the EXIF metadata. All parameters are editable directly in the table interface. So if your images were scanned from film negatives, you shot with ND filters, or you have lost exposure information in proceeding editing steps, you can make adjustments and fill in the blanks here.

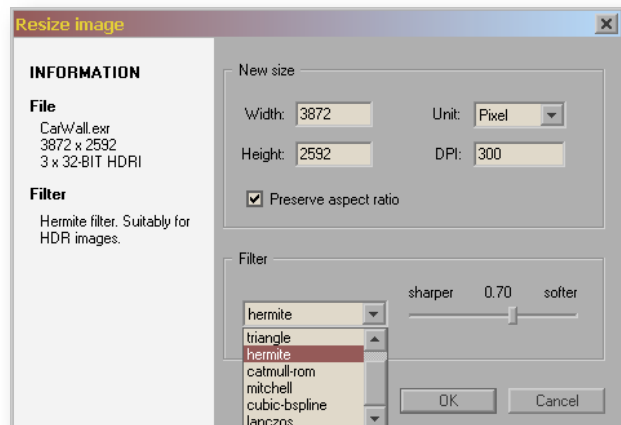
You can also change the bit depth of any single LDR, and Picturenaut converts it properly into a pseudo-HDRI using a standard gamma curve, or any curve you saved from an ICC profile or derived from a set of calibration images.



## HDR Editing

Picturenaut offers 7 different interpolation options for resizing HDRs, with precise control over sharpness parameters. Of course, they work on LDRs as well.

More editing functions are planned, recently made possible through the addition of the 3rd-party SDK.

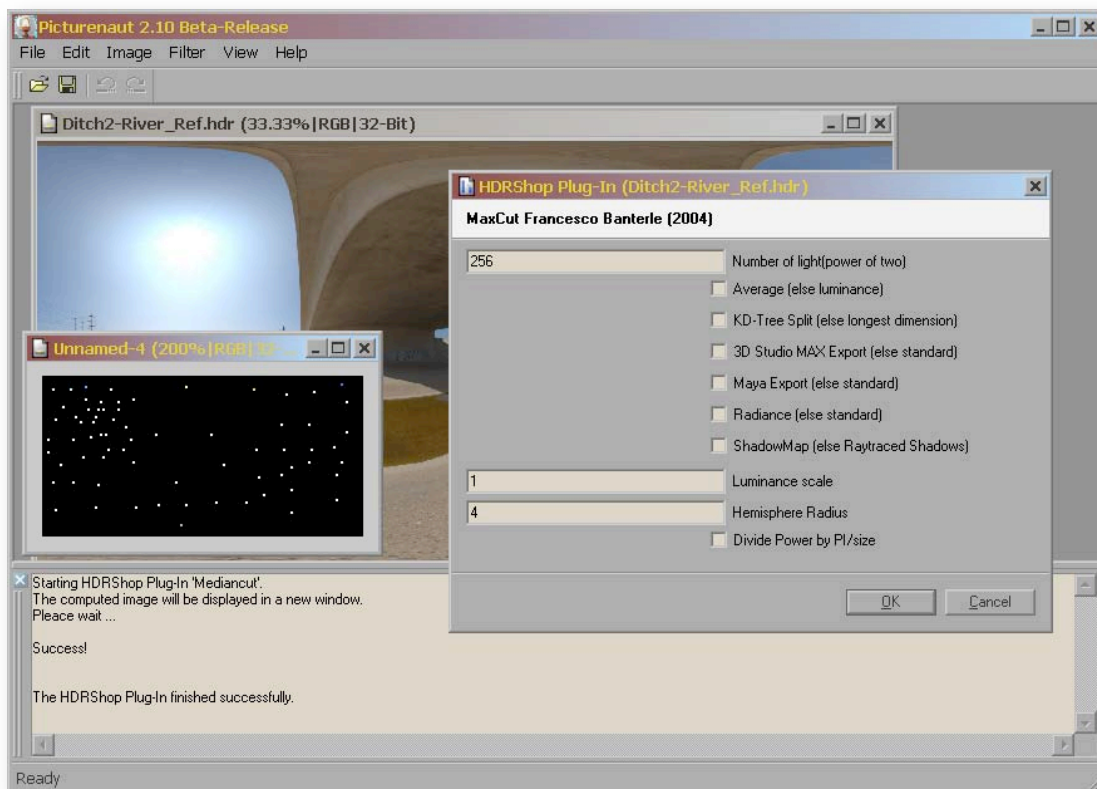




The seamless integration of HDRShop plugins enables a wide spectrum of image edits. There's already a great collection of filter plugins by [Francesco Banterle](#), including:

- Gaussian Motion Blur
- Absolute HDR Calibration
- Diffuse SH: spherical harmonics
- Median Cut: light source extraction
- MyFilter: custom convolution kernels
- FakeHDRI: stretch out LDR pixel values
- Physical Sky: generate procedural skies

Also available is a variety of additional tone mapping operators: Greg Ward, Drago, Scan, EriKate, ExpLog.

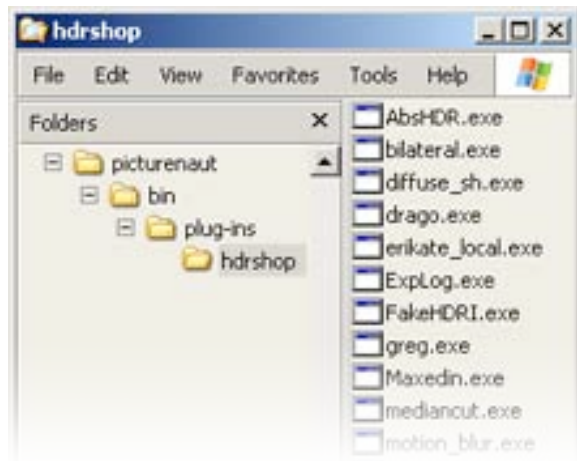


*Light source extraction with the Median Cut plugin by Francesco Banterle in Picturenaut.*

See [Francesco Banterle's website](#) for free download and full documentation.

## Installing HDRShop Plugins

All you have to do is [download Banty's Toolkit](#) and extract all the plugins into the **Picturenaut\bin\plug-ins\hdrshop** folder. Then they will show up in Picturenaut in the Filters menu, and are ready to be fired on any image.



## Tonemapping Features

Picturenaut includes 2 global tonemapping operators, both accessible from the “Image > Tone-Mapping” menu:

### Adaptive Logarithmic (ala Drago):

This TMO protects the color underneath highlights, use it for sunset shots, visible light bulbs. The resulting images will be vibrant and colorful. Adaptive Logarithmic uses a smooth logarithmic roll-off for dynamic range compression of the highlights and the shadows.

### Photoreceptor Physiology (ala Reinhard):

This TMO applies a logarithmic dynamic range compression as well, but the correction curve has a short linear portion on both ends. The result is better visual contrast in the shadow and highlight portions, at the expense of a lower contrast in the middle tones. Also, this TMO desaturates color depending on how much the tonal values are getting compressed, resulting in crisp white highlights. Use this for tonemapping images with specular highlights in them, or to get the most naturally looking result.

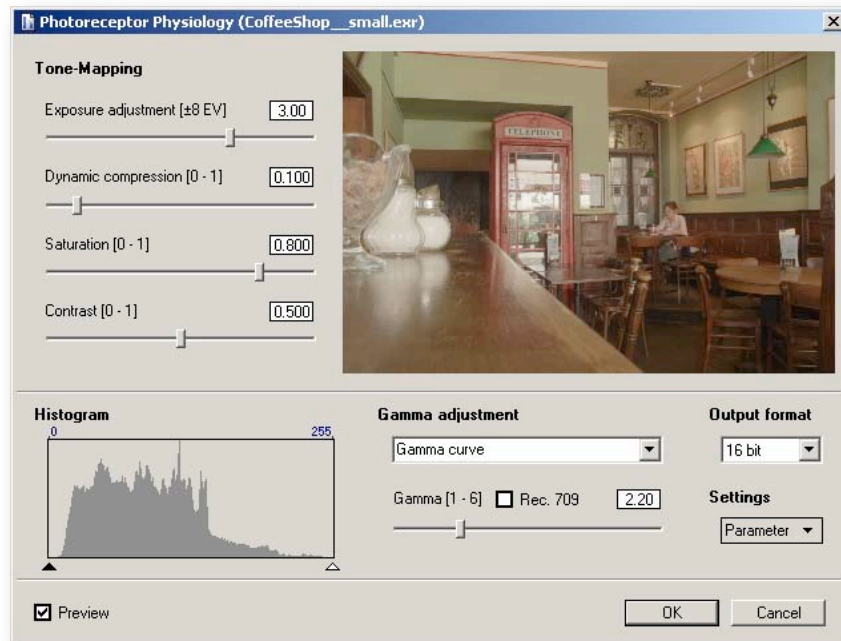
In future versions of Picturenaut, both tonemapping operators will be accessible in one unified tonemapping dialog. Up until version 2.12 these are separate menu options. Implementation of an additional, local TMO is underway and currently in beta-stage.

### General tonemapping features:

Tonemapping in Picturenaut is very easy and interactive. The preview image reflects every change of the settings in realtime. Watching the histogram squash and stretch *while* you’re dragging a slider is the ultimate learning experience for figuring out what all these sliders do.

As soon as you let a slider go, the current settings are applied to the full size image as well - which takes milliseconds.

Hitting OK only closes the requester, because the final image is already tone mapped in full quality during the live Preview.



Picturenaut has the unique ability to reuse the camera curve for the Gamma adjustment of a tone mapped LDR result. That way you can preserve the specific look of your camera (which is the default behavior). You can also simulate the look of a different camera/film stock by applying a previously derived curve as post-adjustment.

Settings can be saved to be used later with the commandline version as well.

Outputting the result in 16-bit is recommended for best quality. Save the file in TIFF format and perform post-adjustments in Photoshop, Lightroom, or your preferred image editor.

## Open Community

Picturenaut is always evolving, which is a good thing.

If you are a developer interested in the SDK, a user looking for support, or if you just want to say hello and show us what you did with Picturenaut please visit our forum at:

[www.hdrilabs.com/picturenaut/forum](http://www.hdrilabs.com/picturenaut/forum)