infiniMap Pro

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IP Acknowledgements

This plugin uses the ECW JPEG 2000 SDK by ER Mapper, some parts of this SDK are based on 3rd party open source libraries and projects:

1) TinyXML - XML parsing for GML Geolocation Metadata

TinyXML is distributed under the zlib license. www.sourceforge.net/projects/tinyxml

2) LittleCMS - ICC Profile Management library - http://www.littlecms.com

LittleCMS is distributed under the MIT license:

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3) J2000 - http://www.j2000.org/

The T1 and MQ code in the ECW JPEG 2000 SDK is based in part on highly modified versions of sections from the J2000 library From the J2000 website: "The J2000 codec was written in an effort to produce the cleanest and simplest implementation possible of the JPEG-2000 standard. We have put a particular emphasis on good architecture design and code simplicity, while at the same time providing an implementation as complete and efficient as possible. The source code for the codec is freely available for anyone to study or even for use in commercial programs. We hope that our open development process and our focus on clean, straightforward code will help make the J2000 codec become a reference implementation of the JPEG-2000 standard." J2000 Copyright (c) 2001-2002, David Janssens All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: 1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS `AS IS' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

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Table of Contents

Introduction

Even now in the age of 64bit computing RAM is a scarce resource. While it is quite common to have workstations with 2-4 GB of RAM or even more, images used to texture in 3D applications have grown in size as well. In certain areas image sizes of tens or hundreds of gigabytes are quite common. Higher render resolutions for HDTV, film or print also require highly detailed, high resolution image maps for texturing. We have decided to tackle this issue.

infiniMap Pro is a LightWave 3D plugin that allows the user to render virtually unlimited[1] size textures within a familiar interface.

This is accomplished by only loading the parts of an image into memory that are actually visible in the final render in the resolution needed for the final image. To determine the optimum resolution of the image need for the render, infiniMap Pro uses a number of variables, including for example the distance of the mesh to the camera.

We have rendered animations of the earth using more than 3GB of images in video resolution using only 300MB of memory, including the memory used by LightWave 3D in the process. We have also rendered images of tens of gigabytes using infiniMap Pro on computers with 500MB of ram successfully.

A smart caching system makes sure that the performance hit on render times is minimal, especially when rendering out animations. The loading of scenes with infiniMap Pro images is much quicker than using natives images.

It has been our goal to integrate infiniMap Pro as tightly into LightWave 3D as possible and to adhere to existing standards to make using it a smooth experience. If the user interface differs from the original LightWave 3D image layers, this is due to the SDK unfortunately not allowing for a 100% accurate replacement of the user interface.

The currently supported image file formats are ECW (from ER Mapper) as well as JPEG 2000.

New Feature
Version 1.0.2 You can use infiniMap Pro to create ECW/JPEG2000 out of images loaded into LightWave 3D, or use one of the tools listed in the appendix of this manual.

Compatibility

New Feature
Version 1.0.2 InfiniMap Pro is compatible with LightWave3D 7.5 up to LightWave 8.5.

It currently runs with the Windows 32bit and Windows 64bit versions of LightWave. It has been tested with Windows 2000 as well as the 32bit and 64bit versions of Windows XP.

A Mac OSX version is planned. Upon demand we can also port a Linux render node version.

Please visit www.infinimap.com for more up to date information.

Features

infiniMap Pro has been thoroughly tested in production by us and our trusty beta testers. The main features of infiniMap Pro are:

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1   Well, not quite, the current limit is an image size of 4,294,967,296 x 4,294,967,296 pixels.

- Full compatibility[2] to LightWave 3Ds surfacing, allowing for an easy replacement of native image texture layers with infiniMap Pro texture layers.

- Works both as a shader and as a procedural texture

- A user interface that remains as close as possible to the native image texturing interface provided by LightWave 3D, resulting in a minimal learning curve.

- Complete support for multi-threading to make full use of multi-processor, multi-core and/or hyper-threading computers.

- Low memory footprint.

- Shared image caches: Multiple instances of the same image use a shared cache, reducing the amount of memory required during rendering for scenes that re-use identical images (or single channels thereof).

- FPrime support.

- Useful tools to make working with infiniMap images easier, such as an automatic openGL preview layer generation tool to make infiniMap Pro images visible in Layout.

- Free network render nodes.

- Unlicensed plugins can still be used to load, render and save infiniMap enabled scenes, thus no need to purchase a license for every copy of LightWave 3D in your facility.

- ScreamerNet network rendering support, of course.

New Feature · Convert images to the ECW/JPEG2000 format from within LightWave 3D

Version 1.0.2 · Replace images globally

- Free point upgrades, free support, free beer[3]

Current Limitations

- Only supports ECW and JPEG 2000 images

- Only 8 bit per channel images are supported.

These are likely to be tackled in later releases.

Note for users of previous Versions

Please re-add the infiniMapPro.p plugin file to LightWave using the Edit Plug-Ins panel.

A new plugin has been added which will only be visible if you add the plugin again.

---

2   As far as the SDK allows that is, unfortunately there are still some missing hooks. Limitations are detailed in the sections describing the actual plugins.

3   O.k., so we're joking about the beer...

Changes since Version 1.0

Here is a list of changes since the initial Version 1.0 release of infiniMap Pro. These are covered in more detail in the manual.

- **Version 1.0.1**
  - ✓ fixed a bug concerning licensing of multiple LightWave installations using a shared programs directory

New Feature

Version 1.0.2

- **Version 1.0.2**
  - ✓ 64bit Windows support
  - ✓ consolidated the external ECW/JPEG2000 into the base plugin file. Now there is only one .p file required to install infiniMap Pro
  - ✓ added a simple converter that can export images loaded into LightWave 3D as ECW or JPEG 2000 image files
  - ✓ The projection code has been re-written to solve problems with bump maps. Bump maps also render slightly faster due to the re-design.
  - ✓ Added a new projection type: Spherical Section Projection.
  - ✓ fixed a bug concerning front projection mapping
  - ✓ added channel selection options to the shader plugin
  - ✓ added "Replace Image" option to globally replace an infiniMap Image
  - ✓ improved the speed of previews in the surface editor
  - ✓ fixed a bug relating to the wrong proxy image being selected if an openGL preview layer was generated that used an existing image
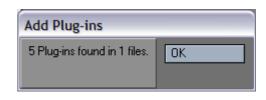
Setting up infiniMap Pro

Installation

New Feature
Version 1.0.2

Since Version 1.0.2 the installation of infiniMap Pro has been greatly simplified.

The infiniMapPro.p file can be copied to any directory where you keep your plugins. We recommend using a manually created plugin directory to separate third party plugins from plugins shipped with LightWave 3D. This will simplify upgrades of LightWave 3D.

Now use the **Edit Plug-ins** panel (alt-F11) of the **Add Plugins** menu item to add the plugin file *infiniMapPro.p* to LightWave 3D. LightWave will prompt you that it found 5 plugins in one file.

The five plugins added are:

infiniMap Pro Texture

infiniMap Pro Shader

infiniMap Browser

infiniMap Converter

infiniMapCoreServices (only used internally by the plugins).

To be able to use all features of the plugin you will need to register it and activate it with the activation code we send to you.

Registration

Once you've installed the plugin, open any object and either apply the infiniMap Pro procedural texture or the shader to the surface. The interface will be blank except for a button asking you to register.

Clicking on the button will open the Registration panel as shown on the left. Enter your full name, company name (if applicable) and e-mail address. Export the registration and attach it to an e-mail to registration@infinimap.com . We will mail you an activation code within 24 hours after payment is received, depending on the time difference.

You can now either import the keyfile attached to the activation e-mail, or copy and paste the activation key into the registration panel (please make sure that the personal information is identical to the one submitted to us for the registration).

Your registration is now complete and you will see the interface of infiniMap Pro, allowing you to use it.

The registration file is stored in your \lightwave\programs\ directory, where lightwav.exe resides. If you use multiple licenses of LightWave 3D from a single network share, the registration manager will only append/edit licenses locked to the dongle installed on the host machine. It will however manage multiple licenses allowing for a single registration file on your network share.

Included Plugins

infiniMap Pro is actually a suite of plugins for LightWave 3D. Currently it consists of the following four plugins:

- infiniMap Pro Procedural Texture

- infiniMap Pro Shader

- infiniMap Pro Browser

New Feature • infiniMap Pro Converter
Version 1.0.2

Reference

Common User Interface Elements

Both the procedural and the shader use many common elements in their user interface[4].

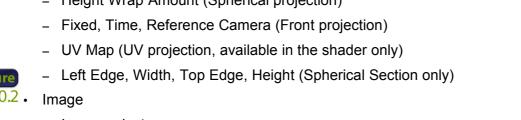The common user interface elements used by both plugins, from top to bottom, are:

- Projection
  - Planar, Cylindrical, Spherical, Cubic, Front, UV (only available in the shader), Spherical Section
- Depending on the type of projection, these additional controls may also be visible
  - Width Tile, Height Tile (Planar projection, Cubic projection, UV projection)
  - Width Wrap Amount (Cylindrical projection, Spherical projection)
  - Height Wrap Amount (Spherical projection)
  - Fixed, Time, Reference Camera (Front projection)
  - UV Map (UV projection, available in the shader only)
  - Left Edge, Width, Top Edge, Height (Spherical Section only)

New Feature
Version 1.0.2

- Image
  - Image selector
  - Channel
  - Image Preview Area
- Options
- Texture Quality
- LoD Blending

These are explained in more detail in the following sections.

Projection Types

InfiniMap Pro supports all projection types that LightWave3D provides to normal image maps. Unfortunately, due to limitations within the SDK, UV mapping is only supported by the infiniMap Pro shader.

---

4   Actually, to a large extent they are based on the same source code as well.

The projection types are:

- Planar projection

- Cylindrical projection

- Spherical Projection

- Cubic Projection

- Front Projection (also known as Camera projection)

- UV Map (not available in the procedural texture)

- Spherical Section Projection

Each one of these behaves exactly like the matching image projection type in LightWave 3D. InfiniMap Pro also supports all the options, such as Wrapping amounts, Width/Height Tile etc.

Please refer to your LightWave 3D documentation for more information on the projection types.

Spherical Section Projection

New Feature
Version 1.0.2

The Spherical Section Projection is unique to infiniMap Pro. It basically works like a spherical projection, but allows you to define the area of the sphere that will be covered by the image using angles.

It can also be considered as a spherical projection defined by Longitude/Latitude coordinates to add high detail imagery to globes[5].

Left Edge

This defines the left edge of the image in degrees.

Width

This defines the width of the image in degrees.

Top Edge

This defines the location of the top edge of the image on the sphere in degrees.
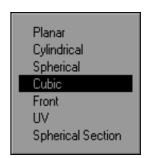
Height

This defines the width in degrees.

At a value of Left Edge: 0° / Width: 360° / Top Edge: -90° / Height 180° the image will wrap the entire sphere.

Image Selector

This pop-up menu works just like the image selector in the image texture layer provided by LightWave.

You can use it to select any of the currently loaded infiniMap Pro images or load a new one.

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5   ...which is incidentally what it was designed for.

Loaded images actually do not use any memory until a render process is started, this can be a preview (including the preview sphere in the Surface Editor), a final render or a FPrime render.

infiniMap Pro keeps track of the usage of the images. If no plugin actually uses one of the images in this list, the image is automatically removed from the list.[6]

New Feature infiniMap Pro shows how many times the image is used in brackets behind the image
Version 1.0.2 name. Please note that viewing an image in the Browser counts as a use of the image as well.

Channel Selector

Unlike LightWave 3D, infiniMap Pro allows you to specify which channel of an image you wish to use for texturing. In some instances it may be useful to just apply the red channel as a bump map for example. This feature also allows you to just use the alpha channel of a RGBA image to mask out other textures for example.

The channel selector has to do a bit of guessing as to how to interpret the bands/channels stored in an image file. If there are 3 bands, it assumes them to be RGB in that order, if there are four it assumes that the fourth band is the alpha channel. Single channels are always available as luminance / grey scale values.

```
RGBA
RGB
Red
Green
Blue
Alpha
Average
Luminance
```

Images with three or more channels, such as RGB images, will also be able to output two additional "pseudo" channels that infiniMap Pro can generate on the fly. These are:

• **Average** – Just the average of the Red, Green and Blue Channel

• **Luminance** – The Red, Green and Blue Channel balanced to produce the perceptual Luminance based on the SMPTE standard.

Image Preview Area

If you have an image loaded, the image preview area will display a small thumbnail of the image.

If you have no image loaded, the image preview area will display the infiniMap Pro logo as well as the version number of infiniMap Pro.

Note: Due to a glitch in the LightWave 3D SDK, in Modeler the image preview area is not available for the procedural texture.

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6   As always, there is an exception to the rule: Procedural texture layers, when copied using the 'Copy' button, still hold on to the infiniMap Pro image they use. So you may notice an image being in the list that you're sure isn't being used, because you copied an infiniMap Pro procedural texture layer that uses this image. No worries, next time you 'Copy' a texture layer, or restart LightWave 3D, it will be gone.
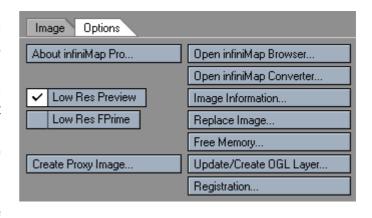
Options

If you select the Options tab you will
be able to access some bonus
functionality of infiniMap Pro.

The options visible depend on the
plugin type, some options may not
always be available.

Also, some options may only be
visible if an image is actually selected
in the Image Selector.

The Options are available in the
procedural texture and the shader.

In the procedural interface some of the option names had to be shortened due to
space constraints.

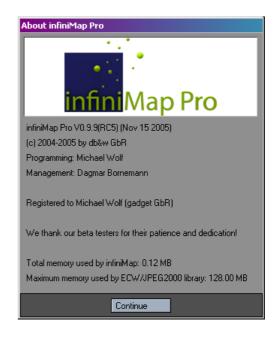### About infiniMap Pro... / About infiniMap...

This displays a panel with the credits for
infiniMap Pro, as well as the version number and
the date the plugin was created.

The version information is quite handy when you
require support and check for updates.

As an additional note, we would once again like
to thank our trusty beta testers for their patience
and support.

The "About infiniMap Pro" panel will also display
the total amount of memory used by all images
handled by infiniMap Pro. This is especially
handy if you're working with FPrime.

It will also display the maximum amount of
memory that the libraries used to handle
JPEG2000 and ECW images **may** use to speed
up access to the image files on disk. This value
is adapted to your actual RAM usage. The more available memory you have, the more
memory **may** be used and vice versa.

Please note: this is a maximum value, and infiniMap Pro is likely to actually use lot less
than that.

Open infiniMap Browser... / infiniMap Browser...

This is a quick way to access the infiniMap Pro Browser from within the Shader or the
Procedural Texture plugin.

Open infiniMap Converter... / infiniMap Converter...

This is a quick way to access the infiniMap Pro Converter from within the Shader or the
Procedural Texture plugin.

New Feature
Version 1.0.2

Show Image Information... / Image Information...

If the user interface displays a preview image, this option displays more verbose information about the loaded image.

This information includes:

| infiniMap Pro: Image information |
| Image: BlueMarble.jp2 |
| File: E:\Wolf_Projekte\BlueMarble\BlueMarble.jp2 |
| Image Type: ECW/JPEG2000 |
| Width: 43200 Pixels - Height: 21600 Pixels - Bands: 3 |
| Raw Size: 2669.68 Mb - Compression: 1:6 |
| Actual RAM Used: 53.46 Mb (2.00% of the raw image size) |
| Continue |

- The file name and full path of the image

- The image format (currently only ECW / JPEG2000)

- The width and height of the image in pixels, as well as the number of bands (or channels) included in the file

- The theoretical raw size of the image if it was uncompressed as well as the compression factor of the file.[7]

- The amount of RAM/memory currently used by the image. Please note, since images may be used multiple times, the memory is only used once per image.

Replace Image...

New Feature
Version 1.0.2

This option allows you to globally replace the currently visible image. A file requester will open to allow you to select a new infiniMap Pro image.

Update/Create GL Layer... / Update GL Layer...

Currently LightWave 3D can not display infiniMap Pro applied images in the openGL preview. We have included an automated way to create what we call openGL Preview Layers, that reflect the state of infiniMap Pro using standard LightWave 3D texture functions. These preview layers are only visible in the openGL view ports and are hidden during renders.

This menu item allows you to create a preview layer, or, if you have already done so, updates the parameters of the preview layer to those of the current instance of infiniMap Pro.

infiniMap Pro identifies openGL preview layers by the name of the image file used by the LightWave 3D image texture. If it contains the name of the base infiniMap Pro image (without the file name extension in both cases) it will assume that the layer is an openGL preview layer.

As an example:

Assuming your infiniMap image is BlueMarble.jp2, infiniMap Pro will accept *Proxy_BlueMarble.tga* or *BlueMarble_myProxy.bmp* as a valid name for the proxy image, but not *My_Blue_Marble_Proxy.tga*.

Please note: For the creation of an openGL proxy layer to work in the shader, you will have to manually activate the texture layers of the surface (just click once on the [T] button next to the base colour of the Surface). Unfortunately infiniMap Pro can not automatically do this yet due to limitations of the LightWave SDK.
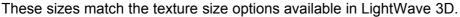
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7   Please note, the raw image size does not signify how much memory infiniMap Pro will actually use during a render.

Creating an openGL Preview Layer

If no preview layer exists, infiniMap Pro will display the Create openGL Preview Layer panel allowing you to create a preview layer as well as a preview image.

Proxy Width
Proxy Height

Defines the size of the final image used by the openGL proxy layer. These sizes match the texture size options available in LightWave 3D.

Size Presets

There a some common presets for openGL preview textures.

File Format

This is the file format used to save the file to disk.

Proxy File Name

Allows you to change the name of the preview image file. Make sure that it contains the name of the infiniMap Pro image as stated further above. Currently you will also have to type in the correct file name extension manually (this makes no difference to LightWave 3D however).

Use Loaded Image

If you activate this button, instead of creating a new image file you can use an existing image file that has been loaded into LightWave 3D.
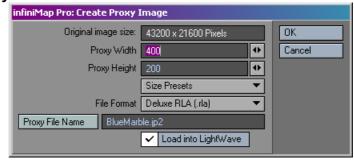
Image

This item allows you to pick a loaded image to use as a preview image instead. Please note that the same naming rules apply for the image file for infiniMap Pro to recognize the openGL preview layer.

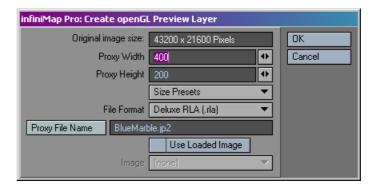## Create Proxy Image... / Create Proxy...

Sometimes you just wish to create a small version of the currently loaded infiniMap Pro image, or create a proxy layer manually.

Create openGL Proxy Image allows you to do that without actually creating an openGL proxy layer within LightWave 3D. The user interface controls have the same functionality as in the **Update/Create openGL Preview Layer** panel.

Low Res Preview / Low Preview

Previews rendered with infiniMap Pro take a while to start up rendering since infiniMap Pro needs to read the disk based image files for every rendering process.

This includes rendering the preview sphere in the Surface Editor and VIPER.

To speed up preview renders, you can turn on the Lores Preview option (which is active by default). It basically reduces the Texture Quality setting by a fixed amount, which in turn means infiniMap Pro doesn't need to read as much data from disk for every preview render.

Final LightWave 3D renders are not affected by this settings at all. We recommend you leave Lores Preview on to maximize interactivity while surfacing. For fine details or FPrime renders it should be turned off though.

This menu items toggles low resolution previews for <u>all</u> instances of infiniMap Pro in the current scene.

Low Res FPrime / Low FPrime

This option is the same as the "Low Res Preview" option but for FPrime renders only. Please note that this settings affects FPrime final renders as well (using the "FPrime Render" plugin).

As a default, this settings is off, in case you want to quickly load a scene and render it with "FPrime Render".

Free Memory...

infiniMap Pro tries to manage memory as intelligently as possible, however there may be cases where this doesn't work as expected. If you work with FPrime extensively and preview on a single frame, but toggle the "Low Res FPrime" option a lot, or move the camera about, infiniMap Pro may use more memory than it really needs to.

Normally it re-evaluates its memory usage when you change to a different frame but you can also use the "Free Memory..." option to tell infiniMap Pro to release all memory.

Registration...

This item opens up the license manager used during the installation. Once the plugin is activated you will not need to enter the license manager again, we do provide this option to allow you to check the registration though.

Texture Quality

Texture Quality defines the resolution of the image texture when applied on the final render. While infiniMap Pro tries to estimate the needed quality depending on a variety of factors, such as the size of the final render or the distance to the camera, this may produce inaccurate results in some cases. This settings allows you to tweak the resolution, and thus the sharpness of the image texture.

The higher the value, the more detailed the image texture will be (within the limits of the image resolution). infiniMap Pro will also use more memory during rendering.

A lower value will blur the image texture more, but also lowers the memory usage.

In most cases the default value of 100% is appropriate, you might want to tweak it though after checking your final render or your memory usage.

LoD Blending

When rendering, infiniMap Pro creates a number of level of details (LoD), small parts of the image texture at different resolutions. These are applied to the surface depending on the Texture Quality setting and other factors such as the distance to the camera.

To smooth transitions from one level of detail (or image resolution) to another, infiniMap Pro blends the level of details. LoD Blending specifies over what range this blending happens.

The higher the value, the more memory will be used, although the memory hit is not as significant as changing the Texture Quality.

We recommend the default setting. If you can clearly see the different resolutions switch (this tends to be visible in animations, especially with a low LoD Blending setting) you should increase this value.

The useful range of LoD Blending values is between 0% and 100%.

infiniMap Pro Procedural Texture

The procedural component of infiniMap Pro is probably the plugin you will spend the most time using.

Except for some special cases we recommend using the Procedural Texture instead of the shader. A few reasons are:

- The procedural texture is more versatile than the shader and can be used on any surface channel

- Unlike the shader the procedural texture is compatible with FPrime

- Procedurals seem to be faster when rendering compared to shaders.

Unfortunately the SDK provided with the current releases for LightWave 3D doesn't allow procedural textures to access UV Maps.

There are also limitations to the accuracy of the Texture Quality setting. As long as the Scale of the texture is correct and the textured object itself has not been scaled within Layout, the Quality Setting will be correct[8].

A change of the size of the object in Layout will need a readjustment of the Texture Quality setting. The Quality has to be set to roughly the square of the scale factor of the mesh. For example, if the object has been scaled to <5.0, 5.0, 5.0> the Texture Quality should be 2500% (5 x 5 x 100%).
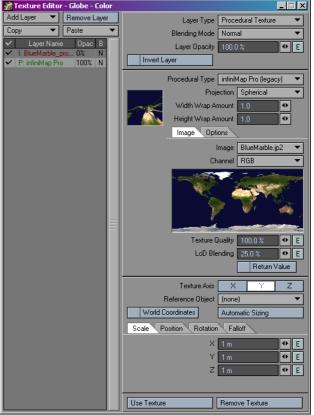
Return Value

This option is only available on the procedural texture if the texture is applied to a colour texture layer (i.e. The texture layers that modify the colour of a surface).

It basically sends the image data differently to LightWave so the result can be used as the source value in a gradient. You should not have to activate it unless the infiniMap Pro layer behaves not as expected in conjunction with other layers.

If you activate "Return Value" you will be able to enter a colour or percentage (depending on the texture layer type) just as you can with any other procedural texture.

Please not that toggling "Return Value" does not immediately update the user interface. You will need to select another layer and then select infiniMap Pro again for the user interface change to show.

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8   Well, at least very close. Unfortunately the plugin can only estimate the optimum settings.

infiniMap Pro Shader

The infiniMap Pro shader provides some additional functionality over the procedural texture, mainly UV mapping support which is unfortunately not possible within a procedural texture.

The shader can also estimate a better quality setting for the image. A value of 100% should be the optimum setting in any case.

Basically all user interface elements starting with the Texture Axis and going down have been designed to work exactly the same way as their counterparts in the LightWave 3D image texture layers. Please refer to your LightWave 3D manual for more information on those options.

New Feature
Version 1.0.2 Since Version 1.0.2 infiniMap Pro also supports applying the image to other surface channels. The controls for that appear at the top of the interfaces.

The affected channel will also be displayed as the plugin description in the shader plugins list of the surface editor.

Surface Channel

This will open a pop-up with all surface channels that can be affected by the shader.

Invert

Just like with LightWave texture layers, you may invert the effect of the shader.

Strength

The strength setting allows you to mix the channel value generated by infiniMap Pro on top of the channel value defined by the surface settings.

infiniMap Pro Browser

The infiniMap Pro Browser is a small generic plugin that you can keep open while your work in Layout. It allows you to have a quick glance at all infiniMap Pro images currently in use by the scene.

You can permanently keep this window open while working.

It also display some of the menu options available in the normal plugin context menu as buttons, allowing you for example to quickly change the quality settings for FPrime renders. These options are explained in more detail in the Common User Interface Elements section.
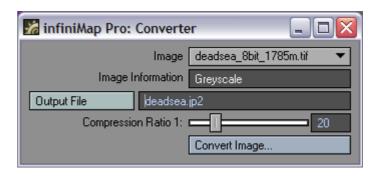
infiniMap Pro Converter

New Feature
Version 1.0.2
The Converter will convert any image that LightWave can load into an ECW/JPEG 2000 image, ready to be used within infiniMap.

Due to licensing restrictions the Converter is limited to a maximum source image size of 500MB.

The Converter will only create images with 8 bits per channel.

Here is a short description of the controls:

Image

This pop-up allows you to pick an image loaded into LightWave to be compressed. Once you pick an image the other controls will be enabled.

Image Information

This area just displays some information about the source image, mainly the channels used (as returned by LightWave)

Output File

This opens a file requester allowing you to pick an output file. The file name extension specifies the type of conversion that will take place.

Call your file <filename>.jp2 to convert to a JPEG 2000 image.

Call your file <filename>.ecw to convert to an ECW image.

Compression Ratio

The Compression Ratio specifies by how much the image will be compressed. The compression ratio is just a hint for the compressor and may actually be higher in the final image. Please note that this only has an effect on the file size, not on the amount of RAM infiniMap will later on use during rendering.

The compression is always lossy, except for JPEG 2000 images with a Compression Ratio of 1:1 – this will result in a lossless compression and is recommended for best quality results.

Convert Image

This will finaly convert the image. Depending on the image size and CPU speed this may take a couple of minutes. A progress window is displayed during the conversion, and infiniMap will also display some statistics after the conversion has completed.

Appendices

JPEG2000 and ECWconversion tools

In addition to the Converter shipping with infiniMap Pro there a numerous other tools to convert images to the JPEG 2000 or the ECW image file format:

- **Free ECW JPEG 2000 Compressor** by ERMapper (*www.ermapper.com*)
  This is one of the best compression tools out there, it is however limited to a raw image size of 500MB and only supports TIF and JPEG as source images.
  ERMapper also have a free ECW/JPEG2000 viewer for download that is quite nice and handles huge images beautifully.

- **Photoshop CS2** by Adobe (*www.adobe.com*)
  Photoshop now supports JPEG 2000 images as well, so you can save your images in JPEG 2000 from within Photoshop CS2

- **j2k** by Fnord software (*www.fnordware.com/j2k/*)
  A free compression/decompression library for Photoshop and After Effects, both Mac and Windows are supported.

- **JasPer** by Michael D. Adams (*http://www.ece.uvic.ca/~mdadams/jasper/*)
  This is a free implementation of a JPEG2000 compressor/decompressor, source code included. It allows for command line compression of images, there are some graphical front-ends available though (most notable, GeoJasPer at *http://www.dimin.net/software/utils.html*).

- **LuraWave** by LuraTech (*www.luratech.com*)
  A commercial compressor available either as a stand-alone tool or as a Photoshop plugin.

- **JPEG Toolbox V2** by Morgan Multimedia (*www.morgan-multimedia.com*)

- **JPEG 2000 / A3D Compressor** from Anything 3D (*www.anything3d.com*)

Most of these compression tools will choke at images that are larger than your main memory. Also TIFF images beyond 2GB are a problem for most conversion tools (since the TIFF standard is only a 32bit standard).

For large scale compression we recommend **ERMapper** by ERMapper (*www.ermapper.com*) or **Manifold**® **System** by manifold.net (*http://www.manifold.net*) for the budget conscious.

A full list of tools is also available in the support section at *www.db-w.com*

Tips & Tricks

Here is a small list of tips and tricks to help you work effectively with infiniMap Pro.

- To speed up the Surface Editor, increase the size of the preview sphere visible at the top of the Surface Editor, or set the 'Refresh Rate' to 'Manual' in the Surface Editor options.

Network Rendering

infiniMap Pro is ScreamerNet compatible and allows for network renders. You can install the plugin on any render node and it will render as expected. Here are a couple of pointers to make network rendering with infiniMap Pro a painless experience.

• Make sure that the support libraries are installed on the render nodes. They should be in the same directory as lwsn.exe

• Make sure infiniMap Pro is properly installed in the plugin configuration file (either lwext.cfg for LightWave 3D 7.x or lwext8.cfg for LightWave 3D 8.x).

• Use content directories.
   infiniMap Pro saves and loads images in relation to the content directory if possible.

• To make maximum use of the image cache used by infiniMap Pro, configure your render controller to render successive frames on the same render node. In Spider for example, you can configure the nodes to render any number of frames at a time, instead of distributing the frames to be rendered one at a time to the render nodes. Other render controllers may have similar options.

Known Issues

Unfortunately some things just never work they way they should. We tried to squash every bug we encountered, however sometimes it wasn't possible to circumstances outside of our control. LightWave 3D itself has a couple of holes within the SDK, and the interaction with FPrime can be troublesome at times as well.

Please note that newer releases of LightWave 3D or infiniMap Pro might have solved some of these issues. Please check www.infinimap.com regularly for updates.

Here is a short list of known issues and a collection of workarounds that should make your life easier in critical situations:

• Pasting procedural texture layers may crash LightWave if FPrime is rendering at the same time. It is recommended that you "Pause" FPrime before pasting a texture layer and then "Unpause" to commence rendering after the paste operation.

• Sometime copying and pasting a texture layer can take quite a long time. This is currently normal behaviour.

• If LightWave slows down drastically if you have the Surface Editor open, try to increase the size of the preview sphere and/or change the update mode to Manual.

LScript

The following commands can be issues from LScript or as a LightWave command.

Generic_infiniMap_Browser

Opens the infiniMap Browser

Generic_infiniMap_Converter

Opens the infiniMap Pro Converter

Glossary of Used Terms

SDK (software development kit)
Basically a set of tools and documents to allow the creation to plugins. In the case of LightWave3D the SDK provided by NewTek.

JPEG 2000
Wavelet based successor to the JPEG standard for compressed images. It allows for lossless compression, more than 8 bits per channel and has a variety of enhanced features.

ECW
an advanced wavelet based compressed image file format developed by ER Mapper. Now replaced by JPEG 2000.

openGL preview layer
A term used by infiniMap Pro for a texture layer within a surface that serves no other purpose but to display an approximation of an infiniMap Pro image in the openGL real-time preview of LightWave3D.

Basically, it is an image layer with the opacity set to 0%, which will still display in openGL but not during renders.

FAQ

I can't create an openGL proxy layer from the Shader
Unfortunately, for this to work from the shader you will have to manually activate the texture layering on the surface colour.

Click on the [T] button to the right of the surface base colour once to activate it. Now the infiniMap Pro shader can create an openGL proxy layer for that surface.

I've created an openGL proxy layer, but I don't see it in the texture layer window (it does show in openGL though)
While the layer has actually been created, LightWave3D will not display the layer in the texture list until you close and re-open the texture list.

Problems network rendering, infiniMap Pro fails
Make sure the support libraries (*NCSEcw.dll*, *NCScnet.dll* and *NCSUtil.dll*) are installed on your render nodes as well.

No image preview in Modeler
Due to a limitation imposed by LightWave 3D, the image preview is not available in the procedural texture component of infiniMap 3D when running in Modeler.

I change the preview resolution, but the Preview / VIPER doesn't update
Sometimes LightWave3D doesn't register the fact that a texture value has been changed. Switching the preview resolution is one of those cases. If it happens, please refresh the preview or VIPER manually.