



## **User Manual**

Version 1.0

©2005 by db&w Bornemann und Wolf GbR

## **Software License and Limited Warranty Agreement**

PLEASE READ CAREFULLY BEFORE DOWNLOADING, INSTALLING OR USING THIS SOFTWARE:

THIS SOFTWARE LICENSE AGREEMENT IS A LEGAL AGREEMENT BETWEEN YOU ( EITHER AN INDIVIDUAL OR, IF PURCHASED OR OTHERWISE ACQUIRED BY OR FOR AN ENTITY, AN ENTITY) AND DB&W BORNEMANN UND WOLF GBR.

BY CLICKING THE "ACCEPT" BUTTON, OPENING THE PACKAGE, DOWLOADING, INSTALLING OR OTHERWISE USING THIS SOFTWARE YOU AGREE TO BECOME BOUND BY THE TERMS OF THIS LICENSE . IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, CLICK THE "DO NOT ACCEPT" BUTTON AND DO NOT DOWNLOAD, INSTALL OR USE THIS SOFTWARE OTHERWISE.

### **1.0 DEFINITIONS**

"Licensee" means you, the User, who agrees to all of the terms set forth in this Software License and Warranty Agreement, by downloading, installing or using this software.

"Licensed Software" shall mean the infiniMap Pro plug in for LightWave 3D and documentation for infiniMap Pro.

"Software" shall mean the infiniMap Pro plug in for LightWave 3D and documentation for infiniMap Pro.

### **2.0 OWNERSHIP OF THE SOFTWARE**

The Licensee acknowledges and agrees that all of the computer programs and associated documentation are owned exclusively by db&w Bornemann und Wolf GbR. You agree that the price paid by you for the Software is a license fee granting you only rights set forth in this License Agreement.

### **3.0 RESTRICTED LICENSE infiniMap Pro**

db&w Bornemann und Wolf GbR grants Licensee a non-exclusive, non-transferable, non-assignable, non-sub licensable, revocable and restricted license to use Licensed Software, in machine-readable, object code form only. The licensee agrees to use the Software solely for the purposes as outlined in this Agreement. The License Agreement does not convey to the licensee any ownership rights or any other interest in the software.

### **4.0 SCOPE OF LICENSE**

This Software is licensed to be installed and used only in connexion with one LightWave 3D license. A valid license must be purchased for each LightWave 3D license.

### **5.0 LICENSE RESTRICTIONS**

No license is granted to Licensee for any other purpose and Licensee may not sell, rent, lent, lease, loan or sub-license or otherwise encumber or transfer the Licensed Software, in whole or in part, to any third party for any purpose.

5.1 Licensee may not duplicate or modify or translate or decompile or create derivative works of the Licensed Software, or disassemble or reverse-engineer script or protocols of the Licensed Software.

5.2 Licensee agrees to use all reasonable efforts to protect the Software from unauthorized use, modification, reproduction, distribution or publication.

5.3 Licensee acknowledges that nothing in this Agreement gives Licensee the right to use any trademark, trade name, or service mark of db&w Bornemann und Wolf GbR or any third party from whom db&w Bornemann und Wolf GbR has acquired license rights.

5.4 The License and other terms and conditions set forth in this Agreement shall apply to any and all versions and components of the Licensed Software furnished by db&w Bornemann und Wolf GbR to Licensee during the term of this Agreement and all versions and components of the Licensed Software used by Licensee in accordance with this Agreement.

5.5 The Licensed Software shall be used only by Licensee and only subject to the terms and conditions in this Agreement.

### **6.0 TITLE, PROPRIETARY RIGHTS, AND DEVELOPMENT**

6.1 The Licensee agrees that db&w Bornemann und Wolf GbR and/or its licensors own all right, title and interest in the Licensed Software and in all patents, trademarks, trade names, inventions, copyrights, know-how and trade secrets relating to the design, manufacture, operation or service of the Licensed Software. All rights not expressly granted are hereby reserved by db&w Bornemann und Wolf GbR. Unauthorized copying or use of the Licensed Software, or failure to comply with the restrictions provided in this Agreement, will result in automatic termination of this Agreement. Nothing in this Agreement shall change db&w Bornemann und Wolf GbR's or any of its licensors' ownership rights to their respective intellectual property, including but not limited to the Licensed Software.

6.2 db&w Bornemann und Wolf GbR is under no obligation to support the Licensed Software in any way, or to provide Licensee with updates, bug fixes, builds, or error corrections (collectively "Software Updates"). If db&w Bornemann und Wolf GbR at its sole option, supplies Software Updates to Licensee, the Updates will be considered part of Licensed Software, and subject to the terms and conditions of this Agreement.

6.3 The Licensee acknowledges that db&w Bornemann und Wolf GbR shall have the right, in its sole discretion and without incurring any liability, to modify the Licensed Software or discontinue its use or distribution at any time and for any reason.

### **7.0 TERM AND TERMINATION OF AGREEMENT**

This Agreement will commence on the date on which Licensee downloads Licensed Software (the "Effective Date") and will remain in force until terminated.

7.1 Licensee might terminate the license at any time by removing the Software from the computer and destroying the original Software and all copies.

7.2 Upon termination or expiration of this Agreement, Licensee must cease use of and destroy the Licensed Software, any records or copies thereof and any related materials, and provide to db&w Bornemann und Wolf GbR a written statement certifying that Licensee has complied with the foregoing obligations within thirty (30) days.

7.3 This license will automatically terminate if the licensee breaches any of the terms or conditions set out in this license agreement.

7.4 Rights and obligations under this Agreement which by their nature should survive, shall remain in effect after termination or expiration hereof.

## **8.0 DISCLAIMER OF WARRANTY**

8.1 Licensed Software IS PROVIDED "AS IS." ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

8.2 db&w Bornemann und Wolf GbR does not warrant that the operation of the Licensed Software will be uninterrupted or error-free.

## **9.0 LIMITATION OF LIABILITY**

9.1 IN NO EVENT SHALL db&w Bornemann und Wolf GbR BE LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING ANY OR ALL GENERAL, SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT OR PUNITIVE DAMAGES ARISING OUT OF THIS AGREEMENT OR USE OF THE LICENSED Software OR CONFIDENTIAL INFORMATION, HOWEVER CAUSED, ON ANY THEORY OF LIABILITY, AND WHETHER OR NOT db&w Bornemann und Wolf GbR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. THESE LIMITATIONS SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

9.2 Notwithstanding the foregoing, any damages that you might incur for any reason whatsoever (including, without limitation, all damages referenced above and all direct or general damages), the entire liability of db&w Bornemann und Wolf GbR and any of its suppliers under any provision of this Agreement and your exclusive remedy for all of the foregoing shall be limited to the greater of the amount, if any, actually paid by you for the Licensed Software or U.S.\$5.00. The foregoing limitations, exclusions and disclaimers shall apply to the maximum extent permitted by applicable law, even if any remedy fails its essential purpose.

9.3 Licensee will hold db&w Bornemann und Wolf GbR harmless from any claims based on Licensee's use of the Licensed Software for any purposes, and from any claims that later versions or releases of any Licensed Software furnished to Licensee are incompatible with the Licensed Software provided to Licensee under this Agreement.

9.4 Licensee shall have the sole responsibility to adequately protect and backup Licensee's data or equipment used in connexion with the Licensed Software. Licensee shall not claim against db&w Bornemann und Wolf GbR for lost data, inaccurate output, work delays or lost profits resulting from Licensee's use of the Licensed Software.

9.5 Neither party will be liable for any indirect, punitive, special, incidental or consequential damage in connection with or arising out of this Agreement, including loss of business, revenue, profits, use, data or other economic advantage, however it arises, whether for breach or in tort, even if that party has been previously advised of the possibility of such damage.

## **10.0 GENERAL TERMS AND INDEMNITY**

10.1 Any action relating to or arising out of this Agreement shall be governed by German law.

10.2 Neither party may assign or otherwise transfer any of its rights or obligations under this Agreement, without the prior written consent of the other party, except that db&w Bornemann und Wolf GbR may assign this Agreement to any other company.

10.3 If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms. In the event that it is determined by a court of competent jurisdiction as a part of a final non-appeal able judgement that any provision of this Agreement (or part thereof) is invalid, illegal, or otherwise unenforceable, such provision will be enforced as nearly as possible in accordance with the stated intention of the parties, while the remainder of the Agreement will remain in full force and effect and the parties will be bound by obligations which approximate, as closely as possible, the effect of the provision found invalid or unenforceable, without being themselves invalid or unenforceable. The waiver of any breach or default shall not constitute a waiver of any other right in this Agreement or any subsequent breach or default. No waiver shall be effective unless in writing and signed by an authorized representative of the party to be bound. Failure to pursue, or delay in pursuing, any remedy for a breach shall not constitute a waiver of such breach.

10.4 Licensee agrees that the Licensee shall indemnify, defend, and hold harmless db&w Bornemann und Wolf GbR, and its respective officers, directors, employees, agents, successors, and assigns, from any damage, allegation, cost, loss, liability, or expense (including court costs and reasonable fees for attorneys or other professionals) arising out of or resulting from or in connexion with any breach or claimed breach of the terms of this Agreement or warranties provided herein.

## Trademark and copyright information

© 2005 db&w Bornemann und Wolf GbR. All rights reserved.

All brands, company names, and product names are trademarks or registered trademarks of their respective holder.

### TRADEMARKS

This paper may contain brands, company names and product names of third parties, and following are the requirements for identifying trademarks and registered trademarks of those third parties. This list is not exhaustive and the paper may contain brands, company names and product names of additional third parties. All brands, company names and product names are trademarks or registered trademarks of their respective holder.

LightWave® and LightWave 3D® are registered Trademarks of NewTek, Inc.

### 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](http://www.sourceforge.net/projects/tinyxml)

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

LittleCMS is distributed under the MIT license:

#### The MIT License

Copyright (c) 1998-2003 Marti Maria Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software. THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

#### 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.

## **Acknowledgements**

### **Software Design and Development**

Michael Wolf

### **Management**

Dagmar Bornemann

### **Documentation and Tutorials**

Michael Wolf

### **Product Marketing**

Dagmar Bornemann

### **Original Logo Design**

Matt Gorner

Special thanks go to our team of dedicated beta testers. You've all done a great job and your feedback, time, criticism and bug hunting skills were invaluable.

We would also like to thank the teams at NewTek, NewTek-Europe, East View Cartographics and gadget for their kind support.

We also thank the LightWave community and the members of the LightWave Plugin Developers mailing list, especially Marvin Landis and Ernie Wright for their insight into the more obscure depths of the LightWave SDK.

---

db&w Bornemann und Wolf GbR  
Seyfferstr. 34  
70197 Stuttgart  
Germany

[www.db-w.com](http://www.db-w.com)  
[info@db-w.com](mailto:info@db-w.com)

# Table of Contents

<b>Introduction</b>	<b>1</b>
Compatibility.....	1
Features.....	1
Current Limitations.....	2
<b>Setting up infinimap Pro</b>	<b>3</b>
Installation.....	3
Registration.....	3
Included Plugins.....	4
<b>Reference</b>	<b>5</b>
Common User Interface Elements.....	5
Projection Types.....	5
Image Selector.....	6
Channel Selector.....	6
Image Preview Area.....	7
Options.....	7
About infinimap Pro... / About infinimap.....	7
Open infinimap Browser... / infinimap Browser.....	8
Show Image Information... / Image Information.....	8
Update/Create GL Layer... / Update GL Layer.....	8
Create Proxy Image... / Create Proxy.....	9
Low Res Preview / Low Preview.....	10
Low Res FPrime / Low FPrime.....	10
Free Memory.....	10
Registration.....	10
Texture Quality.....	11
LoD Blending.....	11
infinimap Pro Procedural Texture.....	12
Return Value.....	12
infinimap Pro Shader.....	13
infinimap Pro Browser.....	13
<b>Appendices</b>	<b>14</b>
JPEG 2000 and ECW conversion tools.....	14
Tips & Tricks.....	14
Network Rendering.....	14
Known Issues.....	15
Glossary of Used Terms.....	15
FAQ.....	16

## 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<sup>1</sup> 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.

You will find more information on how to create ECW or JPEG2000 images in the Appendix of this manual.

## Compatibility

InfiniMap Pro is compatible with LightWave3D 7.5 up to LightWave 8.5.

It currently only runs with the 32bit version of LightWave and is available for Windows only. It has been tested with Windows 2000 as well as the 32bit Version of Windows XP.

A 64bit Windows port, as well as a Mac OSX version are planned. Upon demand we can also port a Linux render node version.

Please visit [www.infinimap.com](http://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:

---

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

- Full compatibility<sup>2</sup> 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.
- Free point upgrades, free support, free beer<sup>3</sup>

## 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.

---

<sup>2</sup> 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.

<sup>3</sup> O.k., so we're joking about the beer...



## Setting up infinimap Pro

### Installation

The installation of infinimap Pro is straight forward, however, care must be taken with the support libraries.

Copy the included support libraries (*NCSEcw.dll*, *NCScnet.dll* and *NCSUtil.dll*) to the programs directory where you installed LightWave3D (this is the directory where the *lightwav.exe* resides).

*infiniMapPro.p* 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 4 plugins in one file.

The four plugins added are:

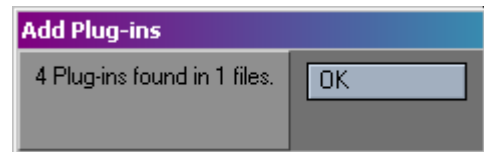
infiniMap Pro Texture

infiniMap Pro Shader

infiniMap Browser

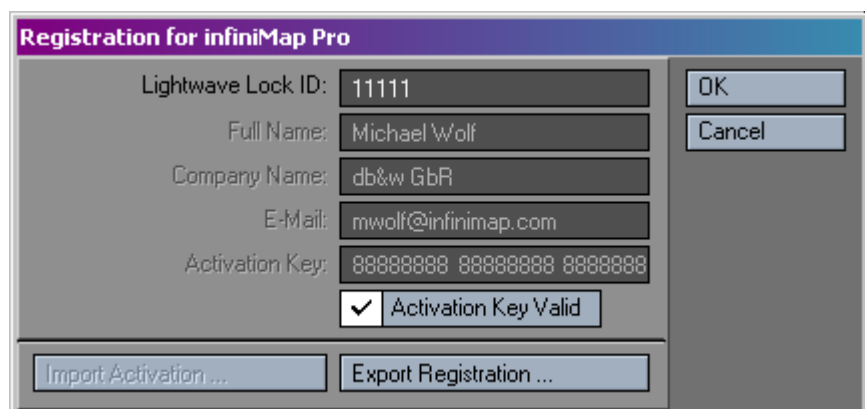
infiniMapCoreServices (only used internally by the plugins).

To be able to use 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](mailto: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 three plugins:

- infiniMap Pro Procedural Texture
- infiniMap Pro Shader
- infiniMap Pro Browser

These are explained in more detail in the following chapter.

## Reference

Originally Posted by **Exper**

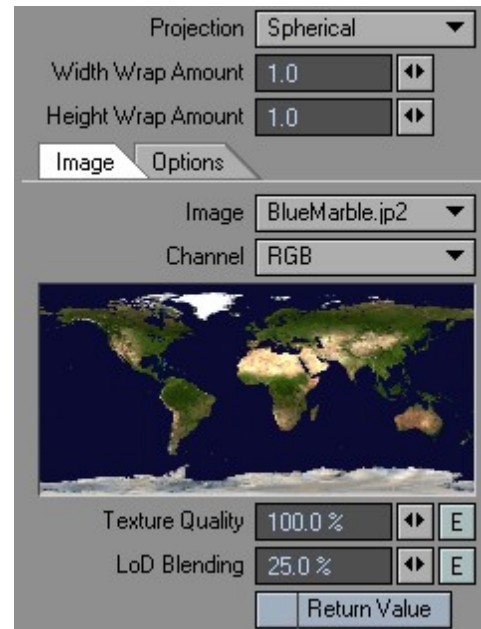
"Parameter 1: use it to change the value of Parameter 1".

### Common User Interface Elements

Both the procedural and the shader use many common elements in their user interface<sup>4</sup>.

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

- Projection
  - Planar, Cylindrical, Spherical, Cubic, Front, UV Map (only available in the shader)
- 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)
- Image
  - Image selector
  - Channel
  - Image Preview Area
- Options
  - Texture Quality
  - LoD Blending



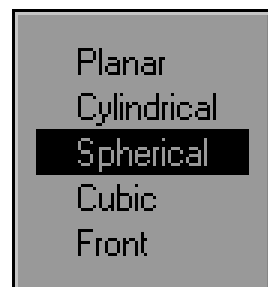
These are explained in more detail in the following sections.

### 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.

The projection types are:

- Planar projection
- Cylindrical projection



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

- Spherical projection
- Cubic Projection
- Front Projection (also known as Camera projection)
- UV Map (not available in the procedural texture)

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.

## 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.

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.<sup>5</sup>

## 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.

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.



RGBA  
RGB  
Red  
Green  
Blue  
Alpha  
Average  
Luminance

<sup>5</sup> 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.

## 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.

## Options

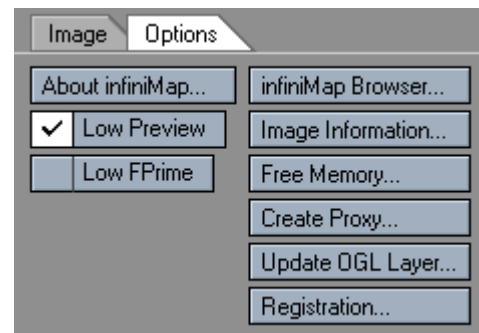
If you select the Options tab you will be able to access some bonus functionality of infiniMap Pro.

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...

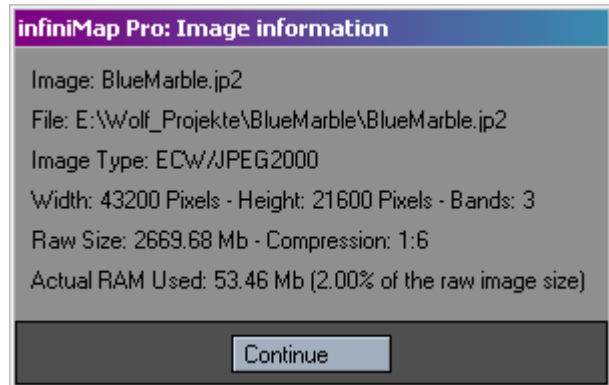
This is a quick way to access the infinimap Pro Browser from within the Shader or the Procedural Texture plugin.

### 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:

- 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.<sup>6</sup>
- 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.



### 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.

<sup>6</sup> Please note, the raw image size does not signify how much memory infinimap Pro will actually use during a render.

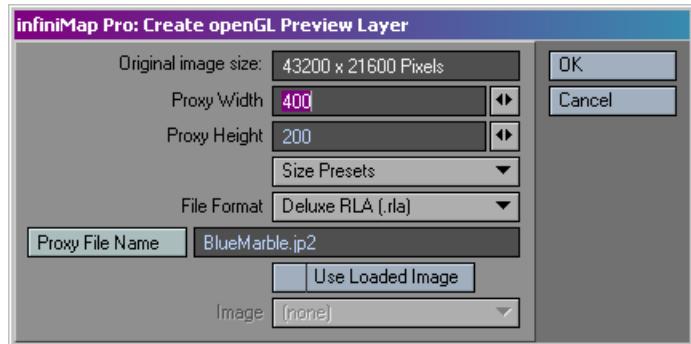
### Creating an OpenGL Preview Layer

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 are 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.

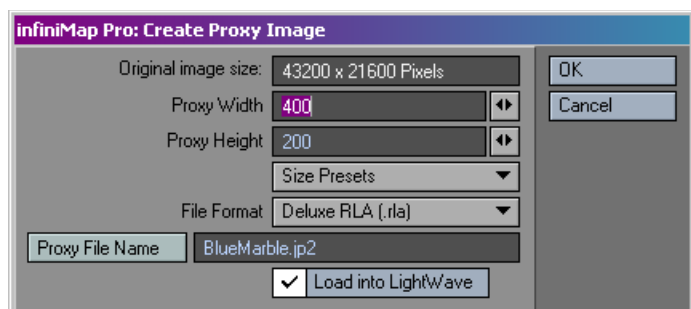
#### Image

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 all 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. 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 our 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 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<sup>7</sup>.

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%).

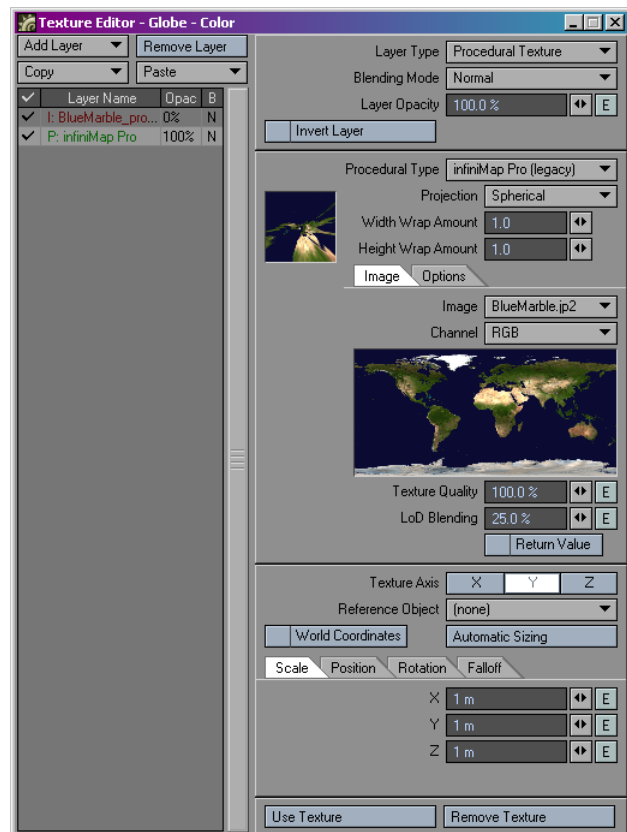
### Return Value

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 note 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.



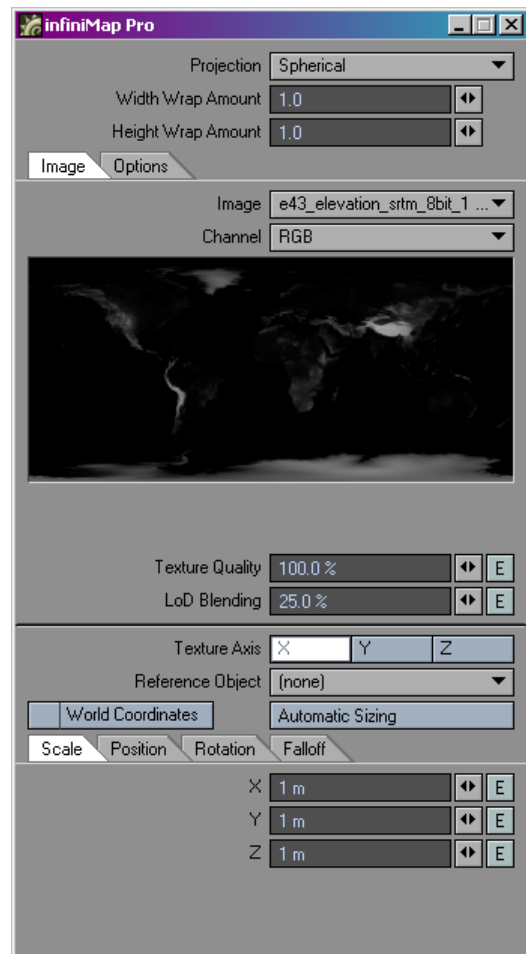
<sup>7</sup> Well, at least very close. Unfortunately the plugin can only estimate the optimum settings.

## 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.



## 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 displays 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.



## Appendices

### JPEG 2000 and ECW conversion tools

Currently infinimap Pro does not ship with a tool to convert images to the JPEG 2000 or the ECW image file format.

There are a couple of tools available and we will cover a selection here:

- **Free ECW JPEG 2000 Compressor** by ERMapper ([www.ermapper.com](http://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.  
ERMMapper 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](http://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/](http://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/utls.html> ).
- **LuraWave** by LuraTech ([www.luratech.com](http://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](http://www.morgan-multimedia.com))
- **JPEG 2000 / A3D Compressor** from Anything 3D ([www.anything3d.com](http://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 **ERMMapper** by ERMapper ([www.ermapper.com](http://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](http://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 the way they should. We tried to squash every bug we encountered, however sometimes it wasn't possible to circumvent 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](http://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.

## Glossary of Used Terms

### **SDK (software development kit)**

Basically a set of tools and documents to allow the creation of 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*, *NCSchnet.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.