

Help Manual for the PDT Layers Demo by IDELIX

Table of Contents

1	Introducing PDT Layers Demo	1
2	Getting Started with the PDT Layers Demo	2
2.1	Windows System Requirements	2
2.1.1	Windows Installation Instructions	2
2.2	Mac System Requirements	2
2.2.1	Mac Installation Instructions	2
2.3	Technical Support	2
2.4	Contact Information	3
3	The Basics - QuickStart	4
3.0.1	The Main Window	4
3.0.2	Operating the PDT Layer Demo	5
3.1	Loading the Image Layers	5
3.2	Changing Lens Image	6
3.3	Activating the PDT Lens	7
3.4	Adding and Removing a Lens	7
3.5	Removing Lens Folding	7
3.6	Editing the Layers	8
3.7	Changing the Pen Colour	9
3.8	Undoing Edits	10
4	Using the PDT lens	11
4.1	Lens basics	11
4.1.1	Activating the interactive PDT lens controls	11
4.2	Using the interactive lens controls	12
4.2.1	Exploring with the lens	13
4.2.1.1	Moving the lens	13
4.2.1.2	Placing the lens	13
4.2.2	Resizing the lens base	14
4.2.3	Resizing the focal region	15
4.2.4	Folding the lens	16
4.2.5	Changing the lens magnification	17
4.2.6	Changing the lens scoop	18
5	Known Issues and Frequently Asked Questions	20
5.1	Why can't I move the lens?	20
5.2	Why can't I see the lens?	20
5.3	Known Issues	20

6	More About IDELIX Software Inc and PDT.	
	21
6.1	About IDELIX Software Inc.....	21
6.2	About Pliable Display Technology	21
7	Concept Index.....	22

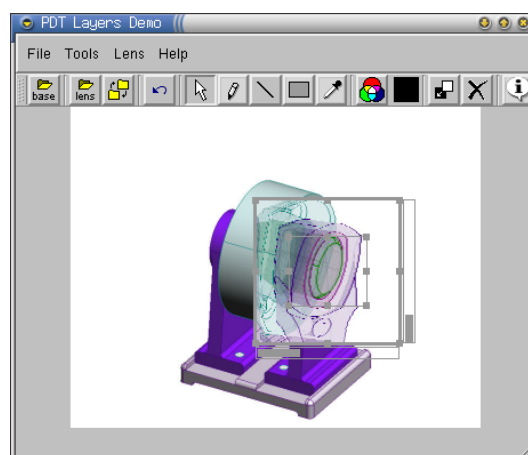
1 Introducing PDT Layers Demo

Welcome to the PDT Layers Demo help manual by IDELIX Software Inc. This manual is intended to help you get started using the PDT Layers Demo and to answer any questions that may arise while you are working with it. Should you encounter any problems, please do not hesitate to contact us via email at info@idelix.com.

What is the PDT Layers Demo?

The PDT Layers Demo is a technology demonstration tool. It is powered by Pliable Display Technology (PDT), a Software Development Kit developed by IDELIX Software Inc. This Demo uses a series of multiple images to demonstrate how PDT can be used to visualize either multiple images, or multiple layers of data. For the purposes of this help document, we will use "layers" and "images" interchangeably. The PDT Layers Demo demonstrates the ability to view and edit two images simultaneously: one image is viewed outside the lens (in the background) while a second image is viewed inside the lens.

The figure below illustrates the PDT Layers Demo in action using two different images of the same object. The background image shows a solid 3D model, while the lens reveals the internal structure of the object. In this case the lens also shows a magnified view of the object.



The PDT Layers Demo In Action

The PDT Layers Demo enables you to intuitively navigate and interpret two layers of information. By extending traditional zoom and pan capabilities, a PDT lens allows you to view magnified detail within a region of interest without losing a view of the surrounding context. In the demo, the process of editing modifies both image layers, highlighting the ability to edit or mark-up magnified detail and have it reflect accurately on the base image layer.

Please have a look at the [Chapter 5 \[FAQ\], page 20](#) section before you start.

See also [\[About Pliable Display Technology\], page 21](#)

2 Getting Started with the PDT Layers Demo

What you need to know to install and run the PDT Layers Demo on your computer:

1. System Requirements [[[system requirements](#)], page 2]
2. Windows Installation Instructions [[[Windows installation](#)], page 2] or Mac Installation Instructions [[[Mac installation](#)], page 2]
3. Technical Support [[[technical support](#)], page 2]
4. Contact Information [[[contact information](#)], page 2]

2.1 Windows System Requirements

For the Windows version of the PDT Layers Demo you will need Microsoft Windows(TM) 95 or later. The minimum memory requirement for Windows 98 is 128MB with a minimum CPU speed of 400MHz.

2.1.1 Windows Installation Instructions

1. Confirm that your computer meets the minimum system requirements as noted above.
2. Run the installation program provided.
3. Thoroughly read and respond to each question asked during the installation program.
4. Click **Finish** upon completion of the installation program.

2.2 Mac System Requirements

For the Mac version of the PDT Layers Demo you will need a G4 400MHz or faster computer. The minimum memory requirement for Mac is 128MB.

2.2.1 Mac Installation Instructions

1. Confirm that your computer meets the minimum system requirements as noted above.
2. Run the installation program provided.
3. Double click on the .dmg file that you downloaded to mount a disk image.
4. Double click on the disk image (PDTLayersDemo) and double click on the file inside to start the application.

2.3 Technical Support

IDELIX Software Inc.

Technical Support

Website <http://www.idelix.com/support.shtml>

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2.4 Contact Information

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3 The Basics - QuickStart

The PDT Layers Demo demonstrates two unique capabilities:

1. the capability to view two image layers simultaneously
2. the capability to edit two image layers simultaneously

Viewing Two Image Layers Simultaneously The PDT Layers Demo allows you to view two layers at the same time: one inside the PDT lens and one outside the lens. The image inside the lens is known as the **lens image** while the image outside the lens is known as the **base image**. The PDT Layers Demo currently supports PNG, JPG and BMP file formats.

Editing Two Image Layers Simultaneously The PDT Layers Demo allows you to edit two images at the same time. In other words, editing one image modifies the second image in exactly the same place. Editing of the images is accomplished through the toolbar options which include the **Draw curve** tool, the **Draw line** tool, and the **Select region and fill** tool. These tools will be discussed in further detail in the following section.

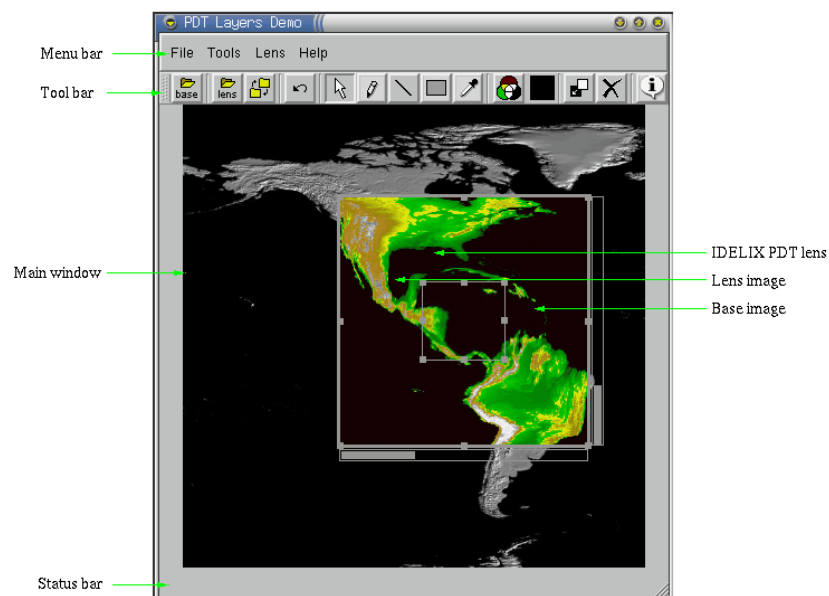
In this next section we will:

Describe the application's [\[The Main Window\]](#), page 4

Provide instructions for [\[Operating the PDT Layers Demo\]](#), page 5.

3.0.1 The Main Window

The PDT Layers Demo application window consists of a number of parts: the main window, the menu bar, the toolbar, and the status bar.

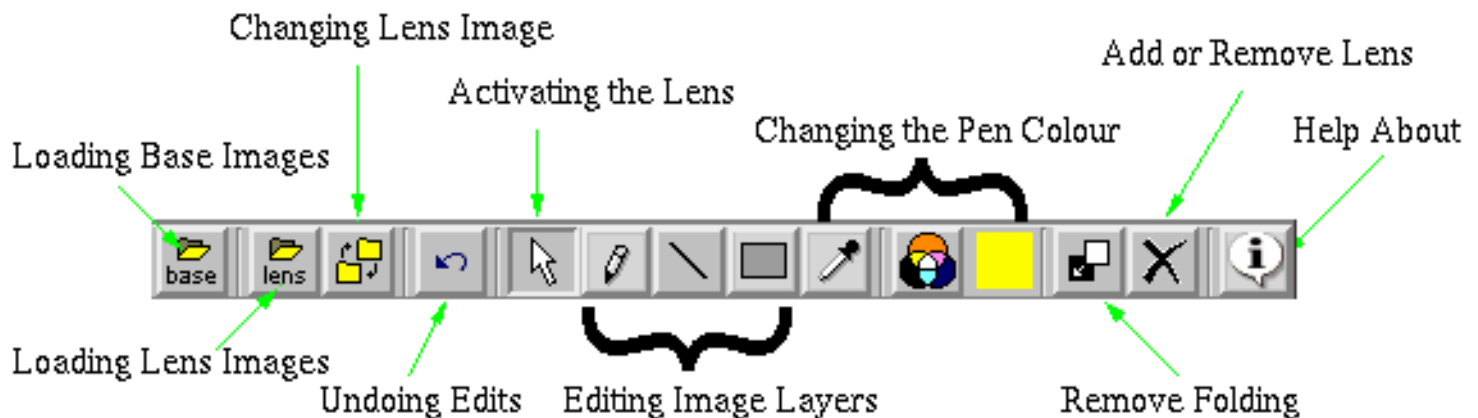


The PDT Layers Demo Main Window

The previous figure illustrates two images within the main window. The **base image** is a relief map of the Americas; the **lens image** is an elevation view of the same geographic coordinates.

3.0.2 Operating the PDT Layer Demo

All the modes of interaction for this application are provided through the toolbar or menu options.



Operating the PDT Layers Demo

- [Loading the Image Layers], page 5.
- [Changing Lens Image], page 6.
- [Lens basics], page 11.
 - [Activating the PDT Lens], page 6.
 - [Removing Lens Folding], page 7.
 - [Adding and Removing a Lens], page 7.
- [Editing the Layers], page 8.
- [Changing the Pen Colour], page 9.
- [Undoing Edits], page 10.

3.1 Loading the Image Layers



Open Base and Lens Image Layers

The Open base image layer button and the Open lens image layer button located in the toolbar are used to load images into the main window. These options are also available under the File menu.

Two steps are required to view two images simultaneously. First, click on the **Open base image layer** button to open the image you wish to view outside the PDT lens. Then click the **Open lens image layer** to open the image you wish to view inside the PDT lens. Both options pop up a dialog box which allows you to find the files you wish to load.

The base and lens image may be different sizes. However, if the aspect ratio of the two images are different, the lens layer is stretched to match the base layer.

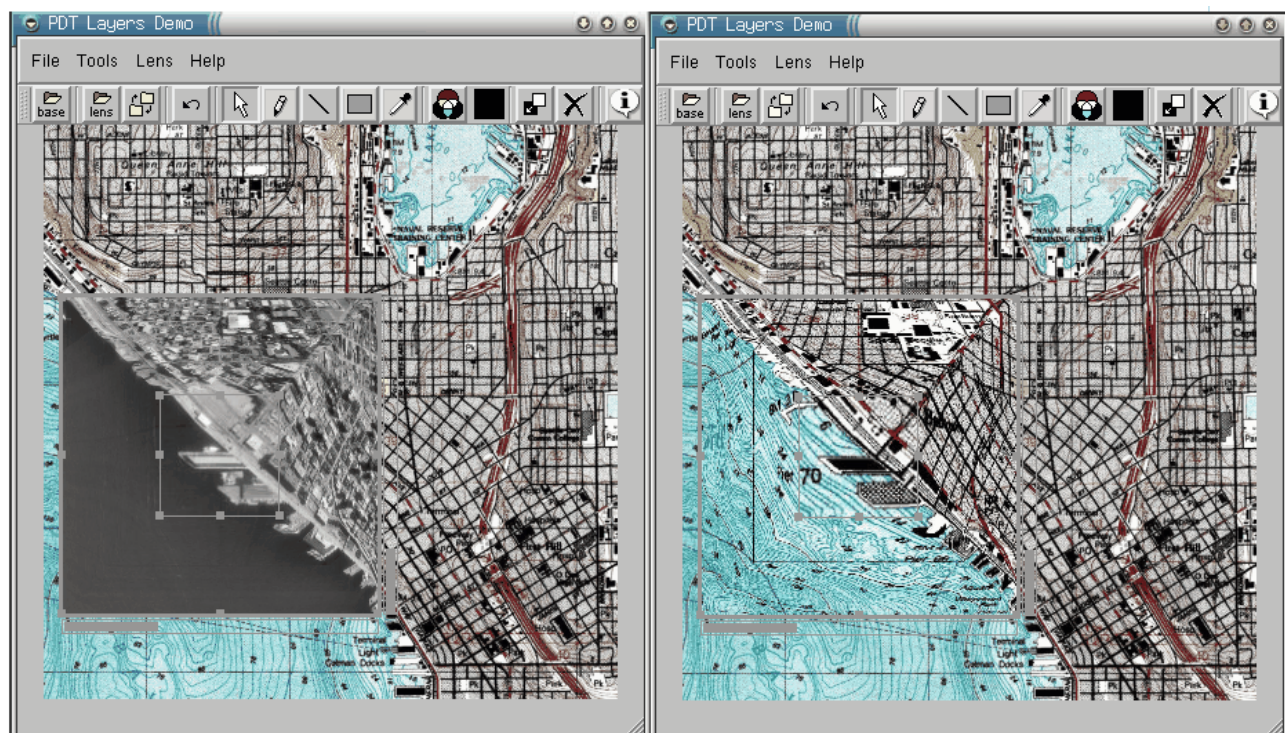
3.2 Changing Lens Image



Change Lens Image Button

By clicking on the **Change lens image** button, the image appearing in the lens can be replaced with the base image. Clicking this button again returns the original lens image.

This button is particularly useful after using the editing tools to highlight parts of the image. Instead of moving the lens away to see where your edits have affected the base layer simply press the **Change lens image** button, or press Ctrl-R. This command fills the lens with base image layer for magnified inspection. The figures below shows the effects of pressing the **Change Lens Image** command.



Before and After Pressing Ctrl-R or the Change Lens Image Button

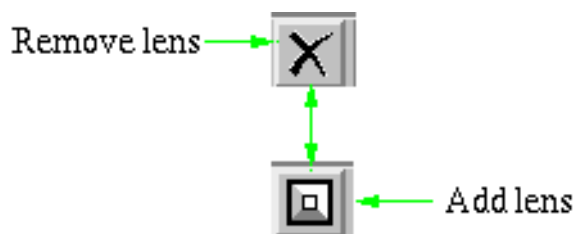
3.3 Activating the PDT Lens



Activate Lens Button

Once the base and lens images have been loaded successfully, click on the **Activate lens** button (if it is not already pressed) to move and resize the PDT lens within the window. To explore PDT's viewing capabilities, try dragging the lens, changing the lens magnification, or folding the lens. For more information on how to manipulate the PDT lens see [\[Lens basics\]](#), page 11.

3.4 Adding and Removing a Lens



Removing and Adding a PDT Lens Toggle Button

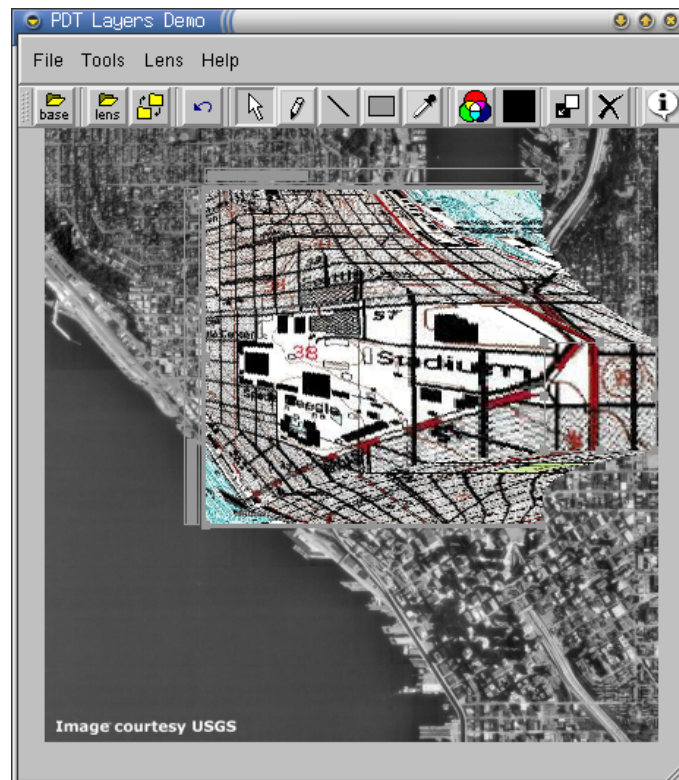
To remove the lens, click on the **Remove lens** toggle toolbar button. When the **Remove lens** icon button is pressed, the icon changes to the **Add lens** button icon and vice versa. The PDT lens will reappear where it was before being removed.

3.5 Removing Lens Folding



Remove Folding Button

Folding the lens allows you to inspect areas of interest in the shoulder of the lens without moving the lens. If you cannot clearly see data in the lens shoulder, fold the lens to extend the shoulder region to make the data easier to view.

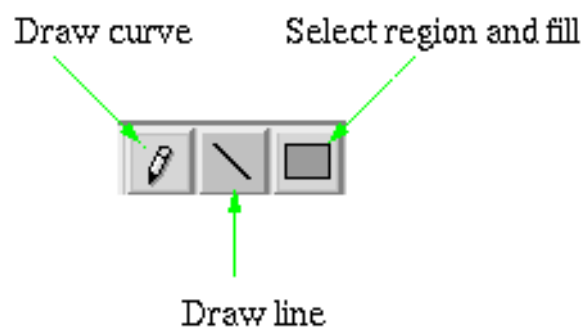


Example of Folding

To undo lens folding click on the Remove folding toolbar button. For more information on what folding is, see [\[Lens basics\]](#), page 11.

3.6 Editing the Layers

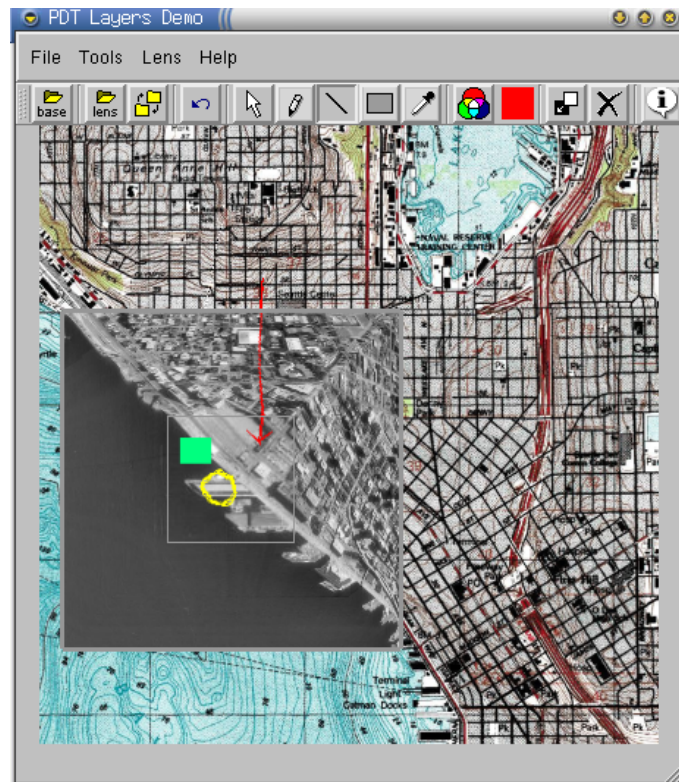
The toolbar provides three tools for editing the image layers. These tools are the Draw curve, the Draw line, and the Select region and fill tools.



Toolbar Editing Options

The Draw curve tool can be used to edit individual pixels or to draw freehand curves. The Draw line tool creates straight line segments. The Select region and fill tool cre-

ates rectangular box filled with the currently selected paint colour. The figure belows shows edits created with the various editing tools.

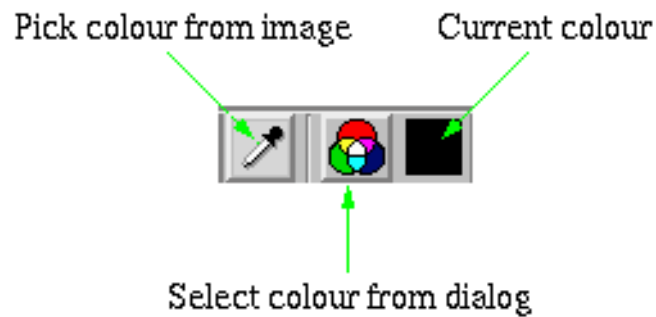


Examples of Editing with the PDT Lens

The circle around the wharf was created with the **Draw curve** tool; the arrow pointing to the wharf was made with the **Draw line** tool; the rectangular box beside the wharf was generated with the **Select and fill region** tool. The process of editing modifies both image layers.

3.7 Changing the Pen Colour

There are three tools in the toolbar associated with colour selection.



Toolbar Paint Colour Options

The **Pick colour from image** provides a means to select a colour by clicking on a pixel in the base or lens image. The **Select colour from dialog** button opens a dialog box for colour selection. The last tool, **Current colour**, indicates the currently selected editing colour.

3.8 Undoing Edits

If you edit images and want to "undo" your change, click on the **Undo** button provided on the toolbar. Up to ten sequential undo's are possible.

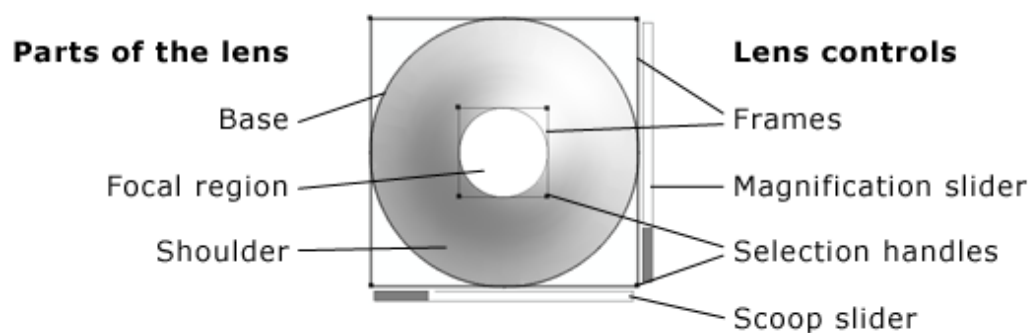


Toolbar Undo Button

4 Using the PDT lens

4.1 Lens basics

A PDT lens has three distinct parts: the **focal region**, the **shoulder**, and the **base**. The **focal region** is the central region within the lens displaying a single, uniform magnification. The **shoulder** is the area between the focal region and the base where the magnification varies smoothly between the focal region scale and the base scale. The **base** is the outer edge or perimeter of the lens.



The PDT lens.

The **lens controls** consist of several components on and around the lens: the borders or thin frames, the **magnification slider**, the **scoop slider** and the **selection handles** on and around the lens. These controls are used for configuring the lens in real time.

Find out more:

- Learn how to get started by [\[Adding and Removing a Lens\]](#), page 7.
- Learn how to utilize the controls appearing on the lens in [\[Using the interactive lens controls\]](#), page 11.

4.1.1 Activating the interactive PDT lens controls

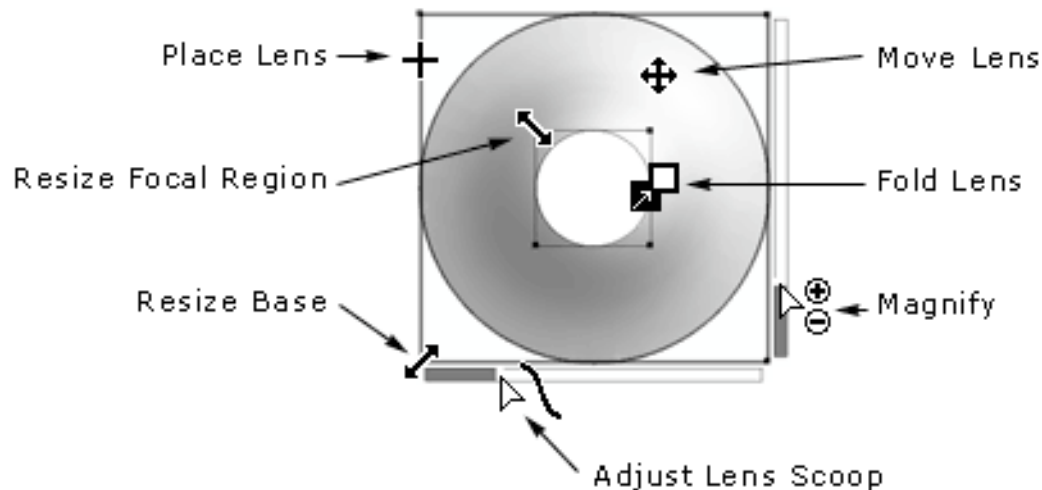
If the PDT lens controls are not active, choose the **Activate lens** button (i.e. the arrow) from the toolbar.



Activate Lens

4.2 Using the interactive lens controls

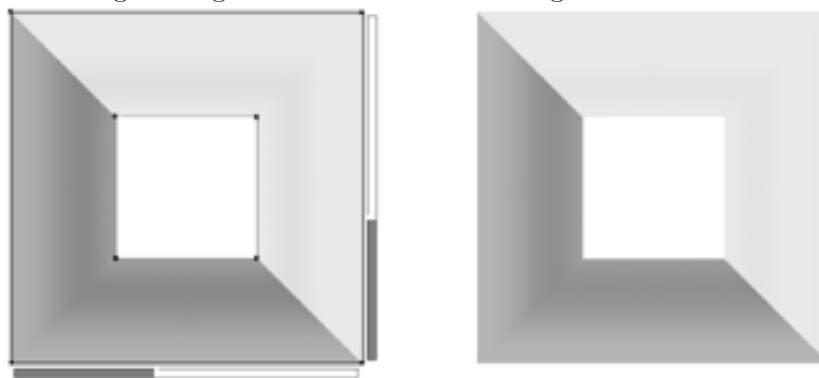
Now you are ready to begin using the PDT lens to display detailed areas of your image in context of the entire base image. This section describes the basics of using the lens controls to manipulate the lens. Each lens control is indicated by a cursor change as it moves over the control.



Cursor changes on the lens controls (cursors enlarged for clarity).

When a PDT lens is added to the image, the lens is **active**, making the lens controls visible. The lens controls on an active lens allow you to change the focal region magnification, lens size, and lens placement on the image.

The PDT lens is considered **inactive** when the lens is visible but the lens controls are not shown. This occurs when one of the interaction modes apart from **Activate lens** are chosen (e.g. **Draw curve** or **Draw line**). It is useful to make the lens inactive if the lens controls are obscuring the region of interest on the image.



An active lens (left), and the same lens inactive (right).

Find out more:

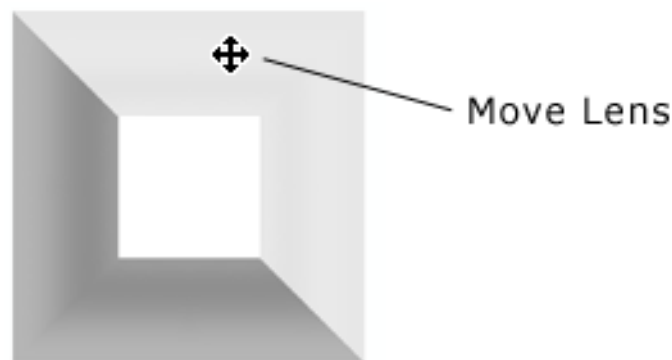
- Learn how to explore data with the lens by [\[Moving the lens\]](#), page 13, or [\[Placing the lens\]](#), page 13.
- Learn how and when to use [\[Resizing the lens base\]](#), page 14.
- Learn how and when to use [\[Resizing the focal region\]](#), page 15.
- Learn how and when to use [\[Folding the lens\]](#), page 16.
- Learn how and when to use [\[Changing the lens magnification\]](#), page 17.
- Learn how and when to use [\[Changing the lens scoop\]](#), page 18.

4.2.1 Exploring with the lens

You can explore the data or pinpoint a specific area on the image by changing the lens position in one of two ways: [\[Moving the lens\]](#), page 13, or [\[Placing the lens\]](#), page 13.

4.2.1.1 Moving the lens

The **Move lens** function allows you to click and drag on the PDT lens and move it to a new location. While the lens is in motion, the handles disappear, allowing you to clearly see the detail in the lens in context to the entire base image.



The PDT lens controls: moving the lens.

To move the lens to a new location

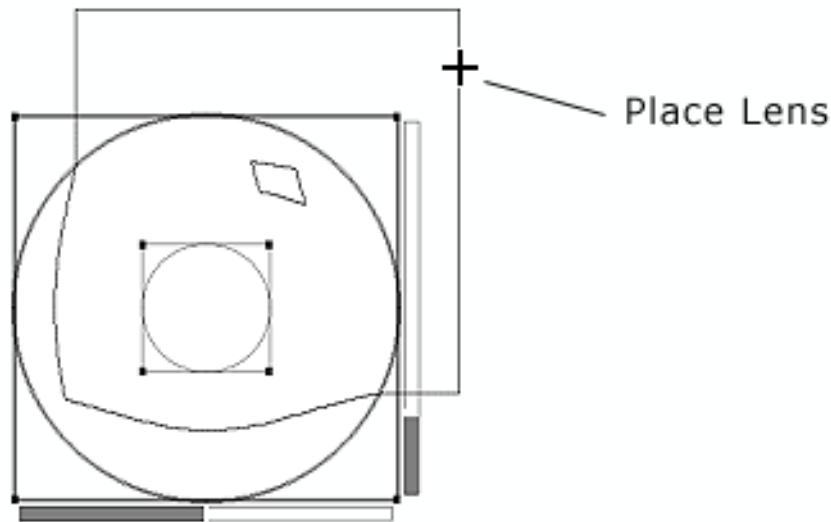
1. Move the cursor over the PDT lens until it changes to crossed double arrows. Avoid clicking on the frames or selection handles.
2. Click on the lens and drag it to the new location.

See also [\[Placing the lens\]](#), page 13.

4.2.1.2 Placing the lens

The **Place Lens** function allows you to select the PDT lens and move it to a new location while still being able to see the previous lens location. The main purpose of this function is

to allow you to select a very specific new location for the lens within the current shoulder, or elsewhere on the image.



The PDT lens controls: placing the lens.

To move the lens to a precise location on your image

1. Move the cursor over the edge of the lens frame until it changes to crosshairs.
2. Click on the lens edge and drag the lens outline until the center box is over the desired location.
3. Releasing the mouse will instantly move the lens to the selected location.

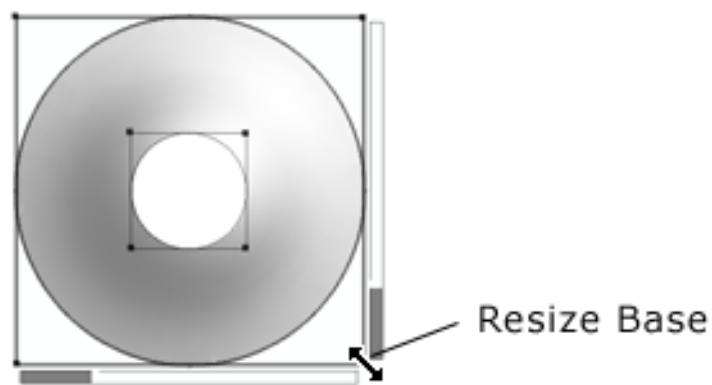
Note: the center box of the outline indicates the area that will be contained within the focal region once the mouse is released.

See also [\[Moving the lens\]](#), page 13.

4.2.2 Resizing the lens base

Resizing the PDT lens base allows you to control both the size of the lens relative to the image, and the width of the lens shoulder.

The focal region is constrained by the lens base, so if you wish the focal region to be larger than the current lens base, you will first need to enlarge the base.



The PDT lens controls: resizing the base.

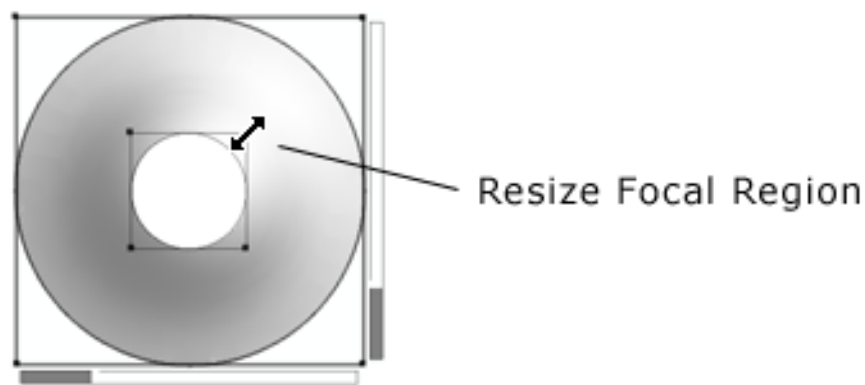
To change the size of the lens base

1. If the lens controls are not visible, click on the **Activate Lens** button.
2. Move the cursor over the selection handles on the corners of the frame around the lens base until the cursor changes to a double arrow.
3. Click on the selection handle, and drag to increase or decrease the size of the base.

Note: the lens base cannot be made smaller than the focal region. See [Resizing the focal region](#), page 15. If you wish to view a smaller lens base, the focal region must be decreased first.

4.2.3 Resizing the focal region

Resizing the focal region of the PDT lens allows you to increase or decrease the area that is uniformly magnified by the lens. You can also resize the focal region to change the width of the lens shoulder.



The PDT lens controls: resizing the focal region.

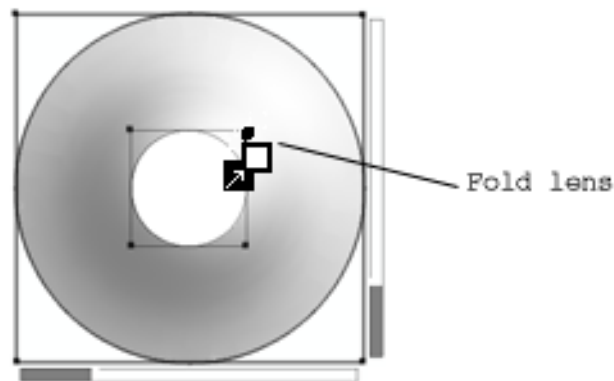
To change the size of the lens focal region

1. If the lens controls are not visible, click on the "Activate lens" button.
2. Move the cursor over the selection handles on the corners of the frame around the lens focal region until the cursor changes to a double arrow.
3. Click on the selection handle, and drag to increase or decrease the size of the focal region.

Note: the focal region cannot be made larger than the lens base. See [Resizing the lens base](#), page 14

4.2.4 Folding the lens

Folding the lens allows you to inspect areas of interest in the shoulder of the lens without moving the lens. If you cannot clearly see data in the lens shoulder, fold the lens to extend the shoulder region to make the data easier to view.



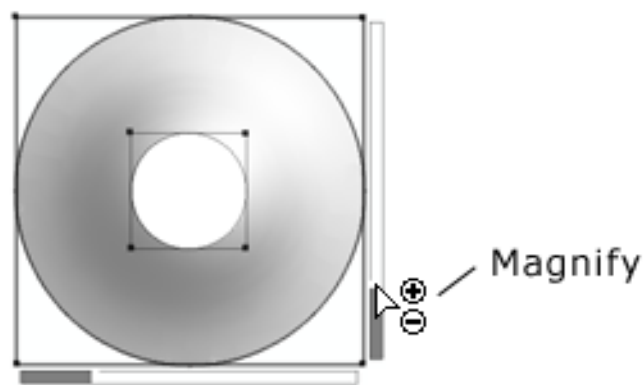
The PDT lens controls: folding the lens.

To fold the lens

1. If the lens controls are not visible, click on the **Active Lens** button.
2. Move the cursor over the outline of the focal region until the cursor changes to the folding cursor (two boxes with an arrow between them).
3. Click on the outline of the focal region and drag to move the focal region to a new location, thus increasing or decreasing the visible size of the shoulder.

4.2.5 Changing the lens magnification

Adjusting the magnification changes the level of detail displayed in the focal region of the PDT lens. The magnification within the focal region can be adjusted between 1x and 7x the scale of the visible image.



The PDT lens controls: changing the magnification.

To change the magnification within the lens

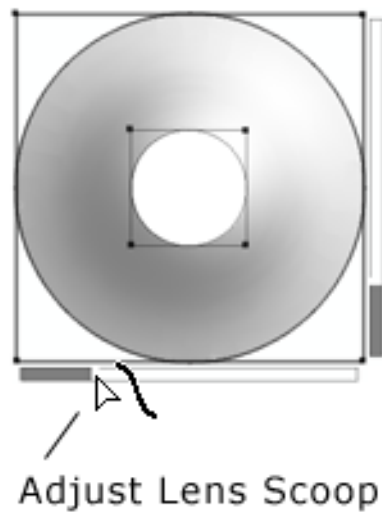
1. If the lens controls are not visible, click on the "Activate lens" button.
2. Move the cursor over the magnification slider until the cursor changes to the half arrow with +/-.
3. Click on the handle of the magnification slider and drag it up or down to adjust the magnification.
 - or -
 Click within the magnification slider, and the lens magnification will jump to the selected level.

4.2.6 Changing the lens scoop

The scoop of a PDT lens is a description of the steepness of the upper part of the lens shoulder near the focal region. The greater the scoop of the lens, the steeper the upper shoulder.

Increasing lens scoop makes detail in the lower shoulder more visible. Decreasing lens scoop makes detail in the upper lens shoulder more visible.

Adjusting the lens scoop is advantageous in cases where the magnification factor of the lens, or the size of the focal region, are great enough to cause detail on the lens shoulder to be hidden from view (i.e. occluded). If you notice occlusion in the lens shoulder, adjust lens scoop.



The PDT lens controls: changing the scoop

To change the scoop of the lens

1. If the lens controls are not visible, click on the "Activate lens" button.
2. Move the cursor over the scoop slider until the cursor changes to the half arrow with the wave.
3. Click on the handle of the scoop slider and drag it left or right to adjust the scoop.
- or -
Click within the scoop slider, and the lens scoop will jump to the selected level.

5 Known Issues and Frequently Asked Questions

5.1 Why can't I move the lens?

The lens can only be moved if you have selected the **Activate lens** button tool in the toolbar.



Activate Lens Button

5.2 Why can't I see the lens?

If you can't see the lens, click on **Add or Remove Lens** button on the toolbar.

5.3 Known Issues

- If the aspect ratio of the two images are different, the lens layer is stretched to match the base layer.

6 More About IDELIX Software Inc and PDT.

6.1 About IDELIX Software Inc.

IDELIX Software Inc. is changing the way people interact with high-density images and 3D models within the spatial limitations of their display screens. Pliable Display Technology (PDT) is a virtual lens technology that results in efficiency gains by enabling "detail-in-context" editing and magnification. With PDT, users can view the detail they require without zooming important information off the screen. The 2D and 3D PDT Software Development Kits are data format and platform independent, and can be integrated into leading software applications to make tasks such as mark-up, image analysis, and the interpretation of multiple data layers more intuitive. Major opportunities for Pliable Display Technology exist in markets where enhanced visualization tools are key to performance, such as Government and Defense, Handheld/Wireless, CAD/CAM, Geographic Information Systems, Digital Image Processing, and Design. To download a demonstration of PDT working on a variety of platforms including the PC and Mac, handheld/wireless devices and the Internet, visit: <http://www.idelix.com/pdtdemos.shtml>.



6.2 About Pliable Display Technology

If you are interested in obtaining a copy of the PDT Software Development Kit, or for more information on PDT and PDT 3d, see:

The IDELIX Partner Program: <http://www.idelix.com/partners.shtml>

PDT Product Sheets: <http://www.idelix.com/productsheets.shtml>

PDT White Papers: <http://www.idelix.com/whitepapers.shtml>

PDT Technical Descriptions: <http://www.idelix.com/techdescriptions.shtml>

PDT Integration Document: <http://www.idelix.com/integration.shtml>

Other PDT Executable Downloads: <http://www.idelix.com/pdtdemos.shtml>

PDT Videos: http://www.idelix.com/pdt_demos_video.shtml



7 Concept Index

A

About IDELIX Software Inc.	21
About Pliable Display Technology.....	21
Activating the lens.....	7
Adding lens	7

B

Base, resize	14
--------------------	----

C

Colour selection	9
Contact Information	3
Ctrl-R	6

E

Edit undo.....	10
Editing the layers.....	8

F

Focal region, resize.....	15
Folding remove	7
Frequently Asked Questions	20

G

Getting Started.....	2
----------------------	---

H

Help, Technical Support	2
-------------------------------	---

I

Introduction.....	1
-------------------	---

K

Known Issues.....	20
-------------------	----

L

Layer modification.....	8
Layers, loading	5
Layers, selecting	5
Lens controls, activate	12
Lens Controls, fold lens function	16
Lens controls, hide.....	12
Lens controls, magnification slider.....	17
Lens controls, move lens function	13
Lens controls, place function.....	13
Lens controls, resize base function.....	14

Lens controls, resize focal region function.....	15
Lens controls, scoop slider	18
Lens controls, types of controls, illustration	11
Lens manipulation	7
Lens, active	12
Lens, adding	7
Lens, inactive	12
Lens, parts of the lens.....	11
Lens, parts of the lens, illustration	11
Lens, remove folding	7
Lens, removing	7

M

Mac Installation Instructions	2
Mac System Requirements.....	2
Magnification, slider position	18
Main window	4
Manipulating the lens	7
Menu options.....	5
More About IDELIX Software Inc and PDT. ...	21
Moving the lens	13

P

Pen colour	9
------------------	---

Q

QuickStart	4
------------------	---

R

Removing lens.....	7
Resize lens base	14
Reveal base image command.....	6

S

Scoop, lens controls	18
----------------------------	----

T

The Basics - QuickStart	4
Toolbar	5

U

Undo edits	10
Using the PDT lens.....	11

W

Windows Installation Instructions.....	2
Windows System Requirements	2