



OrthoVista V4.3.0

- New Feature: Feature Detection
- New Feature: Exclusion areas for seam lines (Mosaic hints)
- New Feature: ADS Metafile support
- New Feature: Windows XP64 and Windows Vista32/64 versions available
- New Feature: Radiometrix Editor and Select All function
- New Feature: Output of geotiff and tfw georeference information
- New Feature: Parallel processing in one session with more than one license
- New Feature: Consideration of Background Areas for Hot Spot Removal
- New Feature: Seam Editor and rotated images
- Change: Usage of existing seam lines
- Change: Reduction of small seam areas
- Change: Independent Background checking parameters for 8 and 16 bit
- Change: Independent cache parameters for OrthoVista and Seam Editor
- Change: Number of images that can be loaded and displayed at a time in OrthoVista
- Change: Faster import of water areas
- Change: Water areas can be imported via DXF and Shp files
- Change: Tile borders blended in water areas
- Change: Per Image Selection
- Change: Seam Editor Short Cuts E and A
- Change: Seam Editor Short Cuts can be also used in separate windows
- Change: Speed-up of saving the project in the Seam Editor
- Change: Image Commander allows now the generation of internal overviews also
- Change: Consider image bounds on feather distance calculation
- Change: QPixmap messages with zoom function
- Change: More processing information in logfile
- Restriction: Contrast Adjustment with Global Tilting
- Restriction: True Orthophoto Mosaicking and Feature Detection
- Restriction: Seam Editor, rotated images and images with different pixel resolution
- Restriction: Seam Editor - Number of images that can be loaded at one time
- Restriction: No LINUX version available
- Important Information: Cache size in the Seam Editor
- Important Information: Handling ADS40 images
- Important information: Scanline TIFF images
- Important Information: Background settings when handling 16 bit images
- Important Information: Seam output
- Information: Processing images stored with PhotoShop cause slower results.
- Information: Background color
- Information: Seam line finding
- Information: Supported files size for BIP/BIL/BSQ images
- Information: Processing speed of version 4.3



OrthoVista V4.3.0

New Feature: Feature Detection

A new fully automatic seam line finding function called Feature Detection is now available with OrthoVista. The function is better adapted to urban areas. Compared to Adaptive Feathering more automatically detected seam lines are avoiding objects like buildings. This reduces the manual editing time considerably.



Feature Detection result

Adaptive Feathering result

New Feature: Exclusion areas for seam lines (Mosaic hints)

It is now possible to import DXF or SHP files containing closed polygons that mark exclusion areas for seam lines. The automatic seam line finding functions (Adaptive Feathering, Feature Detection) will then avoid these areas.

Note: If the mosaic hints are used with Adaptive Feathering, the alpha grid size needs to be set at least to "urban" (200) or higher.

New Feature: ADS Metafile support

OrthoVista can read now also ADS files that are linking ADS40 images together to a long strip being stored in several tiff files. The generation of ADS files is not supported.

New Feature: Windows XP64 and Windows Vista32/64 versions available

OrthoVista supports now the following operating systems: Windows 2000, Windows XP32, Windows XP64, Windows Vista32, Windows Vista64. The 32 bit and 64 bit versions need different installation setups that can be either downloaded from our home page or are delivered on different DVDs.

The 64 bit versions do have the advantage that the limit of 2 GB RAM is no more existing and the processing with certain applications can be faster.

By testing different data sets we found the following speed up factors when using 64 bit operating systems compared to processing with Windows XP32.

- XP64 is ~6% faster
- Vista 64 is ~20% faster



Release Notes - OrthoVista V4.3

May 2008

3

The Windows Vista operating system has the following limitations:

- No support of stereo viewing but anaglyph color stereo viewing (Microsoft Vista operating system does not support stereo in a window)
- Windows Vista 64bit requires at least 4 GB of RAM
- To take advantage of the 64 bit operating systems we suggest to install anyhow in minimum 4 GB of RAM
- Windows Vista SP1 must be installed

The Windows 64 bit versions can be only used with the Codemeter dongle from WIBU. The Aladdin hardlocks do not support 64 bit operating systems.

Please contact sales@inpho.de to get an offer for replacing the Aladdin hardlock with the Codemeter dongle.

Please note: The Windows 2000 support will be terminated with the next version of INPHO's photogrammetric software.

New Feature: Radiometrix Editor and Select All function

The Radiometrix Editor allows now the selection of all images by using a Select All button.

New Feature: Output of geotiff and tfw georeference information

OrthoVista allows now to generate geotiff and tfw geo-reference information when processing images.

New Feature: Parallel processing in one session with more than one license

INPHO's software modules can be now also used with the CodeMeter protection lock from WIBU. This protection lock allows processing with more than one OrthoVista instance in the same session of a computer. But each OrthoVista instance must get an own license.

New Feature: Consideration of Background Areas for Hot Spot Removal

OrthoVista can now handle images with large background areas in the Hot Spot Removal function. This function allows the processing of images where more than 50% of the pixels are background color. The former versions of OrthoVista were quite strict when images were covered with larger background pixel or exclusions areas.

New Feature: Seam Editor and rotated images

The Seam Editor is now able to handle rotated images. Images with the same rotation can be loaded and the seam line can be edited. This works only if all images do have the same rotations.

Change: Usage of existing seam lines

When running Adaptive Feathering or Feature Detection on the same data set repeatedly and seam lines already exist no new seam lines are generated if the seam lines were not modified with the Seam Editor and the image constellation has not changed. Note: To make sure that new seam lines are generated remove the existing "cld" files on the meta data directory before processing.



Change: Reduction of small seam areas

The Adaptive Feathering method of former versions generated dependent on the parameter settings many small seam areas. The amount of such small seam areas is considerably reduced now.

Change: Independent Background checking parameters for 8 and 16 bit

The background checking parameters for 8 and 16 bit are now treated independent on each other during the processing. Also the parameter setting is now independent on each other. OrthoVista is able to process 8 and 16 bit images at once.

Change: Independent cache parameters for OrthoVista and Seam Editor

So far both programs used the same parameter for the cache parameter setting. As the Seam Editor needs normally a higher cache parameter in comparison to OrthoVista, the parameters are now independent on each other.

Change: Number of images that can be loaded and displayed at a time in OrthoVista

Former versions of OrthoVista were able to load and display about 2000 images. The limits have been increased now. OrthoVista is now able to load about 10 000 images if only the footprints are displayed and OrthoVista is able displaying now the image content of more than 4000 images. Exact numbers can't be given as this depends still on the type of the images.

Change: Faster import of water areas

Former versions could have been slow with the import of water areas for processing and display. The reason is that these versions always checked if a certain polygon is partly covered by another polygon. If this was the case the two polygons were merged to a new one. Version 4.3 offers now an option to skip this check. This makes the import much faster. The function is available with the Reflection Adjustment Options and is called "Allow Complex Polygon Definitions".

Change: Water areas can be imported via DXF and Shp files

The import of water areas via DXF and Shp files was already possible with the last version but so far a shp file filter for the direct import was not available.

Change: Tile borders blended in water areas

Former versions had problems with the mosaicking when mosaic tiles without overlap were used as input images. A reflection removal was performed with saving adjusted images. Only in water areas there were then lines visible at the tile borders. This problem is now solved.

Change: Per Image Selection

The "per image selection" in former versions did not sort in any order but on the order the images were loaded. Now the images are sorted in alphanumerical order.

Change: Seam Editor Short Cuts E and A

In addition to the currently already available shortcuts Ctrl E (Edit seam) and Ctrl A (Move and Add point) now shortcuts E and A are introduced to enable the faster activation of the commands without pressing the Ctrl key.



Release Notes - OrthoVista V4.3

May 2008 5

Change: Seam Editor Short Cuts can be also used in separate windows

Former versions didn't allowed using shortcuts in separate windows. This is now supported.

Change: Speed-up of saving the project in the Seam Editor

The saving of a project in the seam editor is speed-up considerably as now only data and parameters are saved that have been changed since the last save action was performed.

Change: Image Commander allows now the generation of internal overviews also

This was so far not possible as OrthoVista had locked the images.

Change: Consider image bounds on feather distance calculation

When doing the computation of the feather distance for adaptive feathering and feature detection the image border is not considered correctly.

Change: QPixmap messages with zoom function

When zooming deeply into images it could have happened that QPixmap messages are reported and afterwards the windows remain blank. This problem is fixed now.

Change: More processing information in logfile

Further processing information is printed into the logfile. This helps to analyze the processing afterwards and to check if a process is still alive.

Restriction: Contrast Adjustment with Global Tilting

In seldom cases the contrast adjustment can have a bad impact on the global tilting result by adding too high saturation to the images. This will then cause strange colors in the output. If such a problem occurs please do the processing without having the contrast adjustment activated and you will have to remove the "tlt" files located in the meta data directory before reprocessing the images without contrast adjustment.



Restriction: True Orthophoto Mosaicking and Feature Detection

The new seam line algorithm Feature Detection is currently not supported with True Orthophoto mosaicking. Please handle with care as the result may not be as expected.

Restriction: Seam Editor, rotated images and images with different pixel resolution

The Seam Editor does currently support neither rotated images nor orthophotos with different pixel sizes.



Restriction: Seam Editor - Number of images that can be loaded at one time

The maximum number of images that can be loaded at one time with the Seam Editor (OrthoVistaSE) is limited to 800. If there is an attempt to load more images, the Seam Editor may crash because of memory overrun.

Restriction: No LINUX version available

Linux is not supported at time, but will be added in the next release. Please be aware, that with the next release the licensing policy will change and we will license the software by means of a dongle instead of the IP address.

Important Information: Cache size in the Seam Editor

The Seam Editor version 4.2.1/4.2.2 is slower in the update and movement of the image display as the version 4.2.0. By setting a cache size of 512 MB in the Seam Editor the speed is again comparable with the one of version 4.2.0.

Important Information: Handling ADS40 images

ADS40 images have the characteristic of being very large and very long strip wise. To process ADS40 images, it is very useful to increase the cache size of OrthoVista. We have made the following speed test with the following data set:



Block of two images with 79440x7952 and 86586x12579 pixels.

The whole block was processed using Global Tilting Adjustment and Adaptive Feathering with a different Cache Size on a 2.4 GHz processor with 2 GB RAM. The results are as follows:

- Cache Size: 128 MB → Processing Time: 33 hours 11 min
- Cache Size: 256 MB → Processing Time: 1 hour 56 min
- Cache Size: 512 MB → Processing Time: 1 hour 56 min

Important information: Scanline TIFF images

Scanline TIFF images are generally slower to access than tiled TIFF images. **Therefore we suggest using tiled TIFF images as input orthophotos.**

The following table shows the time needed to compute just the region files (Background pixel detection) for different kind of file formats.

File type (Size of 8 bit image 375 MB)	Time for region generation in minutes
8 bit Tiled (Tile size 128x128)	3,5
16 bit Tiled (Tile size 128x128)	4,5
8 bit Tiled (Tile size 128x128) JPEG compressed	3,5
12 bit Tiled (Tile size 128x128) JPEG compressed	5



8 bit Scanline	5,5
16 bit Scanline	7,5
8 bit Scanline JPEG compressed	18
12 bit Scanline JPEG compressed	35
Image store with PhotoSHOP JPEG compressed	65

Important Information: Background settings when handling 16 bit images

When handling 16 bit images it is important to set the Background color parameter for 16 bit images. If your images do have black background colors then set the valid image data range from 1 to 65535. If your images do have white background colors then set the valid data range from 0 to 65534.

Important Information: Seam output

In order to generate DXF files containing either all automatically generated project-wide seams or single seams, OrthoVista must take into account all areas that contain background information. In circumstance where images contain numerous small and isolated areas with background pixels, the seam generation process can easily run out of memory.



The left image shows background pixels in white. The image contains a forest and was scanned with parameters causing the forest to contain many black pixels. Black pixels are defined as background. The region file (rgn) and (cld) files for this image will have a size with larger than 10 MB. Even running a small block with seam output activated for just a few images of this type will cause OrthoVista to require 1.5 GB or more RAM to process. As this will surely cause a crash. OrthoVista has implemented the following functionality to assist in avoiding problems.

When generating the meta data, especially the rgn files, OrthoVista checks the amount of memory needed to keep the rgn data. If the size is over a certain limit, a warning is supplied – informing about the image that exceeds the limit, and that it might cause problems when generating seams.

The limit is by default 4 MB, but this can be changed in the orthovista.cfg file with the following entry:

```
> Mosaic::WarnRegionSize          4096
```

If the rgn data size exceeds a second limitation (default is 10 MB), this will very likely cause an eventual crash because of memory overflow. OrthoVista will again provide a warning message, but it will then switch off the seam output. Also this second limit parameter can be changed with the following entry:

```
> Mosaic::FailRegionSize          10240
```

Please note:

In most cases, the internal rgn data is twice as large as on disk. Images like the one shown above and even images with fewer small background regions can increase the processing time considerably.

We strongly suggest avoiding images like the one shown above. The best solution is to scan the images, so that they do not have numerous black or white (background) pixels. If this is not possible,



we suggest starting OrthoVista processing, and if OrthoVista provides warnings messages, to stop the processing after the region generation. Then you will manually manipulate the reported images. To do this, you have to first remove the rgn files, and if present, the cld files of the reported images. Then open these images in an image editing tool like PhotoShop and change in the image area (not the border area) all background pixels (e.g. from 0 to 1). Once you have done this, restart OrthoVista by using the project file (ovp) file, which was generated automatically with the last processing run. The rgn files for the edited images will then be recomputed.

Information: Processing images stored with PhotoShop cause slower results.

Some programs like PhotoShop are able to store images as tiled tiff/jpeg images. Unfortunately, they often select a tile size which is as large as the image itself. This can be checked with the "tiffinfo" tool delivered on our OrthoBOX CDs.

Below please find a "tiffinfo" output example of a tiled tiff/jpeg image stored by PhotoShop. The tile size is not especially reported here, as the tile size is identical with the image size.

EXAMPLE: TIFF Directory at offset 0x8
Subfile Type: (0 = 0x0)
Image Width: 11194 Image Length: 11193
Resolution: 72, 72 pixels/inch
Bits/Sample: 8
Compression Scheme: JPEG
Photometric Interpretation: YCbCr
YCbCr Subsampling: 1, 1
YCbCr Positioning: cosited
Date & Time: "2004:11:24 16:52:40"
Samples/Pixel: 3
Planar Configuration: single image plane

PhotoShop software has no problems reading this type of file format since PhotoShop always reads the entire image into memory. For photogrammetric software packages, such a format is not at all optimal since they must read many images and many small portions of images. Because of this non-optimal file format, OrthoVista is required to continually read and decompress the entire image to get a small portion of the image extracted. Since OrthoVista must often read small portions, the processing speed is drastically reduced with this image format.

EXAMPLE: In HotSpot Removal OrthoVista V4.x performed with the above image as follows:

- PhotoShop image with tile size as large as image size: ~ **1 h 7 min**
- Image converted to a tiled tiff/jpeg image: ~ **1 min 20 sec s**
- Image converted to a scanline tiff/jpeg image with Rows/Strip = 8: ~ **1 min 50 sec**

Note : OrthoVista V3.x was not able to process this kind of images at all.

We strongly suggest avoiding processing images stored in the format shown above in OrthoVista. We recommend generating tiled tiff or tiled tiff/jpeg images instead, with a tile size of 128x128 pixel or



256x256 pixels, for example. If this is not possible, scanline tiff images should be used and the number of Rows/Strip kept low; optimal would be Rows/Strip = 8.

Information: Background color

The Background Color is only used when reading from or writing to a file, and it has no meaning during the whole processing.

When reading input image data, OrthoVista checks the data for background pixels and creates a per-pixel mask. From this point on, the color of a pixel no longer has any meaning for background checking. Therefore, it does not matter if Radiometrix or another adjustment change the pixel color. When writing output data, OrthoVista asserts that pixels marked as background also have the background color and - even more important - that pixels *_not_* marked as background do *_not_* have the background color.

Information: Seam line finding

Because of software changes in the software, the seam lines now found with the Version 4.3 can be different to the seam lines found in previous version.

Information: Supported files size for BIP/BIL/BSQ images

The maximum file size for reading and writing of the mentioned file types is 2 GB. Whereas TIFF files can have a size up to 4GB.

Information: Processing speed of version 4.3

The following information shall inform about processing times achieved with certain hardware equipment on certain blocks. Note: You might achieve different processing times as it is dependent on the hardware configuration, parameter setup and image overlap.

Block 1

Description: 96 images; ~ 10% overlap; input data: 2/3 are scanlined tiff and 1/3 are tiled tiff images; 14 GB; output 96 tiles;

Computer used: Xeon 3.7 GHz processor with 2 GB RAM; Data on local SATA drive (7500 rpm)

Output:

- Tiled Tiff; HotSpot Removal; Global Tilting 3 iterations; **Adaptive Feathering** with mixed mode
Processing time: **2h 55 min**
- Tiled Tiff; HotSpot Removal; Global Tilting 3 iterations; **Feature Detection** with mixed mode
Processing time: **2h 34 min**
- Scanline Tiff; HotSpot Removal; Global Tilting 3 iterations; **Adaptive Feathering** with mixed mode
Processing time: **3h 55 min**
- Scanline Tiff; HotSpot Removal; Global Tilting 3 iterations; **Feature Detection** with mixed mode
Processing time: **3h 34 min**

Remarks: Scanline Tiff output is in general slower than tiled Tiff output. Feature Detection method is about 10-14% faster than Adaptive Feathering.



Block 2

Description: 421 images; ~ 15% overlap; input data: scanline tiff images; 64 GB ; 155 output tiles

Computer used: Xeon 3.7 GHz processor with 2 GB RAM; Data on local SATA drive (7500 rpm)

Output:

- Tiled Tiff; No single image adjustment; Global Tilting 3 iterations; **Adaptive Feathering** with rural mode; Processing time: 11h 30 min
- Tiled Tiff; No single image adjustment; Global Tilting 3 iterations; **Feature Detection** with rural mode; Processing time: 10h 08 min

Remarks: Feature Detection method is about 14% faster than Adaptive Feathering.

Block 3

Description: 5 strips ADS images; ~ 15% cross overlap & 5% overlap in strip direction; input data: tiled tiff images; 200 GB ; 66 output tiles

Computer used: Xeon 3.7 GHz processor with 2 GB RAM; Data on local LaCie drive (7500 rpm)

Output:

- Tiled Tiff; No single image adjustment; Global Tilting 25 iterations; **Adaptive Feathering** with rural mode; Processing time: 1h 12min
- Tiled Tiff; No single image adjustment; Global Tilting 25 iterations; **Feature Detection** with rural mode; Processing time: 57 min

Remarks: Feature Detection method is about 13% faster than Adaptive Feathering.

Block 4

Description: 2699 images; ~ 10% overlap; input data: tiled tiff images; 165 GB ; 342 output tiles

Computer used: Xeon 3.0 GHz processor with 2 GB RAM; Data on network server

Output:

- Tiled Tiff; No single image adjustment; Global Tilting 3 iterations; **Adaptive Feathering** with mixed mode; Processing time: 14d 2h
- Tiled Tiff; No single image adjustment; Global Tilting 3 iterations; **Feature Detection** with mixed mode; Processing time: 8d 9h

Remarks: Feature Detection method is considerably faster than Adaptive Feathering.

Should you have any questions regarding the technical details of software, please contact your Support Team at support@inpho.de.